

# Whitsunday Regional Council Planning Scheme



July 2017  
Version 3.5



## Citation and commencement

This planning scheme may be cited as the Whitsunday Regional Council Planning Scheme.

A notice was published in the Government Gazette No. 58 on 30 June, 2017 for the planning scheme for the Whitsunday Regional Council.

The commencement date for the planning scheme was 3 July, 2017.

Amendments to the planning scheme are included at Appendix 2.

### Community statement

The Whitsunday Region is a local government area located in North Queensland, approximately 1,000km north of Brisbane and 600km south of Cairns. An amalgamation of Bowen and Whitsunday Shires from March 2008, the region is a key pillar in Queensland's economy, rich in Tourism, Agriculture, Mining and Construction.

From country to coast, the Whitsunday Region supports a diverse range of lifestyles that incorporate the regions key economic sectors and tropical natural environment. Major towns Collinsville, Bowen, Proserpine and Airlie Beach each have their own identity that Council seeks to develop and diversify to build a successful, stronger and more resilient region over the next 20 years. In the coming decades, the region is spoilt for opportunity, growing links to the Asian tourist market, development of tourist catalysts such as Whitsunday International Airport and Airlie Beach developments, the development of the Abbot Point Growth Gateway Project boosting regional exports, and ongoing management of the regions pristine natural environments, fertile soils and water supplies to maintain strong agricultural production in the region.

Whitsunday Regional Council seeks to accommodate these opportunities through the enhancement of existing infrastructure, developing liveable communities and encouraging innovative practices that improve efficiency and sustainability. The region is anticipated to grow by over 20,000 people up to 2036 with over 9,000 more jobs being created. This growth will be accommodated in a compact urban form to reduce impacts on the regions pristine natural environments and fertile agricultural lands. Population growth will be focused around existing centres, encouraging new modern developments that enhance the local community, build a sense of place and develop vibrant liveable communities that are attractive to permanent residents and tourists alike. Development will supplement the special opportunities afforded to the Whitsunday Region in order to maximise the growth in Tourism, Agriculture, Mining and Construction sectors.

In 2036, the Whitsundays will have a thriving economy in a diverse range of sectors that offer resiliency to the region and capitalise on the areas' privileged location alongside tropical paradise, beautiful hinterlands, fertile soils and resource rich geology. The region will attract new families, cultures and millions of visitors who flock to experience the unique Whitsunday lifestyle. Whilst the region will grow and develop, the Whitsunday lifestyle unique to each township will remain.

Editor's note—The Community statement is extrinsic material to the planning scheme.

## Strategic vision

The Whitsundays strategic vision is reflected in the *Whitsunday Regional Council Planning Scheme 2017*, which shows how we will effectively manage growth and land use in the region. This planning scheme is the planning framework that focuses upon capitalising upon the regions' opportunities in a sustainable manner using the following guiding principles identified within the strategic framework:

- liveable communities and housing;
- economic growth;
- environment and heritage;
- safety and resilience to hazards; and
- infrastructure;

The *Whitsunday Regional Council Planning Scheme 2017* and its strategic intent will guide growth in the region whilst maintaining a high quality of life for Whitsunday residents.

Editor's note—The Strategic vision is extrinsic material to the planning scheme.

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# Part 1 About the planning scheme

## 1.1 Introduction

- (1) The Whitsunday Regional Council Planning Scheme 2016 (planning scheme) has been prepared in accordance with the *Sustainable Planning Act 2009* (the SP Act) as a framework for managing development in a way that advances the purpose of the SP Act.
- (2) The planning scheme was amended for alignment with the *Planning Act 2016* (the Act) by the Minister's rules under section 293 of the Act on July 3 2017.
- (3) In seeking to achieve this purpose, the planning scheme sets out Whitsunday Regional Council's (WRC) intention for the future development in the planning scheme area, over the next 20 years to 2036.
- (4) The planning scheme seeks to advance state and regional policies through more detailed local responses, taking into account the local context.
- (5) While the planning scheme has been prepared with a 20 year horizon, it will be reviewed periodically in accordance with the Act to ensure that it responds appropriately to the changes of the community at a local, regional and state level.
- (6) The planning scheme applies to the planning scheme area of WRC including all premises, roads, internal waterways and local government tidal areas and interrelates with the surrounding local government areas illustrated in **Schedule 2** (Mapping) Overview map - WRC - 01 (Local government planning scheme area and context).

Editor's note—State legislation may state that the planning scheme does not apply to certain areas, e.g. strategic port land where there is a land use plan only to the extent of any inconsistency. In accordance with the provisions of section 26 of the *Sustainable Ports Development Act 2015* a port overlay for a master planned area prevails over the planning scheme, to the extent of any inconsistency.

## 1.2 Planning scheme components

- (1) The planning scheme comprises the following components:
- (a) about the planning scheme
  - (b) state planning provisions
  - (c) the strategic framework
  - (d) the local government infrastructure plan
  - (e) tables of assessment
  - (f) the following zones and where applicable, zone precincts specified in Table 1.2.1 (Zones and zone precincts) below:

**Table 1.2.1 Zone and zone precincts**

<b>Zone and zone precincts</b>
<b>Residential zones category</b>
(a) Low density residential zone (b) Low-medium residential density zone (c) Tourist accommodation zone
<b>Centre zones category</b>
(a) Major centre zone code (b) District centre zone code (c) Local centre zone code (d) Neighbourhood centre zone code
<b>Industry zones category</b>
(a) Low impact industry zone code (b) Medium impact industry zone code (c) High impact industry zone code (d) Special industry zone code (e) Waterfront industry zone code (f) Industry investigation zone code
<b>Recreation zones category</b>
(a) Recreation and open space zone code
<b>Environmental zones category</b>
(a) Environmental management and conservation zone code
<b>Other zones category</b>
(a) Community facilities zone code (b) Emerging community zone code (c) Mixed use zone code (d) Rural zone code (e) Rural residential zone code

- (g) the local plans specified in Table 1.2.2 (Local plans) below:

**Table 1.2.2 Local plans**

<b>Local plans</b>
(a) Hamilton island local plan

- (h) the overlays specified in Table 1.2.3 (Overlays) below:

**Table 1.2.3 Overlays**

Overlays
(a) Acid sulfate soils overlay code
(b) Agricultural land overlay code
(c) Airport environs overlay code
(d) Bushfire hazard overlay code
(e) Coastal protection overlay code
(f) Environmental significance overlay code
(g) Extractive resources overlay code
(h) Flood hazard overlay code
(i) Heritage overlay code
(j) Infrastructure overlay code
(k) Landslide hazard overlay code
(l) Waterway and wetlands overlay code

(i) the development codes specified in Table 1.2.4 (Development Codes) below:

**Table 1.2.4 Development codes**

Development codes
<b>Relevant prescribed codes as specified in the Schedules of the Planning Regulation 2017 (the Regulation)</b>
(a) Community residence code
(b) Forestry for wood production code
(c) Reconfiguring a lot (subdividing one into two lots) and associated operational works code
<b>Use codes</b>
(a) Business activities code
(b) Caretaker's accommodation code
(c) Child care centre code
(d) Dual occupancy code
(e) Dwelling house code
(f) Extractive industry code
(g) Home based business code
(h) Industry activities code
(i) Market code
(j) Multi-unit uses code
(k) Relocatable home park and tourist park code
(l) Residential care facility and retirement facility code
(m) Rural activities code
(n) Sales office code
(o) Service station code
(p) Telecommunications code
<b>Other development codes</b>
(a) Advertising devices code
(b) Construction management code
(c) Excavation and filling code
(d) Infrastructure code
(e) Landscaping code
(f) Reconfiguring a lot code
(g) Transport and parking code

(j) schedules and appendices

(2) The planning scheme policies specified in Table 1.2.5 (Planning scheme policies) below support the planning scheme:

**Table 1.2.5 Planning scheme policies**

<b>Planning scheme policies</b>	
(a)	Environmental features planning scheme policy
(b)	Heritage planning scheme policy
(c)	Landscaping planning scheme policy
(d)	Natural hazards planning scheme policy
(e)	Third party advice or comment planning scheme policy
(f)	Growth management planning scheme policy
(g)	Whitsunday Regional Council development manual planning scheme policy

## **1.3 Interpretation**

### **1.3.1 Definitions**

- (1) A term used in the planning scheme has the meaning assigned to that term by one of the following:
  - (a) the *Planning Act 2016* (the Act); or
  - (b) the Planning Regulation 2017 (the Regulation), other than the regulated requirements; or
  - (c) the definitions in **Schedule 1 (Definitions)** of the planning scheme; or
  - (d) the Acts Interpretation Act 1954; or
  - (e) the ordinary meaning where that term is not defined in the Act, the Regulation, **Schedule 1 (Definitions)** of the planning scheme or the Acts Interpretation Act 1954.
- (2) In the event a term has been assigned a meaning in more than one of the instruments listed in sub-section 1.3.1(1), the meaning contained in the instrument highest on the list will prevail.
- (3) A reference in the planning scheme to any act includes any regulation or instrument made under it, and where amended or replaced, if the context permits, means the amended or replaced act.
- (4) A reference in the planning scheme to a specific resource document or standard means the latest version of the resource document or standard.
- (5) A reference to a part, section, table or schedule is a reference to a part, section, table or schedule of the planning scheme.

Editor's note—The regulated requirements do not apply to this planning scheme.

### **1.3.2 Standard drawings, maps, notes, editor's notes and footnotes**

- (1) Standard drawings contained in codes or schedules are part of the planning scheme.
- (2) Maps provide information to support the outcomes and are part of the planning scheme.
- (3) Notes are identified by the title 'note' and are part of the planning scheme.

- (4) Editor's notes and footnotes are extrinsic material, as per the *Acts Interpretation Act 1954*, and are identified by the title 'editor's note' and 'footnote' and are provided to assist in the interpretation of the planning scheme; they do not have the force of law.

Note—This is an example of a note.

Editor's note—This is an example of an editor's note.

Footnote<sup>1</sup>—See example at bottom of page.

### 1.3.3 Punctuation

- (1) A word followed by ';' or ', and' is considered to be 'and'
- (2) A word followed by '; or' means either or both options can apply.

### 1.3.4 Zones for roads, waterways and reclaimed land

- (1) The following applies to a road, closed road, waterway or reclaimed land in the planning scheme area:
- (a) if adjoined on both sides by land in the same zone—the road, waterway or reclaimed land is in the same zone as the adjoining land;
  - (b) if adjoined on one side by land in a zone and adjoined on the other side by land in another zone—the road, waterway or reclaimed land is in the same zone as the adjoining land when measured from a point equidistant from the adjoining boundaries;
  - (c) if the road, waterway or reclaimed land is adjoined on one side only by land in a zone—the entire waterway or reclaimed land is in the same zone as the adjoining land; and
  - (d) if the road, waterway or reclaimed land is covered by a zone then that zone applies.

Editor's note—The boundaries of the local government area are described by the maps referred to in the Local Government Regulation 2012.

## 1.4 Categories of development

- (1) The categories of development under the Act are:

- (a) accepted development;

Editor's note—A development approval is not required for development that is accepted development. Under section 44(6)(a) of the Act, if a categorising instrument does not apply a category of development to a particular development, the development is accepted development. Schedule 7 of the Regulation also prescribes accepted development.

- (b) assessable development
- i. code assessment
  - ii. impact assessment

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<sup>1</sup> Footnote—this is an example of a footnote.

Editor's note—A development approval is required for assessable development. Schedules 9, 10 and 12 of the Regulation also prescribe assessable development.

- (c) prohibited development.

Editor's note—A development application may not be made for prohibited development. Schedule 10 of the Regulation prescribes prohibited development.

- (2) The planning scheme states the category of development for certain types of development, and specifies the category of assessment for assessable development in the planning scheme area in **Part 5 (Tables of Assessment)**.

Editor's note—Section 43 of the Act identifies that a categorising instrument categorises development and specifies categories of assessment and may be a regulation or local categorising instrument. A local categorising instrument includes a planning scheme, a TLPI or a variation approval.

## 1.5 Hierarchy of assessment benchmarks

- (1) Where there is inconsistency between provisions in the planning scheme, the following rules apply:
- (a) the strategic framework prevails over all other components to the extent of the inconsistency for impact assessment;
  - (b) relevant codes as specified in Schedules 6 and 10 of the Regulation prevail over all other components to the extent of the inconsistency;
  - (c) overlays prevail over all other components (other than the matters mentioned in (a) and (b)) to the extent of the inconsistency;
  - (d) local plan codes prevail over zone codes, use codes and other development codes to the extent of the inconsistency;
  - (e) zone codes prevail over use codes and other development codes to the extent of the inconsistency; and
  - (f) provisions of Part 10 (Other plans) may override any of the above.

## 1.6 Building work regulated under the planning scheme

- (1) Section 17(b) of the Regulation identifies the assessment benchmarks for building work that a local planning instrument must not change the effect to the extent the building work is regulated under the building assessment provisions, unless permitted under the *Building Act 1975*.
- (2) The building assessment provisions are listed in section 30 of the *Building Act 1975*.

Editor's note—The building assessment provisions are stated in section 30 of the Building Act 1975 and are assessment benchmarks for the carrying out of building assessment work or building work that is accepted development subject to any requirements (see also section 31 of the *Building Act 1975*).

- (3) This planning scheme, through Part 5, regulates building work in accordance with sections 32 and 33 of the *Building Act 1975*.

Editor's note—The *Building Act 1975* permits planning schemes to:

- regulate, for the Building Code of Australia (BCA) or the Queensland Development Code (QDC), matters prescribed under a regulation under the *Building Act 1975* (section 32). These include variations to provisions contained in parts MP1.1, MP 1.2 and MP 1.3 of the QDC such as heights of buildings related to

- obstruction and overshadowing, siting and design of buildings to provide visual privacy and adequate sight lines, on-site parking and outdoor living spaces. It may also regulate other matters, such as designating land liable to flooding, designating land as bushfire prone areas and transport noise corridors
- deal with an aspect of, or matter related or incidental to building work prescribed under a regulation under section 32 of the *Building Act 1975*
  - specify alternative boundary clearances and site cover provisions for Class 1 and 10 structures under section 33 of the *Building Act 1975*.

Refer to Schedule 9 of the Regulation to determine assessable development, the type of assessment and any referrals applying to the building work.

- (4) The building assessment provisions are contained in the following parts of this planning scheme.

**Table 1.6.1 Building assessment provisions contained in the planning scheme**

<b>Building assessment matter addressed in the planning scheme</b>	<b>Relevant section of the planning scheme</b>
<b>Flood hazard</b>	
Identification of part of the planning scheme area as a natural hazard management area (flood)	Schedule 2 Flood hazard overlay maps
Identification of the level to which flood levels of habitable rooms of a building must be built	Section 8.2.8 Flood hazard overlay code
<b>Bushfire hazard</b>	
Designation of part of the planning scheme area as a designated bushfire prone area for the BCA and QDC	Schedule 2 Bushfire hazard overlay maps

Editor's note— A decision in relation to building work that is assessable development under the planning scheme should only be issued as a preliminary approval<sup>83(b)</sup> of the *Building Act 1975*.

Editor's note— In a development application the applicant may request preliminary approval for building work. The decision on that development application can also be taken to be a referral agency's response under section 56 of the Act, for building work assessable against the *Building Act 1975*. The decision notice must state this.

## 1.7 Local government administrative matters

There are no local government administrative matters for the planning scheme.

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## **Part 2 State planning provisions**

### **2.1 State planning policy**

The Minister has identified that State Planning Policy April 2016 is reflected in the planning scheme in the following ways:

#### **State interests in the state planning policy appropriately reflected**

##### **Liveable communities and housing**

- Liveable communities
- Housing supply and diversity

##### **Economic growth**

- Agriculture
- Development and construction
- Mining and extractive resources
- Tourism

##### **Environment and heritage**

- Biodiversity
- Coastal environment
- Cultural heritage
- Water quality

##### **Safety and resilience to hazards**

- Emissions and hazardous activities
- Natural hazards, risk and resilience (Flood, Bushfire, Landslide, Coastal)

##### **Infrastructure**

- Energy and water supply
- State transport infrastructure
- Strategic airports and aviation facilities

#### **State interests in the state planning policy not integrated**

None

#### **State interests in the state planning policies not relevant to Whitsunday Regional Council**

None

Editor's note—In accordance with section 8(4)(a) of the Act the State Planning Policy applies to the extent of any inconsistency.

### **2.2 Regional plan**

The Minister has identified that the planning scheme, specifically the strategic framework, appropriately advances the Mackay Isaac Whitsunday Regional Plan 2012, as it applies in the planning scheme area.

## 2.3 Referral agency delegations

Schedule 10 of the Regulation identifies referral agencies for certain aspects of development. The following referral agencies have delegated the following referral agency jurisdictions to Whitsunday Regional Council:

**Table 2.3.1 Delegated referral agency jurisdictions**

<b>Column 1 Application involving</b>	<b>Column 2 Referral agency and type</b>	<b>Column 3 Referral jurisdiction</b>
There are no delegated referral agency jurisdictions for the planning scheme		

Editor's note - For the above listed referral agency delegations the applicant is not required to refer the application to the referral agency listed under Schedule 10 of the Regulation because the local government will undertake this assessment role.

## 2.4 Regulated requirements

The regulated requirements as identified in section 5(2)(a) of the Planning Regulation 2017 are not reflected in this planning scheme.

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## Maps in Part 3

Strategic framework map - SFM - 01:05 (Strategic framework map)

## Part 3 Strategic framework

### 3.1 Preliminary

- (1) The strategic framework sets the policy direction for the planning scheme and forms the basis for ensuring appropriate development occurs in the planning scheme area for the life of the planning scheme.
- (2) Mapping for the strategic framework is included in Schedule 2 (Mapping).
- (3) For the purpose of describing the policy direction for the planning scheme, the strategic framework is structured in the following way:
  - (a) a strategic intent;
  - (b) the following five themes that collectively represent the policy intent of the scheme:
    - (i) liveable communities and housing;
    - (ii) economic growth;
    - (iii) environment and heritage;
    - (iv) safety and resilience to hazards; and
    - (v) infrastructure;
  - (c) the strategic outcome proposed for development in the planning scheme area for each theme; and
  - (d) the land use strategies for achieving these outcomes.
- (4) Although each theme has its own section, the strategic framework in its entirety represents the policy intent for the planning scheme. Zones organise the planning scheme area in a way that facilitates the location of preferred or acceptable land uses.

## **3.2 Strategic Intent**

- (1) In 2036 and beyond, the Whitsundays is a prosperous, liveable and sustainable region where people live, work, play and invest. The region, extending over 23,862 square kilometres, will be built on the integration of the unique attributes and competitive advantages of Airlie, Bowen, Collinsville, Proserpine and their surrounds as shown in Strategic Framework Map - SFM - 01:05 (Strategic framework maps).
- (2) The region's major townships and communities have a strong and proud social identity, being sustainable and well supported through the provision of variety of housing and lifestyle options and appropriate community and utility infrastructure. Risks to the community (including life and property) from hazardous activities and natural hazards are appropriately mitigated or avoided; ensuring disaster management response capabilities and capacities are supported.
- (3) The major townships of the region operate as a network of centres, each maintaining relatively strong levels of growth supported by the ongoing strengthening and development of the key economic sectors of agriculture, mining and tourism and associated development and construction activities. The strength of these industry sectors will continue to be supported by maintaining and protecting the resources and values upon which these sectors rely, promoting business innovation and increasing accessibility to robust road, rail, port and aviation facilities.
- (4) The promotion and protection of the region's cultural heritage and unique aquatic, coastal and inland environmental values continues as developmental and environmental pressures increase cumulatively. All matters of ecological, environmental and scenic value (including key urban gateways, views and vistas) are valued and preserved, ensuring the health and resilience of the regions overall biodiversity.

### **3.2.1 Liveable communities and housing**

#### **3.2.1.1 Strategic outcome**

- (1) The life-enriching (educational, health, cultural and recreational) capacities and resilience of the community and community infrastructure are enhanced or restored for present and future generations in a way which supports the regions settlement pattern and hierarchy of centres.

#### **3.2.1.2 Land use strategies**

- (1) The settlement pattern of the region ensures that urban uses are primarily located within the established urban areas of Airlie, Bowen, Collinsville and Proserpine. New residential expansion will occur in Cannon Valley (to the west of Airlie), Mount Bramston and Mount Gordon (to the south of Bowen) and Moongunya Springs (to the north of Collinsville).
- (2) Limited Accommodation activities and low order Community and convenience Business activities are located within the settlements of Brisk Bay, Conway Beach, Dingo Beach, Gumlu, Guthalungra, Hideaway Bay, Shutehaven, Merinda, Mt Coolon and Wilson Beach.
- (3) The community of each major urban area will be supported by a hierarchy of centres. The highest order, Major centres are provided at Paluma Road/Galbraith Avenue (Cannonvale), Herbert Street (Bowen) and Main Street (Proserpine). Communities of the region are further serviced by a series of lower order, smaller scale centres. Business activities are only located outside of centres if they cannot be practicably

located within nominated centres due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.

- (4) Primary and/or secondary schools are co-located with existing facilities in Bowen, Cannonvale, Collinsville, Gumlu, Hamilton Island, Hayman Island and Proserpine, with new facilities in Cannon Valley and Mount Gordon and higher order educational facilities such as a secondary boarding school and a tertiary educational facility located within the established urban area of Proserpine.
- (5) A regionally significant health facility is located in Proserpine with supporting health facilities in Airlie Beach, Bowen, Cannonvale, Collinsville and Hamilton Island.
- (6) Urban uses are only located away from identified urban areas if they cannot be practicably located within the existing settlement pattern due to their nature, scale, effects or necessary relationship to other activities or particular features, resources or infrastructure.
- (7) Rural residential areas will continue to occur on the fringes of urban areas and will generally not expand into adjacent rural areas.
- (8) Non-resident workers accommodation is only utilised for the workforce associated with the construction phase of a project. This form of accommodation activity is not to be utilised for workers associated with the operational phase of a project. Accommodation activities for an operational workforce are to be integrated into existing urban areas.

### **3.2.2 Economic growth**

#### **3.2.2.1 Strategic outcome**

- (1) The economic resilience, wealth creating and employment generating capacities of the regions key sectors are protected and enhanced for present and future generations.

#### **3.2.2.2 Land use strategies**

- (1) Agricultural land (including stock routes) and existing rural activities are protected and diversified with rural activities being intensified in areas to the west of Collinsville along the Bowen River, west and south-west of Proserpine and between Gumlu and Bowen. The long term viability of this agricultural land is enhanced through sustainable land management practices, the use of new technology and the improvement and expansion of supporting infrastructure such as water storage and irrigation infrastructure.
- (2) Rural activities are located outside the existing and proposed urban and environmental areas with only Business and Industry activities that support or supplement the primary rural activity being located within rural areas.
- (3) The integrity and functionality of the mining and extractive resource industry, including that within Abbot Point and Galilee Basin State Development Areas is maintained and protected to reduce potential conflict with incompatible uses.
- (4) Major industrial expansion is appropriately accommodated where the scale, intensity and nature of the Industry activity can be adequately supported. New expansion will predominantly occur within the Abbot Point State Development Area, around the Delta intersection, between Collinsville and the mines to the south, east of Proserpine and within the vicinity of the Whitsunday Coast Airport.
- (5) Bulk loading and supporting multi-commodity port facilities are established at the Port of Abbot Point. High impact industry is primarily located adjacent to Port of Abbot

Point within the Abbot Point State Development Area, particularly where Industry activities value-add to commodities being exported or imported through the Port of Abbot Point.

- (6) Marine industry servicing the fishing and recreational boating fleet of central and north Queensland is primarily located within the Bowen Boat Harbour with limited facilities of a smaller nature and scale located at Abel Point Marina and Port of Airlie. A public passenger ferry facility servicing the Whitsunday Islands is primarily located at the Port of Airlie with supplementary facilities at Abel Point Marina and Shute Harbour. A freight (barge) facility servicing the Whitsunday Islands is primarily located at Shute Harbour.
- (7) Tourism accommodation and ancillary Business activities are primarily located within the established island resorts at Daydream, Hayman, Hook, Long and South Molle Islands. New or expanded tourist accommodation and ancillary Business activities are located at Airlie Beach, Bowen Front Beach, Funnel Bay, Hamilton Island, Horseshoe Bay, Murray Bay, Rose Bay and Shute Harbour with limited nature-based tourism at the northernmost point of Cape Gloucester. A major regional function facility is located adjacent to the Airlie Beach Main Street and Esplanade area. Tourism accommodation and related activities are only located away from these areas if their nature, scale and effects are small and they have a necessary relationship to other activities or particular natural features.

### **3.2.3 Environment and heritage**

#### **3.2.3.1 Strategic outcome**

- (1) The cultural heritage and life-supporting capacities of air, ecosystems, soil and water are conserved, enhanced or restored for present and future generations; and biological resilience is protected.

#### **3.2.3.2 Land use strategies**

- (1) The key ecological values of the Great Barrier Reef, Brigalow Belt, Central Queensland Coast and Einasleigh Uplands and the fauna and flora they support are protected. The protection of key endangered species such as the Black-throated finch (white-rumped subspecies), Leatherback turtle, Loggerhead turtle, Olive Ridley turtle and Proserpine rock-wallaby and the habitat on which they rely continues to be enhanced as development and environmental pressures increase.
- (2) The core landscape values within the Whitsundays are protected, and if practicable enhanced. The core landscape values include the urban gateways to Airlie, Bowen, Collinsville, Proserpine and the Whitsunday Coast Airport, as well as the significant visual backdrops as viewed from major scenic routes of the Bowen Development Road, Bruce Highway, Lascelles Avenue, Shute Harbour Road and the boating routes along the coastline and through the Whitsunday Islands.
- (3) Places of cultural significance are appropriately preserved and promoted to enhance community identify and maintain important connections to the past for the benefit of current and future generations.

### **3.2.4 Safety and Resilience to Hazards**

#### **3.2.4.1 Strategic outcome**

- (1) The safety of the community, property and infrastructure is protected and enhanced for present and future generations; and the community's resilience to hazards is enhanced.

### **3.2.4.2 Land use strategies**

- (1) Risks to people and property are minimised in areas within or adjacent to natural hazard areas particularly escarpments behind Airlie Beach and Hideaway Bay (landslide); Bells Gully, Campbell Creek, Don River, and Proserpine River (flooding); Bowen Front Beach, Cannonvale Beach, Conway Beach, Greys Bay, Rose Bay, Queens Beach, Queens Bay and Wilsons Beach (coastal erosion and storm surge).
- (2) Community health and safety, sensitive land uses and the natural environment are appropriately planned and managed to avoid or mitigate potential adverse impacts of emissions (air, noise and odour) and hazardous activities, whilst ensuring the long term viability of such activities (Industry and Recreation activities).

### **3.2.5 Infrastructure**

#### **3.2.5.1 Strategic outcome**

- (1) The service-supporting capacities of infrastructure are coordinated, efficient and orderly. Infrastructure provision and operation is financially sustainable.

#### **3.2.5.2 Land use strategies**

- (1) An international airport (runway and terminal), remote mine operations centre, air freight and supporting education and Industry activities are located within the vicinity of the Whitsunday Coast Airport, with a secondary regional airport (runway and terminal) at Hamilton Island. Smaller scale and supplementary facilities are provided at Bowen, Collinsville, Flametree and Mount Coolon Airports.
- (2) Existing road and rail corridors are protected and operate efficiently. New road connections are established from Cannonvale to Gregory-Cannon Valley Road as a parallel network to Shute Harbour Road, from Collinsville to Proserpine and between Abbot Point State Development Area and the North West Minerals Province. New railway connections are established from Abbot Point State Development area to the north Bowen Basin, the Galilee Basin State Development Area and the North West Minerals Province.
- (3) Significant power generation facilities are established and expanded near Collinsville (base-load power station) and the Burdekin Falls Dam (hydro-electric) connecting to the north-south transmission lines which traverse the Whitsunday region. Existing transmission corridors are protected and new corridors are provided from the Collinsville Power Station to the Galilee Basin and the North West Minerals Province. Gas pipeline(s) are established from gas fields in the Bowen Basin to the Collinsville Power Station and where practical new development aligns with existing or future linear corridors.
- (4) The water resource catchments of the Bowen River Weir, Burdekin Falls Dam, Peter Faust Dam (Lake Proserpine) and the potential water resource catchments of the Andromache River and Urannah Creek are protected for future use with water pipelines established from Lake Dalrymple and the Burdekin River to Bowen and Abbot Point State Development Area, and from the Bowen River catchment to the Galilee Basin State Development Area.



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## Part 4 Local government infrastructure plan

### 4.1 Preliminary

- (1) This local government infrastructure plan (LGIP) has been prepared in accordance with the requirements of the *Planning Act 2016*.
- (2) The purpose of the local government infrastructure plan is to:
  - (a) integrate infrastructure planning with the land use planning identified in the planning scheme;
  - (b) provide transparency regarding a local government's intentions for the provision of trunk infrastructure;
  - (c) enable a local government to estimate the cost of infrastructure provision to assist its long term financial planning;
  - (d) ensure that trunk infrastructure is planned and provided in an efficient and orderly manner; and
  - (e) provide a basis for the imposition of conditions about infrastructure on development approvals.
- (3) The local government infrastructure plan:
  - (a) states in Section 4.2 (Planning assumptions) the assumptions about future growth and urban development including the assumptions of demand for each trunk infrastructure network;
  - (b) identifies in Section 4.3 (Priority infrastructure area) the prioritised area to accommodate urban growth up to 2031;
  - (c) states in Section 4.4 (Desired standards of service) for each trunk infrastructure network the desired standard of performance;
  - (d) identifies in Section 4.5 (Plans for trunk infrastructure) the existing and future trunk infrastructure for the following networks:
    - (i) water supply;
    - (ii) sewerage;
    - (iii) stormwater;
    - (iv) transport; and
    - (v) parks and land for community facilities.
  - (e) provides a list of supporting documents that assist in the interpretation of the local government infrastructure plan in the Editor's note – Extrinsic material at the end of Section 4.

## 4.2 Planning assumptions

- (1) The planning assumptions state the assumptions about:
  - (a) population and employment growth; and
  - (b) the type, scale, location and timing of development including the demand for each trunk infrastructure network.
- (2) The planning assumptions together with the desired standards of service form a basis for the planning of the trunk infrastructure networks and the determination of the priority infrastructure area.
- (3) The planning assumptions have been prepared for:
  - (a) the base date 2016 and the following projection years to accord with future Australian Bureau of Statistics census years:
    - (i) mid 2021;
    - (ii) mid 2026;
    - (iii) mid 2031; and
    - (iv) Ultimate development.
  - (b) the LGIP development types in column 2 that include the uses in column 3 of Table 4.2.1; and
  - (c) the projection areas identified on Local government infrastructure map – PAM – 01:06 (Projection area map) in Schedule 3—Local government infrastructure plan mapping and tables.

**Table 4.2.1 Relationship between LGIP development categories, LGIP development types and uses**

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
Residential development	Single dwellings	Caretaker's accommodation Community residence Dwelling house Dwelling unit Home-based business
	Multiple dwellings	Dual occupancy Multiple dwelling Relocatable home park Residential care facility Retirement facility Rooming accommodation Rural workers' accommodation Short-term accommodation
	Other dwellings	Nature-based tourism Non-resident workforce accommodation Resort complex Tourist park
Non-residential development	Retail	Adult store Agricultural supplies store Bulk landscape supplies Car wash

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Food and drink outlet Garden centre Hardware and trade supplies Hotel Outdoor sales Service station Shop Shopping centre
	Commercial	Bar Brothel Club Function facility Health care services Indoor sport and recreation Nightclub entertainment facility Office Sales office Showroom Theatre Tourist attraction Veterinary services
	Community purpose	Cemetery Child care centre Community care centre Community use Crematorium Detention facility Educational establishment Emergency services Funeral parlour Hospital Landing Major sport, recreation and entertainment facility Market Motor sport facility Outdoor sport and recreation Outstation Park Place of worship
	Industry	Air services Extractive industry High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Rural industry Service industry Special Industry Warehouse
	Other	Animal husbandry Animal keeping Aquaculture Cropping Environment facility Intensive animal industry

Column 1 LGIP development category	Column 2 LGIP development type	Column 3 Uses
		Intensive horticulture Major electrical infrastructure Parking station Permanent plantation Port services Renewable energy facility Roadside stall Substation Telecommunications facility Transport depot Utility installation Wholesale nursery Winery

- (4) Details of the methodology used to prepare the planning assumptions are stated in the extrinsic material.

#### 4.2.1 Population and employment growth

- (1) A summary of the assumptions about population and employment growth for the planning scheme area is stated in Table 4.2.1.1 Population and employment assumptions summary.

**Table 4.2.1.1 Population and employment growth assumptions summary**

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Population	36,380	38,380	41,680	44,970	66,460
Employment	16,959	18,246	19,534	20,821	22,109

- (2) Detailed assumptions about growth for each projection area and LGIP development type category are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:
- (a) for population, Table SC3.1.1—Existing and projected population; and
  - (b) for employment, Table SC3.1.2—Existing and projected employees.

#### 4.2.2 Development

- (1) The developable area is represented by zones relating to urban uses excluding the Environmental zones category identified on Zone maps ZM – 01:29 and not affected by the protected areas identified on Environmental significance overlay maps ES– 01:29.
- (2) The planned density for future development is stated in Table SC3.1.3 in Schedule 3—Local government infrastructure plan mapping and tables.
- (3) A summary of the assumptions about future residential and non-residential development for the planning scheme area is stated in Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary.

**Table 4.2.2.1 Residential dwellings and non-residential floor space assumptions summary**

Column 1 Description	Column 2 Assumptions				
	Base date 2016	2021	2026	2031	Ultimate development
Residential dwellings	16,995	17,958	19,556	21,164	30,378
Non-residential floor space (m <sup>2</sup> GFA)	622,199	674,471	726,735	779,003	831,274

- (4) Detailed assumptions about future development for each projection area and LGIP development type are identified in the following tables in Schedule 3 Local government infrastructure plan mapping and tables:
- (a) for residential development, Table SC3.1.4; and
  - (b) for non-residential development, Table SC3.1.5.

### 4.2.3 Infrastructure demand

- (1) The demand generation rate for a trunk infrastructure network is stated in Column 4 of Table SC3.1.3 in Schedule 3 Local government infrastructure plan mapping and tables.
- (2) A summary of the projected infrastructure demand for each service catchment is stated in:
- (a) for the water supply network, Table SC3.1.6;
  - (b) for the sewerage network, Table SC3.1.7;
  - (c) for the stormwater network, Table SC3.1.8;
  - (d) for the transport network Table SC3.1.9; and
  - (e) for the parks and land for community facilities network, Table SC3.1.10.

### 4.3 Priority infrastructure area

- (1) The priority infrastructure area identifies the area prioritised for the provision of trunk infrastructure to service the existing and assumed future urban development up to 2031.
- (2) The priority infrastructure area is identified on Local government infrastructure plan map – PAM – 01:06 (Projection area map).

### 4.4 Desired standards of service

- (1) This section states the key standards of performance for a trunk infrastructure network.
- (2) Details of the standard of service for each trunk infrastructure network is identified in the extrinsic material.

#### 4.4.1 Water supply network

- (1) Ensure drinking water complies with the National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines and Whitsunday Regional Council's Drinking Water Quality Management Plan.
- (2) Collect, store, treat and convey potable water from source to consumers in accordance with the *Water Act 2000*.
- (3) Minimise non-revenue water loss.
- (4) Design the water supply network in accordance with Council's adopted standards identified in the planning scheme, including the Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual planning scheme policy, to provide:
  - (a) average day consumption (AD) – 500 l/EP/day;
  - (b) Mean Day max Month (MDMM) 1.5 x AD;
  - (c) Peak Day (PD) 2.25 x AD;
  - (d) Peak Hour (PH) 1/12 x PD;
  - (e) minimum and maximum supply pressure of 220 kPa and 800 kPa at each property boundary; and
  - (f) fire flow for residential (15 l/s for 2 hours), industrial and commercial (30 l/s for 4 hours) development.
- (5) Design water systems to meet the requirements of the *Water Supply (Safety and Reliability) Act 2008* and Water Services Association of Australia (WSAA) guidelines.

## 4.4.2 Sewerage network

- (1) Provide a reliable network that collects, stores, transports, treats and releases sewerage from premises.
- (2) Design the sewerage network in accordance with:
  - (a) Council's adopted standards identified in the planning scheme;
  - (b) WSAA guidelines;
  - (c) the *Water Act 2000*;
  - (d) all Environmental Protection Agency (EPA) licence conditions;
  - (e) key design parameters identified in Table 4.4.2.1; and
  - (f) Equivalent Demands detailed in SC6.8 Whitsunday Regional Council development manual planning scheme policy.

**Table 4.4.2.1 Key design parameters for the sewerage network**

<b>Column 1 Infrastructure item</b>	<b>Column 2 Design parameters</b>
<b>All (network)</b>	<p><b>Average dry weather flow (ADWF)</b> 270l/EP/day</p> <p><b>Peak wet weather flow (PWWF)</b> 5 x ADWF OR <math>C_1 \times \text{ADWF}</math> (whichever is greater) <math>C_1 = 15 \times (\text{EP})^{-0.1587}</math></p> <p><b>Peak dry weather flow (PDWF)</b> <math>C_2 \times \text{ADWF}</math> <math>C_2 = 4.7 (\text{EP})^{-0.105}</math></p>
<b>Pump stations</b>	Emergency storage of 4 hours @ ADWF Installed pump capacity $\geq$ PWWF
<b>Gravity sewers</b>	Air space of at least 75% of pipe diameter at design flow Slope to achieve self-cleansing velocity
<b>Rising mains</b>	Minimum velocity: 0.75 m/s (Preferred 1.5 m/s) Maximum velocity: 2.5 m/s
<b>Sewerage treatment / release</b>	Existing and future DEHP licence conditions



### 4.4.3 Stormwater network<sup>1</sup>

- (1) Collect and convey stormwater flows for both major 100 year flood events and minor low flow year flood events as per the specific land use requirements from existing and future land use in a manner that protects life and does not cause nuisance or inundation of property.
- (2) Design the stormwater network to comply with Council's adopted standards identified in the planning scheme, which generally accord with the Queensland Urban Drainage Manual or the Transport and Main Roads Road Drainage Design Manual.
- (3) Design road crossing structures to provide an appropriate level of flood immunity for a 50 and 10 year flood events for major and minor roads respectively in accordance with Council's adopted standards identified in the planning scheme.
- (4) Meet water quality objectives for receiving waters at all times.
- (5) Design the water quality system to achieve the minimum reductions in mean annual loads from unmitigated development identified in Table 4.4.3.1 in accordance with Department of State Development, Infrastructure and Planning State Planning Policy – April 2016.

**Table 4.4.3.1 Minimum reductions in mean annual loads from unmitigated development**

Column 1 Region	Column 2 Pollutant reduction (%)			
	Total suspended solids	Total Phosphorus	Total Nitrogen	Gross pollutants >5mm
Central QLD (north) <sup>1</sup>	75	60	40	90
Western QLD <sup>2</sup>	85	60	45	90

**Notes:**

1. Applies to development for urban purposes with population centres greater than 3000 persons.
2. Applies to development for urban purposes with population centres greater than 25,000 persons.
3. Excludes development that is less than 25% impervious.
4. In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.
5. Regions defined by State Planning Policy mapping.

<sup>1</sup> Drainage elements that form an inherent part of road infrastructure such as culverts and bridge structures can be included with road infrastructure planning.

## 4.4.4 Transport network

### 4.4.4.1 Roads

- (1) Provide a functional urban hierarchy that supports settlement patterns, commercial and economic activities, and freight movement.
- (2) Design the road network to comply with the following:
  - (a) adopted standards identified in the planning scheme;
  - (b) AUSTROADS guides;
  - (c) the Department of Transport and Main Roads Interim Guide to Road Planning and Design Practice;
  - (d) maximum road volume to capacity ratios identified in Table 4.4.4.1.1; and
  - (e) maximum degree of saturation for intersections identified in Table 4.4.4.1.2.

**Table 4.4.4.1.1 Maximum volume to capacity ratios for the road network**

Column 1 Infrastructure item	Column 2 Design parameters	
	Residential	Non-residential
Arterial	0.8	0.8
Sub-arterial	0.8	0.8
Major collector	0.8	0.8
Arterial (state-controlled)	0.8	0.8

**Table 4.4.4.1.2 Maximum degree of saturation for road intersections**

Column 1 Road network item	Column 2 Maximum degree of saturation
Traffic signals	0.9
Roundabout	0.9
Priority controlled	0.8

### 4.4.4.2 Footpaths and cycle ways

- (1) Plan cycle ways and footpaths to provide a safe, attractive and convenient network that links residential areas to major activity nodes and public transport interchanges, thereby encouraging walking and cycling as acceptable travel alternatives.
- (2) Design cycle ways (including on-road cycle ways) and footpaths to comply with council's adopted standards identified in the planning scheme.

### 4.4.4.3 Public transport

- (1) Ensure development accommodates the integration of public transport services.
- (2) Provide bus stops including bus bays, shelters, seating and bus information systems in accordance with adopted standards identified in the planning scheme

#### 4.4.5 Public parks and land for community facilities network

- (1) Provide an accessible network of parks, open space, and community facilities that meets the needs of residents and visitors in accordance with the rate of provision identified in Table 4.4.5.1 and accessibility standards outlined in Table 4.4.5.2.
- (2) Ensure land for public parks and community facilities has:
  - (a) minimum land size as identified in Table 4.4.5.3;
  - (b) configuration, slope, and acceptable level of flood immunity in accordance with Table 4.4.5.3 and adopted standards identified in the planning scheme; and
  - (c) embellishments to complement the type and purpose of the public park as identified in Table 4.4.5.4.

**Table 4.4.5.1 Rate of land provision for public parks and community facilities**

Column 1 Infrastructure item	Column 2 Rate of provision (Ha/1000 people)	
	District	Regional
Recreation park	0.5	0.8
Sport park	1.2	1.0

**Table 4.4.5.2 Accessibility standards for public parks and land for community facilities**

Column 1 Infrastructure item	Column 2 Accessibility standard (km) <sup>1</sup>	
	District	Regional
Recreation park	2	25
Sport park	5	10

**Notes:**  
1. 90% of population should be within this distance of a facility

**Table 4.4.5.3 Size of public parks for community facilities**

Column 1 Characteristic	Column 2 Recreation park		Column 3 Sports park	
	District	Regional	District	Regional
Average (desired) size (Ha)	4	13	6	18
Shape of land	Preferred square to rectangular aspect ratio no greater than 2:1		Square or rectangle to maximise playing field area	
Minimum desired flood immunity (area)	20% > Q50 10% > Q100	50% > Q50 20% > Q100	Fields and courts > Q50 Built facilities > Q100	
Minimum desired grade	Max grade 1:10 for 80% of park, 1:14 where possible	Average grade 1:20, 1:50 for kick-about areas	Max grade of 1:80 for all playing surfaces	Laser levelling to a maximum gradient of 1:100 for all playing surfaces
Road frontage	30-50% of park perimeter to have direct road frontage, preferably on a collector road		25-50% of the park perimeter to have direct road frontage	

**Table 4.4.5.4 Standard facilities/embellishments for public parks**

Column 1 Embellishment	Column 2 Recreation park		Column 3 Sports park	
	District	Regional	District	Regional
Playground (activity node)	X	X	X	X
Other activity nodes (half court, rebound wall, skate facility, exercise equipment, etc.)	5 - 7	13	-	-
Fencing – bollards or log and rail to prohibit car access	X	X	X	X
Shade trees clustered near activity area	X	X	X	X
Turf	X	X	X	X
Landscaped garden beds	X	X	X	X
Irrigation	X	X	X	X
Internal pathways and paving	X	X	X	X
Bicycle racks	X	X	X	X
Signage	X	X	X	X
Shade structures	X	X	X <sup>1</sup>	X <sup>1</sup>
Tap / bubbler	X	X	X	X
Bench seating	X	X	X	X
Electric barbeque	X	X	-	-
Picnic shelters	X	X	-	-
Bins	X	X	X	X
Dog off leash area	X	X	-	-
Toilets	X <sup>2</sup>	X	X	X
Internal roads and car parking	-	X	X	X
Public recreation centre	-	-	X	X
Spectator facilities (grandstand)	-	-	X	X
Sports fields	-	-	X	X
Sports courts	-	-	X	X
<p>1. Shade structures should be structures teams can stand under, not shade sails.</p> <p>2. Only to be provided in certain district recreation parks based on popularity, location and type of use.</p>				

## 4.5 Plans for trunk infrastructure

- (1) The plans for trunk infrastructure identify the trunk infrastructure networks intended to service the existing and assumed future urban development at the desired standard of service up to 2031.

### 4.5.1 Plans for trunk infrastructure maps

- (1) The existing and future trunk infrastructure networks are shown on the following maps in Schedule 3—Local government infrastructure plan mapping and tables:
  - (a) Local government infrastructure plan map – PFTI WN – 01:06 (Water network plans for trunk infrastructure map);
  - (b) Local government infrastructure plan map – PFTI SN – 01:05 (Sewerage network plans for trunk infrastructure map);
  - (c) Local government infrastructure plan map – PFTI SWN – 01:05 (Stormwater network plans for trunk infrastructure map);
  - (d) Local government infrastructure plan map – PFTI TN – 01:05 (Transport network plans for trunk infrastructure map); and
  - (e) Local government infrastructure plan map – PFTI PCFN – 01:06 (Parks and land for community facilities network plans for trunk infrastructure map).
- (2) The State infrastructure forming part of transport trunk infrastructure network has been identified using information provided by the relevant State infrastructure supplier.

### 4.5.2 Schedules of works

- (1) Details of the existing and future trunk infrastructure networks are identified in the electronic Excel schedule of works model which can be viewed here: <http://www.whitsunday.qld.gov.au/390/Infrastructure-Planning-and-Charges>
- (2) The future trunk infrastructure is identified in the following tables in Schedule 3—Local government infrastructure plan mapping and tables:
  - (a) for the water supply network, Table SC3.2.1;
  - (b) for the sewerage network, Table SC3.2.2;
  - (c) for the stormwater network, Table SC3.2.3;
  - (d) for the transport network, Table SC3.2.4; and
  - (e) for the parks and land for community facilities network, Table SC3.2.5.

## Editor's note – Extrinsic material

The below table identifies the documents that assist in the interpretation of the Local government infrastructure plan and are extrinsic material under the *Statutory Instruments Act 1992*.

### List of Extrinsic material


Column 1 Title of document	Column 2 Date	Column 3 Author
Whitsunday Region Economic Analysis: Economic and Population Study	November 2013	Norling Consulting Pty Ltd
Whitsunday Regional Council Urban Growth Study	May 2014	Whitsunday Regional Council
Whitsunday Regional Council Development Manual	28 June 2016	Whitsunday Regional Council
Trunk Infrastructure Definitions	May 2017	Whitsunday Regional Council
Local Government Infrastructure Plan (LGIP) and Schedule of Works Model (SOW) explanatory notes	October 2017	Whitsunday Regional Council
Local Government Infrastructure Plan Checklist	May 2017	Whitsunday Regional Council
Department of Transport and Main Roads Consultation Letter	May 2017	Department of Transport and Main Roads
Whitsunday Regional Council Priority Infrastructure Plan Water and Sewerage Network Model Updates	May 2014	Hyder Consulting

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## Part 5 Tables of assessment

### 5.1 Preliminary

The tables in this part identify the category of development, and the category of assessment and assessment benchmarks for assessable development in the planning scheme area.

### 5.2 Reading the tables

The tables identify the following:

- (1) the category of development:
  - (a) prohibited;
  - (b) accepted, including accepted with requirements; and
  - (c) assessable development, that requires either code or impact assessment;
- (2) the category of assessment - code or impact - for assessable development in:
  - (a) a zone and, where used, a precinct of a zone;
  - (b) a local plan and, where used, a precinct of a local plan; and
  - (c) an overlay where used;
- (3) the assessment benchmarks for assessable development, including:
  - (a) whether a zone code or specific provisions in the zone code apply (shown in the 'assessment benchmarks' column);
  - (b) if there is a local plan, whether a local plan code or specific provisions in the local plan code apply (shown in the 'assessment benchmarks' column);
  - (c) if there is an overlay;
    - (i) whether an overlay code applies (shown in Table 5.10.1) ;or
    - (ii) whether the assessment benchmarks as shown on the overlay map (noted in the 'assessment benchmarks' column) applies;
  - (d) any other applicable code(s) (shown in the 'assessment benchmarks' column);
- (4) any variation to the category of assessment (shown as an 'if' in the 'category of assessment' column) that applies to the development.

Note—Development will only be taken to be prohibited development under the planning scheme if it is identified as prohibited development in Schedule 10 of the Regulation.

Editors note—Examples of matters that can vary the category of assessment are gross floor area, height, numbers of people or precinct provisions.

### 5.3 Categories of development and assessment

#### 5.3.1 Process for determining the category of development and the category of assessment for assessable development

The process for determining a category of development and category of assessment is:

- (1) for a material change of use, establish the use by reference to the use definitions in Schedule 1;

- (2) for all development, identify the following:
  - (a) the zone or zone precinct that applies to the premises, by reference to the zone map in Schedule 2;
  - (b) if a local plan or local plan precinct applies to the premises, by reference to the local plan map in Schedule 2 (Mapping); and
  - (c) if an overlay applies to the premises, by reference to the overlay map in Schedule 2 (Mapping);
- (3) determine if the development is accepted development under Schedule 6 of the Regulation;

Editors note—Schedule 6 of the Regulation prescribes development that a planning scheme can not state is assessable development where the matters identified in the schedule are met.

- (4) determine if the development is assessable development under Schedule 10 of the Regulation by reference to section 5.7 Regulated categories of development and assessment—building work; and categories of assessment prescribed by the Regulation.
- (5) if the development is not listed in the tables in section 5.4 Regulated categories of development and categories of assessment prescribed under Schedule 6 of the Regulation, determine the initial level of assessment by reference to the tables in:
  - section 5.5 Categories of development and assessment—Material change of use
  - section 5.6 Categories of development and assessment—Reconfiguring a lot
  - section 5.7 Categories of development and assessment—Building work
  - section 5.8 Categories of development and assessment—Operational work
- (6) a precinct of a zone may change the categories of development or assessment and this will be shown in the 'category of assessment' column of the tables in sections 5.5, 5.6, 5.7 and 5.8;
- (7) if a local plan applies refer to the table(s) in section 5.9 Categories of development and assessment—Local plans, to determine if the local plan changes the category of development or assessment for the zone;
- (8) if a precinct of a local plan changes the category of development or assessment this is to be shown in the 'Category of development and assessment' column of the table(s) in section 5.9;
- (9) if an overlay applies refer to section 5.10 Category of development and assessment—Overlays, to determine if the overlay further changes the category of development or assessment.

### **5.3.2 Determining the category of development and categories of assessment**

- (1) A material change of use is assessable development requiring impact assessment:
  - (a) unless the table of assessment states otherwise;
  - (b) if a use is not listed or defined; and
  - (c) unless otherwise prescribed in the Act or the Regulation.

- (2) Reconfiguring a lot is assessable development requiring code assessment unless the tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.
- (3) Building work and operational work are accepted development, unless the tables of assessment state otherwise or unless otherwise prescribed in the Act or the Regulation.
- (4) Where an aspect of development is proposed on premises included in more than one zone, local plan or overlay, the category of development or assessment for that aspect is the highest category under each of the applicable zones, local plans or overlays.
- (5) Where development is proposed on premises partly affected by an overlay, the category of development or assessment for the overlay only relates to the part of the premises affected by the overlay.
- (6) For the purposes of Schedule 6, Part 2 Material change of use section (2)(2)(d)(i) or (ii) of the Regulation, an overlay does not apply to the premises if the development meets the acceptable outcomes that form the requirements for accepted development in the relevant overlay code.
- (7) If development is identified as having a different category of development or assessment under a zone than under a local plan or an overlay, the highest category of development or assessment applies as follows:
  - (a) accepted development subject to requirements prevails over accepted development;
  - (b) code assessment prevails over accepted development where subject to requirements and accepted development; and
  - (c) impact assessment prevails over code assessment, accepted development where subject to requirements and accepted development.
- (8) Despite sub-subsections 5.3.2(4) and (7) above, a category of assessment in a local plan overrides a category of assessment in a zone and a category of assessment in an overlay overrides a category of assessment in a zone or local plan.
- (9) Provisions of Part 10 (Other plans) may override any of the above.
- (10) The category of development prescribed under Schedule 6 of the Regulation overrides all other categories of development or assessment for that development under the planning scheme to the extent of any inconsistency..

Editor's note—Schedule 7 of the Regulation also identifies development that the state categorises as accepted development. Some development in the schedule may still be made assessable under the planning scheme.

- (11) Despite all of the above, if development is listed as prohibited development under Schedule 10 of the Regulation, a development application cannot be made.

Note—Development is to be taken to be prohibited development under the planning scheme only if it is identified in Schedule 10 of the Regulation.

### **5.3.3 Determining the requirements for accepted development and assessment benchmarks and other matters for assessable development**

- (1) Accepted development does not require a development approval and is not subject to assessment benchmarks. However, certain requirements may apply to some types of

development for it to be accepted development. Where nominated in the tables of assessment, accepted development must comply with the requirements identified as acceptable outcomes in the relevant parts of the applicable code(s) as identified in the relevant column.

- (2) Accepted development that does not comply with one or more of the nominated acceptable outcomes in the relevant parts of the applicable code(s) becomes code assessable development, unless otherwise specified.
- (3) The following rules apply in determining assessment benchmarks for each category of development and assessment.
- (4) Code assessable development:
  - (a) is to be assessed against all the assessment benchmarks identified in the assessment benchmarks column;
  - (b) that occurs as a result of development becoming code assessable pursuant to sub-section 5.3.3(2), must:
    - (i) be assessed against the assessment benchmarks for the development application, limited to the subject matter of the required acceptable outcomes that were not complied with or were not capable of being complied with under sub-section 5.3.3(2); and
    - (ii) comply with all required acceptable outcomes identified in sub-section 5.3.3(1), other than those mentioned in sub-section 5.3.3(2);
  - (c) that complies with:
    - (i) the purpose and overall outcomes of the code complies with the code; and
    - (ii) the performance or acceptable outcomes complies with the purpose and overall outcomes of the code;
  - (d) is to be assessed against any assessment benchmarks for the development identified in Section 26 of the Regulation..

Editors Note— Section 27 of the Regulation identifies the matters code assessment must have regard to..

- (5) Impact assessable development:
  - (a) is to be assessed against all identified assessment benchmarks in the assessment benchmarks column (where relevant); and
  - (b) assessment is to have regard to the whole of the planning scheme, to the extent relevant.
  - (c) is to be assessed against any assessment benchmarks for the development identified in Section 30 of the Regulation.

Note—The first row of each table of assessment is to be checked to confirm if there are assessment benchmarks that commonly apply to general scenarios in the zone, local plan or overlay.

Editor's note—Section 31 of the Regulation identifies the matters that impact assessment must have regard to.

## 5.4 Regulated categories of development and categories of assessment prescribed by the Regulation

For the development specified in the 'use', 'zone' or 'development' columns, the categories of development and assessment are prescribed.

**Table 5.4.1 Development under schedules 6 of the Regulation: Material change of use**

Material change of use		
Use	Categories of assessment	Assessment benchmarks
Community residence	Accepted subject to requirements Editors note—Refer to the material change of use tables for category of assessment for community residence that do not comply with the requirements for accepted development.	Editors note—requirements for community residence development that may not be made assessable under a planning scheme are set out in schedule 6, part 2 item 6 of the Regulation

**Table 5.4.2 Regulated categories of development and categories of assessment: Reconfiguring a lot**

Reconfiguring a lot		
Zone	Category of assessment	Assessment benchmarks
Residential zone category or industry zone category (other than a rural residential zone)	Code assessment if involving subdivision of one lot into two lots (and associated operational work) if code assessment is required under schedule 10 (part 12) of the Regulation	Reconfiguring a lot (subdividing one lot into two lots) Associated operational work code  Editors note—Assessment benchmarks for reconfiguring a lot are set out in schedules 12 of the Regulation.

**Table 5.4.3 Regulated categories of development and categories of assessment: Building work**

Table not used.

**Table 5.4.4 Regulated categories of development and categories of assessment: Operational work**

Operational work		
Zone	Category of assessment	Assessment benchmarks
Residential zone category or industry zone category	Code assessment if involving operational work associated with reconfiguring a lot requiring code assessment under schedule 10, part 12 division 2 of the Regulation.	Editors note—Assessment benchmarks for reconfiguring a lot and associated operational works are set out in schedules 12 of the Regulation.

**Table 5.4.5 Regulated development: Overlays**

Table not used.

## 5.5 Categories of development and assessment – Material change of use

The following tables identify the categories of development and assessment for development in a zone for making a material change of use.

**Table 5.5.1 Community facilities zone**

<b>Community facilities</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Community facilities zone code Infrastructure code
Community residence	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Residential care facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Community facilities zone code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Club	Code assessment	Business activities code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
All other	Impact assessment	The planning scheme

<b>Community facilities</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Entertainment activities		
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Cemetery	Accepted development if undertaken by or on behalf of Council	Community facilities zone code Transport and parking code
	Otherwise code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Child care centre	Code assessment	Child care centre zone Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Crematorium	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Educational establishment	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the: (a) Council; or (b) State government.	
	Otherwise impact assessment	The planning scheme
Funeral parlour	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Health care services	Code assessment	Business activities code Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Place of worship	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code

<b>Community facilities</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Code assessment	Business activities code Community facilities zone code Landscaping code Transport and parking code
Outdoor sport and recreation	Code assessment	Community facilities zone code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Air services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Detention facility	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Parking station	Code assessment	Community facilities zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Community facilities zone code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Community facilities zone code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note—The above categories of development and assessment apply unless otherwise prescribed in the Regulation.



**Table 5.5.2 District centre zone**

<b>District centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b><i>Accommodation activities</i></b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code District centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code District centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code District centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code District centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code District centre zone code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code District centre zone code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Multi-unit uses code District centre zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code District centre zone code Transport and parking code Landscaping code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b><i>Business activities</i></b>		

<b>District centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Agricultural supplies store	Code assessment if: (a) not exceeding a maximum building height of 12m above ground level; and (b) complying with the acceptable outcomes of the applicable code(s).	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code District centre code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code District centre zone code Infrastructure code

<b>District centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Service station	Code assessment	Service station code District centre code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if: (a) having a maximum GLA of 5,000m <sup>2</sup> ; and (b) not exceeding a maximum building height of 12m above ground level.	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Bar	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Club	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Function facility	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Hotel	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code

<b>District centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Theatre	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone District centre zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	District centre zone code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		

<b>District centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Indoor sport and recreation	Code assessment	Business activities code District centre zone code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b><i>Rural activities</i></b>		
All Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.3 Emerging community zone**

<b>Emerging community</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Emerging community zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Emerging community zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Emerging community zone code Infrastructure code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	

<b>Emerging community</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.4 Environmental management and conservation zone**

<b>Environmental management and conservation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
All Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
All Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
All Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development If: (a) located on Council owned or controlled land; and (b) undertaken by or on behalf of the Council.	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.5 High impact industry zone**

<b>High impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code High impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m <sup>2</sup> ; and (b) not involving a drive-through facility.	Business activities code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Office	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Service station	Code assessment	Service station code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
High impact industry	Code assessment	Industry activities code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s) (a)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code High impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		



<b>High impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Crematorium	Code assessment	High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Air services	Code assessment if: (a) the premises is used for the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	High impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Major electricity infrastructure	Code assessment	High impact industry zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	High impact industry zone code Landscaping code Transport and parking code
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code High impact industry zone code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.6 Industry investigation zone**

<b>Industry investigation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
All Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Industry investigation zone code Infrastructure code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.7 Local centre zone**

<b>Local centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Local centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Local centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Local centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Multi-unit uses code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code Local centre zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Agricultural supplies store	Code assessment	Business activities code Local centre zone code Infrastructure code

<b>Local centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Garden centre	Code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Local centre zone code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Local centre zone code Infrastructure code
Service station	Code assessment	Service station code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and	Business activities code Transport and parking code

<b>Local centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	(b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Shopping centre	Code assessment if having a maximum GLA of 1,500m <sup>2</sup> (a)	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone Local centre zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Local centre zone code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of	

<b>Local centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Health care services	Accepted development if involving no building work or only minor building work	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Code assessment	Business activities code Local centre zone code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.8 Low density residential zone**

<b>Low density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Low density residential zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low density residential zone code Infrastructure code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Low density residential zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low density residential zone code Infrastructure code
Shop	Code assessment if: (a) a corner store; and (b) complying with the acceptable outcomes of the applicable codes(s).	Business activities code Low density residential zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		

<b>Low density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre code Low density residential zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low density residential zone code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note—The above levels of assessment apply unless otherwise prescribed within the Act or the Regulation.



**Table 5.5.9 Low impact industry zone**

<b>Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Low impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Agricultural supply store	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Car wash	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m <sup>2</sup> ; and (b) not involving a drive-through facility.	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Garden centre	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if complying with the acceptable	Business activities code Transport and parking code

<b>Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	outcomes of the applicable code(s)	
	Otherwise code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Low impact industry zone code Transport and parking code
	Otherwise code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Showroom	Code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business activities code Transport and parking code
	Code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		

<b>Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Bulk landscape supplies	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code

<b>Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Funeral Parlour	Code assessment	Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Code assessment	Business activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Aquaculture	Code assessment	Rural activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code

<b>Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
All other Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Substation	Code assessment	Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code Low impact industry zone code Infrastructure code
	Otherwise impact assessment	The planning scheme
Transport depot	Code assessment	Industry activities code Low impact industry zone code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.10 Low-medium density residential zone**

<b>Low-medium density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dual occupancy	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dual occupancy code
	Otherwise code assessment	Dual occupancy code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Low-medium density residential zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Low-medium density residential zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Relocatable home park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Retirement facility	Code assessment	Residential care facility and retirement facility code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code

<b>Low-medium density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Rooming accommodation	Code assessment	Multi-unit uses code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Tourist park	Code assessment	Relocatable home park and tourist park code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Low-medium density residential zone code Infrastructure code
Shop	Code assessment if: (a) a corner store; and (b) complying with the acceptable outcomes of the applicable codes(s).	Business activities code Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone Low-medium density residential zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Low-medium density residential zone code Infrastructure code Landscaping code

<b>Low-medium density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b><i>Recreation activities</i></b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b><i>Rural activities</i></b>		
All Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.



**Table 5.5.11 Major centre zone**


<b>Major centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Major centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Major centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Major centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Residential care facility and retirement facility code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Multi-unit uses code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code Major centre zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		

<b>Major centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Agricultural supplies store	Code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code
	Otherwise impact assessable	The planning scheme
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code

<b>Major centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Major centre zone code Infrastructure code
Service station	Code assessment	Service station code Major centre code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Shopping centre	(a) Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Veterinary services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Bar	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Club	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code

<b>Major centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	Otherwise impact assessment	The planning scheme
Function facility	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Hotel	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Nightclub entertainment facility	Code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Theatre	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Tourist attraction	Impact assessment	The planning scheme
All other Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone Major centre zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Major centre zone code Infrastructure code Landscaping code Transport and parking code
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme

<b>Major centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Educational establishment	Code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Hospital	Code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Code assessment	Business activities code Major centre zone code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Parking station	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Major centre zone code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme



Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation..

**Table 5.5.12 Medium impact industry zone**

<b>Medium impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Medium impact industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Agricultural supply store	Accepted development if: (a) if involving no building work or only minor building work; and (b) complying with the acceptable outcomes of the applicable code(s).	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Car wash	Code assessment	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m <sup>2</sup> ; and (b) not involving a drive-through facility.	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Garden centre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Hardware and trade supplies	Accepted development if: (a) complying with the acceptable outcomes of the	Business activities code Transport and parking code

<b>Medium impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	applicable code(s); and (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment.	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Office	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Outdoor sales	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Business use code Transport and parking code
	Otherwise code assessment	Business use code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment	Service station code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Showroom	Code assessment	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Veterinary services	Code assessment	Business activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Bulk landscape supplies	Code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code



<b>Medium impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Low impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Medium impact industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Research and technology	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Warehouse	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Industry	Impact assessment	The planning scheme

<b>Medium impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
activities		
<b>Community activities</b>		
Crematorium	Code assessment	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Funeral Parlour	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
Rural industry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Air services	Code assessable if the premises is used for: (a) the housing, serving, refuelling, maintenance and repair of aircraft; or (b) associated training and education facilities; or (c) aviation facilities.	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Major electricity infrastructure	Code assessment	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code

<b>Medium impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Substation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code Medium impact industry zone code Infrastructure code
	Otherwise impact assessment	The planning scheme
Transport depot	Code assessment	Industry activities code Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Medium impact industry zone code Transport and parking code
	Otherwise code assessment	Medium impact industry zone code Infrastructure code Landscaping code Transport and parking code
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.13 Mixed use zone**

<b>Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Mixed use zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Mixed use zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Mixed use zone Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Residential care facility	Code assessment	Multi-unit uses code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Multi-unit uses code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the	Business activities code Transport and parking code

<b>Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	applicable code(s); and (b) involving no building work; or (c) only minor building work.	
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment	Market code Mixed use zone code Transport and parking code
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Sales office	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Mixed use zone code Infrastructure code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Bar	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code

<b>Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Landscaping code Transport and parking code
Club	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Function facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Hotel	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Nightclub entertainment facility	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Theatre	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code

<b>Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Transport and parking code
Tourist attraction	Impact assessment	The planning scheme
All other Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Health care services	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Code assessment	Business activities code Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Parking station	Code assessment	Mixed use zone code Infrastructure code Landscaping code Transport and parking code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		

<b>Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.



**Table 5.5.14 Neighbourhood centre zone**

<b>Neighbourhood centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Neighbourhood centre zone code Infrastructure code
Dual occupancy	Code assessment	Dual occupancy code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Neighbourhood centre zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Neighbourhood centre zone code Infrastructure code
Multiple dwelling	Code assessment	Multi-unit uses code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Food and drink outlet	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code

<b>Neighbourhood centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Office	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
Shop	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Business activities code Transport and parking code
	Otherwise code assessment	Business activities code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code
Community care centre	Code assessment	Neighbourhood centre zone code Infrastructure code Landscaping code Transport and parking code

<b>Neighbourhood centre</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.15 Recreation and open space zone**

<b>Recreation and open space</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Recreation and open space zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Market	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Market code Transport and parking code
	Otherwise code assessment.	Market code Recreation and open space zone code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Club	Code assessment if associated with a Recreation activity conducted on the same site	Business activities code Recreation and open space zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Function facility	Code assessment if associated with a club conducted on the same site	Business activities code Recreation and open space zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	

<b>Recreation and open space</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work or only minor building work.	
	Otherwise code assessment.	Business activities code Recreation and open space zone code Infrastructure code Landscaping code Transport and parking code
Outdoor sport and recreation	Accepted development if: (a) conducted by or on behalf of the council and does not include licensed premises; or (b) involving no building work or only minor building work.	
	Otherwise code assessment	Recreation and open space zone code Infrastructure code Transport and parking code
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.16 Rural zone**

<b>Rural</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's Accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Rural zone code Infrastructure code
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural zone code
Home based business	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural zone code Infrastructure code
Rural workers accommodation	Code assessment	Multi-unit uses code Rural zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Veterinary services	Code assessment	Business activities code Rural zone code Infrastructure code Landscaping code Transport and parking code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Bulk landscape supplies	Code assessment	Industry activities code Rural zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme

<b>Rural</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
Animal husbandry	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural zone code
Animal keeping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Rural activities code Rural zone code
Aquaculture	Code assessment	Rural activities code Rural zone code
Cropping	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Forestry for wood production code (where applicable)
	Otherwise code assessment	Rural activities code Forestry for wood production code (where applicable) Rural zone code
Intensive animal industry	Code assessment if involving: (a) 1,000 or less birds of poultry; or (b) 400 or less standard pig units; or (c) 150 or less standard cattle units; or (d) 1,000 or less standard sheep units.	Rural activities code Rural zone code
	Otherwise impact assessment	The planning scheme
Intensive horticulture	Code assessment	Rural activities code Rural zone code
Roadside stall	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural uses code
	Otherwise code assessment	Rural activities code Rural zone code

<b>Rural</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Rural industry	Code assessment if no part of the use area is within: (a) 250m of premises in the Rural residential zone; or (b) 500m of premises in a residential zone.	Rural activities code Rural zone code Transport and parking code
	Otherwise impact assessment	The planning scheme
Wholesale nursery	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Rural activities code Transport and parking code
	Otherwise code assessment	Rural activities code Rural zone code Transport and parking code
All other Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Landing	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.



**Table 5.5.17 Rural residential zone**

<b>Rural residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dwelling house	Accepted if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Rural residential zone code
Home based business	Accepted if complying with the acceptable outcomes of the applicable code(s)	Home based business code
	Otherwise code assessment	Home based business code Rural residential zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	Accepted if complying with the acceptable outcomes of the applicable code(s)	Sales office code
	Otherwise code assessment	Sales office code Rural residential zone code Infrastructure code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
Animal husbandry	Accepted if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural residential zone code
Cropping	Accepted if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural residential zone code

<b>Rural residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Roadside stall	Accepted if complying with the acceptable outcomes of the applicable code(s)	Rural activities code
	Otherwise code assessment	Rural activities code Rural residential zone code
All other Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Utility installation	Accepted if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

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**Table 5.5.18 Special industry zone**

<b>Special industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Special industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
All Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
High impact industry	Code assessment	Industry activities code Special industry zone code Infrastructure code Landscaping code Transport and parking code
Special industry	Code assessment	Industry activities code Special industry zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Major electricity infrastructure	Code assessment	Special industry zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Special industry zone code Infrastructure code Landscaping code Transport and parking code

<b>Special industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Telecommunications facility	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code
	Otherwise code assessment	Telecommunications facility code Special industry zone code Infrastructure code
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation..

**Table 5.5.19 Tourist Accommodation zone**

<b>Tourist accommodation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dwelling house	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dwelling house code
	Otherwise code assessment	Dwelling house code Tourist accommodation zone code
Relocatable home park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Resort complex	Code assessment	Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Rooming accommodation	Code assessment	Multi-unit uses code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Short term accommodation	Code assessment	Multi-unit uses code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Tourist Park	Code assessment	Relocatable home park and tourist park code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Food and drink outlet	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Office	Code assessable if in a building consisting of both Accommodation and Business activities	Business activities code Tourist accommodation zone code Infrastructure code Landscaping code

<b>Tourist accommodation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Transport and parking code
	Otherwise impact assessment	The planning scheme
Shop	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Business activities code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.5.20 Waterfront and marine industry zone**

<b>Waterfront and marine industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Waterfront and marine industry zone code Infrastructure code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Food and drink outlet	Code assessment if: (a) having a gross floor area not exceeding 150m <sup>2</sup> ; and (b) not involving a drive-through facility.	Business activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Outdoor sales	Code assessment if for the sale of marine vehicles and equipment	Business activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Service station	Code assessment if primarily servicing marine industry and ancillary uses within the zone	Service station code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Marine industry	Code assessment	Industry activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Warehouse	Code assessment	Industry activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		

<b>Waterfront and marine industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Emergency services	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	Accepted development	
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
Aquaculture	Code assessment	Rural activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Rural industry	Code assessment if for the distribution and wholesale of seafood products	Rural activities code Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
All other Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Landing	Code assessment	Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Major electricity infrastructure	Code assessment	Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Parking station	Code assessment	Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Port services	Code assessment	Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Substation	Code assessment	Waterfront and marine industry zone code Infrastructure code Landscaping code Transport and parking code
Telecommunications facility	Code assessment if complying with the acceptable outcomes of the applicable code(s)	Telecommunications facility code Waterfront and marine industry zone code Infrastructure code



<b>Waterfront and marine industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	Otherwise impact assessment	The planning scheme
Utility installation	Accepted development if undertaken by or on behalf of the Council	
	Otherwise impact assessment	The planning scheme
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

## 5.6 Categories of development and assessment – Reconfiguration of a lot

The following table identifies the categories of development and assessment for reconfiguring a lot.

**Table 5.6.1 Reconfiguring a lot**

<b>Reconfiguration of a lot</b>		
<b>Zone</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Community facilities, or Environmental management and conservation, or Recreation and open space	Impact assessment	The planning scheme
All other zones	Code assessment (where for an access easement) if compliant with the acceptable outcomes of the Reconfiguring a lot code, particularly the minimum lot size set out in Table 9.4.6.3.2 (Minimum lot sizes and dimensions).	Relevant zone code Reconfiguring a lot code Excavation and filling code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
All other zones	Code assessment (where not for an access easement) if compliant with the minimum lot size set out in Table 9.4.6.3.2 (Minimum lot sizes and dimensions) of the Reconfiguring a lot code.	Relevant zone code Reconfiguring a lot code Excavation and filling code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

## 5.7 Categories of development and assessment – Building work

The following table identifies the categories of development and assessment for building work.

**Table 5.7.1 Building Work**

<b>Carrying out Building Work</b>		
<b>Precinct or Zone</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Airlie Beach Precinct A	Impact assessment if exceeding a maximum building height of 14m above ground level	The planning scheme
Airlie Beach Precinct B	Impact assessment if exceeding a maximum building height of 14m above ground level	The planning scheme
Airlie Beach Precinct C	Impact assessment if exceeding a maximum building height of 21m above ground level	The planning scheme
Airlie Beach Precinct D	Impact assessment if exceeding a maximum building height of 18m m above ground level	The planning scheme
Airlie Beach Precinct E	Impact assessment if exceeding a maximum building height of 14m above ground level	The planning scheme
Airlie Beach Precinct F	Impact assessment if exceeding a maximum building height of 18m above ground level	The planning scheme
Airlie Beach Precinct G	Impact assessment if exceeding a maximum building height of 14m above ground level	The planning scheme
<b>Residential zones category</b>		
Low density residential zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
Low-medium residential density zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of 12m above ground level	The planning scheme
Tourist accommodation zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
<b>Centre zones category</b>		
Major centre zone	Impact assessment if exceeding a maximum building height of 12m above ground level	The planning scheme
District centre zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of 12m above ground level	The planning scheme
Local centre zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level	The planning scheme

<b>Carrying out Building Work</b>		
<b>Precinct or Zone</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	where located on slopes exceeding 15%	
Neighbourhood centre zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
<b>Industry zones category</b>		
Low impact industry zone	Impact assessment if exceeding a maximum building height of 10m above ground level	The planning scheme
Medium impact industry zone	Impact assessment if exceeding a maximum building height of 15m above ground level	The planning scheme
High impact industry zone	Impact assessment if exceeding a maximum building height of 20m above ground level	The planning scheme
Special industry zone	Impact assessment if exceeding a maximum building height of 20m above ground level	The planning scheme
Waterfront industry zone	Impact assessment if exceeding a maximum building height of: (a) 20m above ground level for buildings and structures used for the manufacturing, servicing or repair of vessels; or (b) 12.5m above ground level for all other buildings and structures;	The planning scheme
Industry investigation zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
<b>Recreation zones category</b>		
Recreation and open space zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
<b>Environmental zones category</b>		
Environmental management and conservation zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
<b>Other zones category</b>		
Community facilities zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes	The planning scheme

<b>Carrying out Building Work</b>		
<b>Precinct or Zone</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	exceeding 15%	
Emerging community zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme
Mixed use zone, if not within an Airlie Beach Precinct	Impact assessment if exceeding a maximum building height of 12m above ground level	The planning scheme
Rural residential zone	Impact assessment if exceeding a maximum building height of: (a) 8.5m above ground level, or (b) 10m above ground level where located on slopes exceeding 15%	The planning scheme

## 5.8 Categories of development and assessment – Operational work

The following table identifies the categories of development and assessment for operational work.

**Table 5.8.1 Operational work**

<b>Operational Work</b>		
<b>Development</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Extracting gravel, rock, sand or soil from the place where it occurs naturally	Accepted development	
Conducting a forest practice	Accepted development	
Excavating or filling that materially affects premises or their use	Accepted development if: (a) there would be a change of no greater than 1m in the level of any part of the site; or (b) less than 100m <sup>3</sup> of material is imported to or removed from the site.	Excavation and filling code
	Otherwise code assessment	Construction management code Excavation and filling code
All operational works involving landscaping work where associated with the Reconfiguring of a lot or Material Change of Use	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Construction management code Landscaping code
All operational works involving landscaping work where not associated with the Reconfiguring of a lot or Material Change of Use	Code assessment	Construction management code Landscaping code
Operation works involving engineering work	Code assessment	Construction management code Excavation and filling code Infrastructure code
Placing an advertising device on a premise	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Advertising devices code
	Otherwise code assessment	Advertising devices code Construction management code
Prescribed tidal works	Code assessment	Construction management code Excavation and filling code
Undertaking roadworks on a local government road	Accepted development if undertaken by or on behalf of the Council	
	Otherwise code assessment	Construction management code Excavation and filling code

<b>Operational Work</b>		
<b>Development</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
		Transport and parking code
Undertaking roadwork's on a local government road for a driveway	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Excavation and filling code Transport and parking code
	Otherwise code assessment	Construction management code Excavation and filling code Transport and parking code

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

## 5.9 Categories of development and assessment – Local plans


### 5.9.1 Hamilton island local plan categories of development and assessment

The following tables identifies the categories of development and assessment for development in the local plan.

**Table 5.9.1.1 Hamilton Island local plan - Community facilities zone**

<b>Hamilton island local plan - Community facilities</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b><i>Accommodation activities</i></b>		
Caretaker's accommodation	No change	Hamilton island local plan (where code assessment)
All other Accommodation activities	Impact assessment	The planning scheme
<b><i>Business activities</i></b>		
All other Business activities	Impact assessment	The planning scheme
<b><i>Entertainment activities</i></b>		
Club	No change	Hamilton island local plan code
All other Entertainment activities	Impact assessment	The planning scheme
<b><i>Industry activities</i></b>		
All Industry activities	Impact assessment	The planning scheme
<b><i>Community activities</i></b>		
Community use	No change	-
Educational establishment	No change	Hamilton island local plan code
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b><i>Recreation activities</i></b>		
Indoor sport and recreation	No change	Hamilton island local plan code
Outdoor sport and recreation	No change	Hamilton island local plan code
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b><i>Rural activities</i></b>		
All Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Air services	No change	-
Telecommunications facility	No change	Hamilton island local plan code (where code assessable)
Utility installation	No change	-
All other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme





Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.2 Hamilton island local plan - Low density residential zone

<b>Hamilton island local plan - Low density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Dual occupancy	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Dual occupancy code
	Otherwise code assessment	Dual occupancy code Low density residential zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Dwelling house	No change	Hamilton island local plan code (where code assessment)
Home based business	No change	Hamilton island local plan code (where code assessment)
Short term accommodation	Code assessment if in the form of a dual occupancy	Dual occupancy code Low density residential zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Code assessment if in the form of a dwelling house	Dwelling house code Low density residential zone code Hamilton island local plan code
	Otherwise impact assessment	The planning scheme
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	No change	Hamilton island local plan code (where code assessment)
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	No change	-
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	No change	-

<b>Hamilton island local plan - Low density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
All other Other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.9.1.3 Hamilton island local plan - Low impact industry code**

<b>Hamilton island local plan - Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	No change	Hamilton island local plan code (where code assessment)
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Car wash	No change	Hamilton island local plan code (where code assessment)
Office	No change	Hamilton island local plan
Outdoor sales	No change	Hamilton island local plan code (where code assessment)
Service station	No change	Hamilton island local plan code
Showroom	No change	Hamilton island local plan code
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
Low impact industry	No change	Hamilton island local plan code (where code assessment)
Service industry	No change	Hamilton island local plan code (where code assessment)
Warehouse	No change	Hamilton island local plan code (where code assessment)
All other Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	No change	-
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	No change	Hamilton island local plan code
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All other Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Substation	No change	Hamilton island local plan code
Telecommunications facility	No change	Hamilton island local plan code
Transport depot	No change	Hamilton island local plan code
Utility installation	No change	-

<b>Hamilton island local plan - Low impact industry</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
All other Other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.9.1.4 Hamilton island local plan - Low medium density residential zone**

<b>Hamilton island local plan - Low-medium density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Accepted development if complying with the acceptable outcomes of the applicable code(s)	Caretaker's accommodation code
	Otherwise code assessment	Caretaker's accommodation code Low-medium density residential zone code Hamilton island local plan code Infrastructure code
Dual occupancy	No change	Hamilton island local plan code (where code assessment)
Dwelling house	No change	Hamilton island local plan code (where code assessment)
Home based business	No change	Hamilton island local plan code (where code assessment)
Multiple dwelling	No change	Hamilton island local plan code
Rooming accommodation	No change	Hamilton island local plan code
Short term accommodation	No change	Hamilton island local plan code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
Sales office	No change	Hamilton island local plan code (where code assessment)
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Hotel	Code assessment	Business activities code Low-medium density residential zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
All Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	No change	-
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		

<b>Hamilton island local plan - Low-medium density residential</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Utility installation	No change	-
All other Other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.9.1.5 Hamilton island local plan - Mixed use zone**

<b>Hamilton island local plan - Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b><i>Accommodation activities</i></b>		
Caretaker's accommodation	No change	Hamilton island local plan code (where code assessment)
Multiple dwelling	No change	Hamilton island local plan code
Rooming accommodation	No change	Hamilton island local plan code
Short term accommodation	No change	Hamilton island local plan code
All other Accommodation activities	Impact assessment	The planning scheme
<b><i>Business activities</i></b>		
Food and drink outlet	No change	Hamilton island local plan code (where code assessment)
Market	No change	Hamilton island local plan code (where code assessment)
Office	No change	Hamilton island local plan code (where code assessment)
Outdoor sales	Code assessment if: (a) for the sale and hire of recreational and leisure equipment; and (b) complying with the acceptable outcomes of the applicable code(s).	Business activities code Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Otherwise impact assessment	The planning scheme
Sales office	No change	Hamilton island local plan code (where code assessment)
Shop	No change	Hamilton island local plan code (where code assessment)
All other Business activities	Impact assessment	The planning scheme
<b><i>Entertainment activities</i></b>		
Bar	No change	Hamilton island local plan code (where code assessment)
Club	No change	Hamilton island local plan code (where code assessment)
Function facility	No change	Hamilton island local plan code (where code assessment)
Hotel	No change	Hamilton island local plan code (where code assessment)
Nightclub entertainment facility	No change	Hamilton island local plan code (where code assessment)
Theatre	No change	Hamilton island local plan code (where code assessment)
Tourist attraction	Code assessment	Business activities code Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
All other Entertainment activities	Impact assessment	The planning scheme
<b><i>Industry activities</i></b>		



<b>Hamilton island local plan - Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Marine industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Service industry	Accepted development if: (a) complying with the acceptable outcomes of the applicable code(s); and (b) involving no building work; or (c) only minor building work.	Industry activities code Transport and parking code
	Otherwise code assessment	Industry activities code Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Child care centre	Code assessment	Child care centre zone Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Community use	No change	-
Educational establishment	Code assessment	Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Emergency services	No change	-
Health care services	No change	Hamilton island local plan code (where code assessment)
Place of worship	Code assessment	Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	No change	Hamilton island local plan code
Outdoor sport and recreation	Code assessment	Mixed use zone code Hamilton island local plan code Infrastructure code Transport and parking code

<b>Hamilton island local plan - Mixed use zone</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b><i>Rural activities</i></b>		
All Rural activities	Impact assessment	The planning scheme
<b><i>Other activities</i></b>		
Landing	Code assessment	Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Port services	Code assessment	Mixed use zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
Utility installation	No change	-
All other Other activities	Impact assessment	The planning scheme
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

**Table 5.9.1.6 Hamilton island local plan - Recreation and open space code**

<b>Hamilton island local plan - Recreation and open space</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	No change	Hamilton island local plan code (where code assessment)
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
All other Business activities	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
Club	No change	Hamilton island local plan code
Function facility	No change	Hamilton island local plan code
All other Entertainment activities	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Impact assessment	The planning scheme
<b>Community activities</b>		
Community use	No change	-
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b>Recreation activities</b>		
Indoor sport and recreation	No change	Hamilton island local plan code (where code assessment)
Outdoor sport and recreation	No change	Hamilton island local plan code (where code assessment)
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b>Rural activities</b>		
All Rural activities	Impact assessment	The planning scheme
<b>Other activities</b>		
Utility installation	No change	-
All other activities	Impact assessment	The planning scheme
<b>Undefined uses</b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

Table 5.9.1.7 Hamilton island local plan – Tourist accommodation code

<b>Hamilton island local plan – Tourist accommodation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Accommodation activities</b>		
Caretaker's accommodation	Code assessment	Caretaker's accommodation code Hamilton island local plan code Tourist accommodation zone code Landscaping Code Transport and parking code
Dual occupancy	Code assessment	Dual occupancy code Hamilton island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Dwelling house	Code assessment	Dwelling House Code Hamilton island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
Home based business	Code assessment	Home based business code Tourist accommodation zone code Hamilton island local plan code
Resort complex	No change	Hamilton island local plan code Tourist accommodation zone code Infrastructure code Landscaping code Transport and parking code
All other Accommodation activities	Impact assessment	The planning scheme
<b>Business activities</b>		
All other Business activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes.	Business activities code Tourist accommodation zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The planning scheme
<b>Entertainment activities</b>		
All Entertainment activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes.	Tourist accommodation zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The planning scheme
<b>Industry activities</b>		
All Industry activities	Code assessment if associated with a Resort complex and	Industry activities code Tourist accommodation zone

<b>Hamilton island local plan – Tourist accommodation</b>		
<b>Use</b>	<b>Categories of development and assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
	complying with the acceptable outcomes of the applicable codes.	code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The planning scheme
<b><i>Community activities</i></b>		
Community use	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes.	Tourist accommodation zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
	Impact assessment	The planning scheme
Emergency services	No change	-
All other Community activities	Impact assessment	The planning scheme
<b><i>Recreation activities</i></b>		
Park	No change	-
All other Recreation activities	Impact assessment	The planning scheme
<b><i>Rural activities</i></b>		
All Rural activities	No change	-
<b><i>Other activities</i></b>		
Utility installation	No change	-
All other activities	Code assessment if associated with a Resort complex and complying with the acceptable outcomes of the applicable codes.	Tourist accommodation zone code Hamilton island local plan code Infrastructure code Landscaping code Transport and parking code
<b><i>Undefined uses</i></b>		
Any use not defined in Schedule 1 (Definitions)	Impact assessment	The planning scheme

Editor's note— The above categories of development and assessment apply unless otherwise prescribed in the Regulation.

## 5.10 Categories of development and assessment – Overlays

The following tables identify where an overlay changes the category of assessment from that stated in a zone or local plan and the relevant assessment benchmarks.

Note—Some overlays may only be included for information purposes. This should not change the category of assessment or assessment benchmarks in the planning scheme.

**Table 5.10.1 Acid sulfate soils overlay**

<b>Acid sulphate soils overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<p><b>Any development</b>, if on land:</p> <ul style="list-style-type: none"> <li>(a) subject to the Acid sulfate soils overlay as identified in the Acid sulfate soils map; and</li> <li>(b) there would be a change in level of greater than 1m of any part of the site; or</li> <li>(c) greater than 100m<sup>3</sup> of material is imported to or removed from the site.</li> </ul>	No change	Acid sulfate soils overlay code

Note – where development is not identified in the ‘Development’ column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.2 Agricultural land overlay**

<b>Agricultural land overlay</b>		
<b>Development</b>	<b>Category of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Agricultural land overlay as identified in the Agricultural land overlay map	No change	Agricultural land overlay code
<b>Operational work</b> , if on land: (a) subject to the Agricultural overlay as identified in the Agricultural land overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Agricultural land overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.3 Airport environs overlay**

<b>Airport environs overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land: (a) subject to the Airport environs overlay; and (b) resulting in work encroaching into the operational airspace and is at least 12m high; or (c) within a public safety area; or (d) within the existing lighting area buffer zone; or (e) within the wildlife hazard buffer zone; or (f) resulting in work encroaching into the building restricted area.	No change	Airport environs overlay code
<b>Reconfiguring of a lot</b> , if on land: (a) subject to the Airport environs overlay; and (b) within the 20 ANEF contour for an airport; or (c) within a public safety area of an airports identified on the Airport environs overlay map.	No change	Airport environs overlay code
<b>Operational works</b> , only where not associated with a Material change of use or a reconfiguration of a lot.	No change	Airport environs overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.



**Table 5.10.4 Bushfire hazard overlay**

<b>Bushfire hazard overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land: (a) subject to the Bushfire hazard overlay as identified in the Bushfire hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m <sup>2</sup> ; or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m <sup>3</sup> of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.4.3.1 (Criteria for accepted development and assessable development) of the Bushfire hazard overlay code.	Bushfire hazard overlay code
	Otherwise code assessment	Bushfire hazard overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Bushfire hazard overlay as identified in the Bushfire hazard overlay map	No change	Bushfire hazard overlay code
<b>Operational works</b> , if on land (a) subject to the Bushfire hazard overlay as identified in the Bushfire hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) clearing vegetation, including vegetation to which the Vegetation Management Act applies.	No change	Bushfire hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.5 Coastal environment overlay**

<b>Coastal environment overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land: (a) subject to the Coastal environment overlay as identified in the Coastal environment overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m <sup>2</sup> ; or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m <sup>3</sup> of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.5.3.1 (Criteria for accepted development and assessable development) of the Coastal environment overlay code.	Coastal environment overlay code
	Otherwise code assessment	Coastal environment overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Coastal environment overlay as identified in the Coastal environment overlay map	No change	Coastal environment overlay code
<b>Operational works</b> , if on land: (a) subject to the Coastal environment overlay as identified in the Coastal environment overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Coastal environment overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.6 Environmental significance overlay**

<b>Environmental significance overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Environmental significance overlay as identified in the Environmental significance overlay map	No change	Environmental significance overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Environmental significance overlay as identified in the Environmental significance overlay map	No change	Environmental significance overlay code
<b>Operational work</b> , if on land: (a) subject to the Environmental significance overlay as identified in the Environmental significance overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change	Environmental significance overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.7 Extractive resources overlay**

<b>Extractive resources overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change	Extractive resources overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Extractive resources overlay as identified in the Extractive resources overlay map	No change	Extractive resources overlay code
<b>Operational works</b> , if on land: (a) subject to the Extractive resources overlay as identified in the Extractive resources overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Extractive resources overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.8 Flood hazard overlay**

<b>Flood hazard overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m <sup>2</sup> ; or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m <sup>3</sup> of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.8.3.1 (Criteria for accepted development and assessable development) of the Flood hazard overlay code.	Flood hazard overlay code
	Otherwise code assessment	Flood hazard overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Flood hazard overlay as identified in the Flood hazard overlay map	No change	Flood hazard overlay code
<b>Operational works</b> , if on land: (a) subject to the Flood hazard overlay as identified in the Flood hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving engineering work; or (d) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (e) prescribed tidal works; or (f) undertaking roadwork's on a local government road.	No change	Flood hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.9 Heritage overlay**

<b>Heritage overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Heritage overlay as identified in the Heritage overlay map	Code assessment if development will not result in building work involving demolition, relocation or removal of a Heritage place.	Heritage overlay code
	Otherwise impact assessment	The planning scheme
<b>Reconfiguration of a lot</b> , if on land subject to the Heritage overlay as identified in the Heritage overlay map.	No change	Heritage overlay code
<b>Operational works</b> , if on land: (a) subject to the Heritage overlay as identified in the Heritage overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (g) prescribed tidal works; or (h) undertaking roadwork's on a local government road.	No change if development will not result in building work involving demolition, relocation or removal of a Local heritage place.	Heritage overlay code
	Otherwise code assessment	Heritage overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.10 Infrastructure overlay**

<b>Infrastructure overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change	Infrastructure overlay code
<b>Reconfiguration of a lot</b> , if on land subject to the Infrastructure overlay as identified in the Infrastructure overlay map	No change	Infrastructure overlay code
<b>Operational works</b> , if on land: (a) subject to the Infrastructure overlay as identified in the Infrastructure overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) placing an advertising device on a premise; or (f) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (g) prescribed tidal works; or (h) undertaking roadwork's on a local government road.	No change	Infrastructure overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

**Table 5.10.11 Landslide hazard overlay**

<b>Landslide hazard overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map; and (b) where not wholly contained within an existing building; or (c) involving building work of greater than 50m <sup>2</sup> ; or (d) there would be a change in level of greater than 0.5m of any part of the site; or (e) greater than 50m <sup>3</sup> of material is imported to or removed from the site.	No change if complying with acceptable outcomes of Table 8.2.11.3.1 (Criteria for accepted and assessable development) of the Landslide hazard overlay code	Landslide hazard overlay code
	Otherwise code assessment	Landslide hazard overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map	No change	Landslide hazard overlay code
<b>Operational works</b> , if on land: (a) subject to the Landslide hazard overlay as identified in the Landslide hazard overlay map; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change	Landslide hazard overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.



**Table 5.10.12 Wetlands and waterways overlay**

<b>Wetlands and waterways overlay</b>		
<b>Development</b>	<b>Categories of assessment</b>	<b>Assessment benchmarks for assessable development and requirements for accepted development</b>
<b>Material change of use</b> , if on land subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1	No change	Wetlands and waterways overlay code
<b>Reconfiguring a lot</b> , if on land subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1	No change	Wetlands and waterways overlay code
<b>Operational works</b> , if on land: (a) subject to the Wetlands and waterways overlay as identified in the Wetlands and waterways overlay map 1; and (b) involving excavation or filling that materially affects premises or their use; or (c) involving landscaping work where associated with the Reconfiguration of a Lot or Material change of use; or (d) involving engineering work; or (e) clearing vegetation, including vegetation to which the Vegetation Management Act applies; or (f) prescribed tidal works; or (g) undertaking roadwork's on a local government road.	No change	Wetlands and waterways overlay code

Note – where development is not identified in the 'Development' column of the table as being subject to a particular overlay, that overlay is not applicable to the development.

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## Part 6 Zones

### 6.1 Preliminary

- (1) Zones organise the planning scheme area in a way that facilitates the location of preferred or acceptable Land uses.
- (2) Zones are mapped and included in Schedule 2 (Mapping).
- (3) The categories of development and assessment for development in a zone are in Part 5 (Tables of assessment).
- (4) Assessment benchmarks for zones are contained in a zone code.
- (5) A precinct may be identified for part of a zone – table 6.1.1 lists the precincts and their corresponding zones.

**Table 6.1.1 Precincts and corresponding zones**

Precinct	Zone
Airlie Beach Precinct A	Mixed Use
Airlie Beach Precinct B	Low-medium density residential
Airlie Beach Precinct C	Mixed Use
Airlie Beach Precinct D	District Centre
Airlie Beach Precinct E	District Centre
Airlie Beach Precinct F	Mixed Use
Airlie Beach Precinct G	Mixed Use

- (6) Precinct provisions are contained in the corresponding zone codes.
- (7) Each zone code identifies the following:
  - (a) the purpose of the code
  - (b) the overall outcomes that achieve the purpose of the code
- (8) The following are the zone codes for the planning scheme:

#### **Residential zones category**

- (a) Low density residential zone code
- (b) Low-medium density residential zone code
- (c) Tourist accommodation zone code

#### **Centre zones category**

- (a) Major centre zone code
- (b) District centre zone code
- (c) Local centre zone code

- (d) Neighbourhood centre zone code

**Industry zones category**

- (a) Low impact industry zone code
- (b) Medium impact industry zone code
- (c) High impact industry zone code
- (d) Special industry zone code
- (e) Waterfront and marine industry zone code
- (f) Industry investigation zone code

**Recreation zones category**

- (a) Recreation and open space zone code

**Environmental zones category**

- (a) Environmental management and conservation zone code

**Other zones category**

- (a) Community facility zone code
- (b) Emerging community zone code
- (c) Mixed use code
- (d) Rural zone code
- (e) Rural residential zone code

## **6.2 Zone codes**

### **6.2.1 Community facilities zone code**

#### **6.2.1.1 Application**

This code applies to assessable development:

- (a) within the Community facilities zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Community facilities zone code by the tables of assessment in Part 5 (Tables of assessment).

#### **6.2.1.2 Purpose and overall outcomes**

- (1) The purpose of the Community facilities zone code is to provide for community related activities and facilities whether under public or private ownership. These may include the provision of municipal services, public utilities, government installations, hospitals and schools, transport and telecommunication networks and community infrastructure of an artistic, social or cultural nature.
- (2) The local government purpose of the Community facilities zone code is to provide for a range of accessible Community, Recreation and Other activities at varying degrees of scale and intensity which meet the social, educational, spiritual, cultural or health needs of the Whitsunday Region's existing and future communities and operate effectively.
- (3) The purpose of the Community facilities zone code will be achieved through the following overall outcomes:
  - (a) development in the zone caters primarily for specified uses, facilities and works which include:
    - (i) land used, owned or operated by Federal, State or Local government for Community and Other activities such as cemeteries, community uses, emergency services, hospitals, air services, substations, major electricity infrastructure and utility installations; or
    - (ii) uses, facilities and works which by virtue of their location, intensity, combination of uses, operations or site characteristics are best managed in a use-specific land use allocation; or
    - (iii) private Community activities and facilities including community uses, educational establishments, hospitals and places of worship;
  - (b) a range of allied and compatible activities may also be established in this zone. These include Recreational activities such as indoor/outdoor sport and recreation uses;
  - (c) Community activities and associated uses are located to optimise their accessibility, operational efficiency and benefit to the public;
  - (d) development accommodates the specific operational, functional and locational needs of the particular use, whilst maintaining a low rise built form compatible with the intended development in the surrounding area. Buildings are to have a maximum height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;

- (e) development provides a high level of amenity, maintains the safety of people, buildings and works, and effectively manages the potential for land use conflict with existing and intended surrounding development;
- (f) uses, buildings and works are located, designed and operated to minimise adverse impacts on the amenity of any adjacent properties, nearby residential or public spaces having regard to:
  - (i) traffic conditions;
  - (ii) noise or vibration;
  - (iii) dust, odour or similar emissions;
  - (iv) privacy;
  - (v) safety and security;
  - (vi) illumination;
  - (vii) access to natural light and ventilation; and
  - (viii) drainage;
- (g) existing and planned Community activities and associated uses are protected from the intrusion of incompatible uses that could limit the ongoing operation of existing Community activities or prejudice appropriate new activities;
- (h) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (i) development provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the site;
- (j) development is provided with a level of infrastructure and essential services that is commensurate with the location, nature, scale and intensity of the use;
- (k) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (l) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.2 District centre zone code**

### **6.2.2.1 Application**

This code applies to assessable development:

- (a) within the District centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the District centre zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.2.2 Purpose and overall outcomes**

- (1) The purpose of the District centre zone code is to provide for a mix of uses and activities. It includes a concentration of land uses including retail, commercial, residential, offices, administrative and health services, community, small-scale entertainment and recreational facilities capable of servicing a district.
- (2) The local government purpose of the District centre zone code is to provide for a range of activities that complement but do not compete with the role and function of the major activity centres by serving the needs of district level catchments and distinct communities in centres that are highly accessible and well connected to the catchment areas and communities that they serve. District centres are developed as well-designed, safe and visually attractive business, community and employment centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.
- (3) The purpose of the District centre zone code will be achieved through the following overall outcomes:
  - (a) development provides for a range of Business and Entertainment activities that service the district level needs of surrounding smaller centres and residential areas. These uses include, but are not limited to food and drink outlets, offices, shops, shopping centres, theatres, clubs and function facilities;
  - (b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of residents. Such uses include community uses, child care centres, emergency services, health care services and places of worship;
  - (c) Recreation, Industry and Other activities such as indoor sport and recreation, service industries and utility installations may be established where they are compatible with the character and amenity of surrounding development;
  - (d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies, multiple dwellings, rooming accommodation and short term accommodation where such uses are ancillary to and support the predominant business functions of the zone;
  - (e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres<sup>1</sup>. For development in the District centre zone, this includes consideration of the following:

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<sup>1</sup> Development within the District centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).



- (i) the function and role of existing Business activities in district centres is maintained;
  - (ii) shopping centres have a maximum retail and commercial gross leasable area in the order of 5,000m<sup>2</sup>;
  - (iii) not more than one full-line supermarket is established in each allocated district centre, unless there is a demonstrated need and there are no adverse impacts on the major activity centre; and
  - (iv) higher order shopping facilities, including department stores and discount department stores, are not established in the District centre zone;
- (f) unless otherwise specified in a local plan code or Table 6.2.2.2.1 (Maximum building heights in District centre zone), development has a low to medium rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 12.0m above ground level;

**Table 6.2.2.2.1 Maximum building heights in District centre zone**

District centre location	Maximum building height
Airlie Beach Precinct D	18m
Airlie Beach Precinct E	14m

- (g) development may provide for Accommodation activities as part of mixed use premises to encourage and facilitate urban consolidation;
- (h) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;
- (i) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;
- (j) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (l) development encourages public transport accessibility and use and also provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the centre;
- (m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;

- (n) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>2</sup>;
- (o) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
- (p) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (q) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>2</sup> Development within the District centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

## **6.2.3 Emerging community zone code**

### **6.2.3.1 Application**

This code applies to assessable development

- (a) within the Emerging community zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Emerging community zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.3.2 Purpose and overall outcomes**

- (1) The purpose of the Emerging community zone code is to:
  - (a) identify land that is suitable for urban purposes and conserve land that may be suitable for urban development in the future;
  - (b) manage the timely conversion of non-urban land to urban purposes; and
  - (c) prevent or discourage development that is likely to compromise appropriate longer term land uses.
- (2) The local government purpose of the Emerging community zone code is to ensure that development is designed and coordinated to achieve safe, healthy and sustainable new urban communities which are well integrated with existing communities and provided with services and infrastructure.
- (3) The purpose of the Emerging community zone code will be achieved through the following overall outcomes:
  - (a) prior to the granting of development approvals in accordance with a local plan undertaken by the Council:
    - (i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and
    - (ii) development avoids the sporadic or premature creation of additional lots<sup>3</sup>;
  - (b) development is undertaken in accordance with any local plan, prepared and approved master plan or a preliminary approval pursuant to the planning Act, demonstrating that:
    - (i) development occurs in accordance with any local planning undertaken by the Council, as specified in a local plan code;
    - (ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Emerging community zone and neighbouring communities<sup>4</sup>;

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<sup>3</sup> Development within the Emerging community zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).

<sup>4</sup> Development within the Emerging community zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

- (iii) unless otherwise specified in a local plan code, development provides for a low-rise building form that is compatible with the character of the surrounding area, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
- (iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;
- (v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (vi) the scale, density and layout of development facilitates an efficient land use pattern that:
  - (A) is well connected to other parts of the urban fabric and planned future development;
  - (B) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and
  - (C) encourages public transport accessibility and use;
- (vii) a mix of land uses and housing types is provided;
- (viii) a high level of residential amenity, personal health and safety and protection for property is provided;
- (ix) a sense of character and community inclusion is promoted;
- (x) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;
- (xi) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;
- (xii) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (xiii) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>5</sup>;
- (xiv) conflicts with the existing or potential productive use of adjoining or nearby rural lands are avoided or appropriately managed;

<sup>5</sup> Development within the Emerging community zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

- (xv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;
- (xvi) development is provided with the full range of urban services, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;
- (xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (xviii) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.4 Environmental management and conservation zone code**

### **6.2.4.1 Application**

This code applies to assessable development:

- (a) within the Environmental management and conservation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Environmental management and conservation zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.4.2 Purpose and overall outcomes**

- (1) The purpose of the Environmental management and conservation zone code is to provide for the protection and maintenance of areas identified as supporting significant biological diversity and ecological integrity.
- (2) The local government purpose of the Environmental management and conservation zone code is to provide for the protection and rehabilitation of land to maintain biological diversity, ecological processes, coastal processes, water quality, landscape character, scenic amenity, cultural heritage significance and community wellbeing.
- (3) The purpose of the Environmental management and conservation zone code will be achieved through the following overall outcomes:
  - (a) areas identified as having significant environmental values for environmental diversity and functioning, water catchment, beach protection or coastal management, and historical or cultural significance are:
    - (i) protected for their importance in contributing to environmental sustainability; and
    - (ii) appropriately managed to the general exclusion of most forms of development;
  - (b) Recreation activities, limited to parks, may be established in the zone where such development:
    - (i) supports environmental values and provides opportunities for appreciation or study of those values;
    - (ii) is compatible with and has a direct connection with the environmental values; and
    - (iii) provides opportunities for recreational pursuits that have a direct connection with the environmental values of the land;
  - (c) to maintain the intended character and amenity of the zone, development integrates with and compliments the natural landscape and has a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
  - (d) Other activities, limited to utility installations, may be provided where such activities are located, designed and operated to avoid significant impacts on environmental systems and processes;

- (e) a network of green and open space corridors are established across the region providing movement opportunities for people and wildlife between the coast and hinterland and access to the regions cultural heritage and environmental significant features;
- (f) development maintains and protects the scenic values and landscape character of the zone, particularly coastal views and vistas, prominent ridgelines, escarpments, foreshores, coastal landforms and significant landmarks that are in both public and private ownership;
- (g) natural features such as creeks, gullies, waterways, wetlands, flora and fauna communities, habitats, vegetation and bushland are protected and buffered from activities in the zone and adjoining land uses;
- (h) development provides for infrastructure and services that are commensurate with the very limited range of small scale and low-key activities that are expected to occur in the zone. Such infrastructure and services are designed and operated to maintain public safety and environmental health; and
- (i) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.5 High impact industry zone code**

### **6.2.5.1 Application**

This code applies to assessable development:

- (a) within the High impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the High impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.5.2 Purpose and overall outcomes**

- (1) The purpose of the High impact industry zone code is to provide for high impact industry uses. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as high impact industry in the schedule of definitions.
- (2) The local government purpose of the High impact industry zone code is to provide for a range of Industry activities at a larger scale and higher intensity relative to the Medium impact industry zone.
- (3) The purpose of the High impact industry zone code will be achieved through the following overall outcomes:
  - (a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant offsite impacts, including medium impact industry and high impact industry uses;
  - (b) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, offices and service stations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities<sup>6</sup>;
  - (c) development of limited Community and Other activities, compatible with this zone may also be established. Such uses are limited to crematoriums, emergency services, air services, substations, telecommunications facilities and utility installations;
  - (d) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;
  - (e) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;
  - (f) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements, with a maximum building height of 20.0m above ground level where slopes are not greater than 15%;

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<sup>6</sup> Development within the High impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).



- (g) Industry activities positively contribute to the image of the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;
- (h) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment, and minimise impacts on non-industrial land and sensitive uses;
- (i) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (j) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network<sup>7</sup>;
- (k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (l) development is provided with the full range of urban services to support industry and employment needs, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (n) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>7</sup> Development within the High impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

## 6.2.6 Industry investigation zone code

### 6.2.6.1 Application

This code applies to assessable development:

- (a) within the Industry investigation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Industry investigation zone code by the tables of assessment in Part 5 (Tables of assessment).


### 6.2.6.2 Purpose and overall outcomes

- (1) The purpose of the Industry investigation zone code is to identify and protect land that may be suitable for Industry activities where further detailed planning, investigations and studies are required to determine the suitability of the Industry investigation zone for use as an industry zone.
- (2) The local government purpose of the Industry investigation zone code is to ensure that development is designed and coordinated to achieve Industry activities, being of a nature and scale of industry that is compatible with the surrounding area and provided with services and infrastructure.
- (3) The purpose of the Industry investigation zone code will be achieved through the following overall outcomes:
  - (a) prior to the granting of development approvals in accordance with local plan undertaken by the Council or approved State Development Area Development Schemes:
    - (i) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised; and
    - (ii) development avoids the sporadic or premature creation of additional lots<sup>8</sup>;
  - (b) development is undertaken in accordance with any local plan, prepared and approved master plan or a preliminary approval pursuant to the planning Act, demonstrating that:
    - (i) development occurs in accordance with any local planning undertaken by the Council, as specified in a local plan code;
    - (ii) unless otherwise specified in a local plan code, development within the zone co-ordinates with existing or future planned development through logical planning of the full extent of the Industry investigation zone and neighbouring communities<sup>9</sup>;
    - (iii) unless otherwise specified in a local plan code, development provides for a low-rise building form that is compatible with the character of the surrounding area, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;

<sup>8</sup> Development within the Industry investigation zone may be requested to provide a Development needs assessment report in accordance with PSP SC6.7 (Growth management).

<sup>9</sup> Development within the Industry investigation zone may be requested to provide a Structure plan in accordance with PSP SC6.7 (Growth management).

- (iv) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;
- (v) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (vi) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network;
- (vii) the scale, density and layout of development facilitates an efficient land use pattern that:
  - (A) is well connected to other parts of the urban fabric and planned future development; and
  - (B) encourages public transport accessibility and use;
- (viii) Industry activities are adequately separated from sensitive uses to minimise the likelihood of environmental harm or environmental nuisance occurring;
- (ix) development is sited having regard to its servicing capabilities in terms of transport, road, rail, proximity to sea and airports and other associated industries and work forces with the co-location of appropriate uses and infrastructure;
- (x) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within industry investigation areas and to existing urban areas;
- (xi) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (xii) conflicts with the existing or potential productive use of adjoining or adjacent non-industrial land are avoided or appropriately managed;
- (xiii) interim land uses and other development is predominantly limited to existing uses to ensure that the future potential of land to be used for urban purposes is not compromised;
- (xiv) development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services prior to, or in conjunction with, the initial stages of the development;
- (xv) the viability of both existing and future Industry activities are protected from the intrusion of incompatible uses;
- (xvi) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunications infrastructure;

- 
- (xvii) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
  - (xviii) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.7 Local centre zone code**

### **6.2.7.1 Application**

This code applies to assessable development:

- (a) within the Local centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Local centre zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.7.2 Purpose and overall outcomes**


- (1) The purpose of the Local centre zone code is to provide for a limited range of land uses and activities to service local needs. It includes local shopping, local employment nodes, commercial, cafes and dining, entertainment, community services and residential development where it can integrate and enhance the fabric of the activity centre, but it is not the predominant use.
- (2) The local government purpose of the Local centre zone code is to provide for a range of Business and Community activities that complement, but do not compete with, the role and function of higher order activity centres by meeting the convenience service needs of smaller rural or coastal townships or discrete residential areas and providing local employment opportunities. Local centres are developed as well-designed, safe and visually attractive centres, predominantly in a low-rise building format, where significant off-site impacts are avoided.
- (3) The purpose of the Local centre zone code will be achieved through the following overall outcomes:
  - (a) development provides for a range of Business activities that service the local level convenience needs of residents and surrounding tourism or primary production industries and offers locally-based employment opportunities. These uses include, but are not limited to food and drink outlets, offices, shops, shopping centres and veterinary services;
  - (b) development provides for a range of complementary Community activities in appropriate locations to encourage community interaction and support the health, safety and wellbeing of local residents. These uses include child care centres, community uses, emergency services and health care services;
  - (c) Recreation, Industry and Other activities may be established where they are compatible with the character and amenity of surrounding development. Such uses include indoor sport and recreation, service industries and utility installations;
  - (d) beyond existing uses, development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings, where such uses are ancillary to and support the predominant business functions of the zone;
  - (e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres<sup>10</sup>. For development in the Local centre zone, this includes consideration of the following:

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<sup>10</sup> Development within the District centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

- (i) the function and role of existing Business activities in the zone is maintained and not significantly expanded;
  - (ii) shopping centres have a maximum retail and commercial gross leasable area in the order of 1,500m<sup>2</sup>; and
  - (iii) higher order shopping facilities, including full-line supermarkets, department stores and discount department stores, are not established in the zone;
- (f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
  - (g) development incorporates a high standard of architecture, urban design and landscaping that creates an attractive and functional buildings, streets and places;
  - (h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;
  - (i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
  - (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
  - (k) development encourages public transport accessibility and use and also provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the centre;
  - (l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
  - (m) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>11</sup>;
  - (n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
  - (o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
  - (p) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected,

<sup>11</sup> Development within the Local centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).



and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.8 Low density residential zone code**

### **6.2.8.1 Application**

This code applies to assessable development:

- (a) within the Low density residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Low density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.8.2 Purpose and overall outcomes**

- (1) The purpose of the Low density residential zone code is to provide for predominantly dwelling houses supported by community uses and small-scale services and facilities that cater for local residents.
- (2) The local government purpose of the Low density residential zone code is to provide for predominantly low density, low-rise Accommodation activities on a range of lot sizes. Whilst primarily intended to accommodate dwelling houses, limited other Accommodation activities may also be established in the zone where compatible with the prevailing residential character and amenity.
- (3) The purpose of the Low density residential zone code will be achieved through the following overall outcomes:
  - (a) development provides for low density housing types, primarily in the form of dwelling houses that promote variety in housing size and choice;
  - (b) limited other Accommodation activities such as community residences, residential care facilities and retirement facilities may be established in the zone, where such uses are compatible with the prevailing scale and residential character of surrounding development;
  - (c) home based businesses that are compatible with local residential amenity may be established in the zone;
  - (d) development may provide for limited Business, Community and Other activities including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations which:
    - (i) directly support the day to day needs of the immediate residential community;
    - (ii) are a small-scale and low intensity;
    - (iii) are compatible with the local residential character and amenity of the area;
    - (iv) wherever possible, are co-located with similar activities within the zone;
    - (v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and
    - (vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation,



generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

- (e) development occurring in residential neighbourhoods takes place in a planned, orderly manner that promotes certainty and maintains a high level of residential amenity for existing residents in terms of the type, design and density of development that may occur over time;
- (f) development in the zone provides for an attractive, open and low density form of urban residential living that promotes a sense of character and community inclusion;
- (g) development provides for a range of lot sizes, except in specified locations where relatively larger lot sizes are maintained to protect the prevailing residential character and lower density of development;
- (h) to maintain the low intensity character and residential amenity of the zone, development has a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
- (i) the scale, density and layout of development facilitates an efficient land use pattern that:
  - (i) is well connected to other parts of the urban fabric and planned future development;
  - (ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and
  - (iii) encourages public transport accessibility and use;
- (j) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;
- (k) development incorporates a high level of residential amenity, personal health and safety and protection for property;
- (l) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;
- (m) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;
- (n) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (o) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>12</sup>;

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<sup>12</sup> Development within the Low density residential zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

- (p) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;
- (q) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (r) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (s) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (t) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.9 Low impact industry zone code**

### **6.2.9.1 Application**

This code applies to assessable development:

- (a) within the Low impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Low impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.9.2 Purpose and overall outcomes**

- (1) The purpose of the Low impact industry zone code is to provide for service and low impact industry uses. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as low impact industry or service industry in the schedule of definitions.
- (2) The local government purpose of the Low impact industry zone code is to provide for low intensity Industry activities being of a nature and scale that are compatible with intended development in the surrounding area.
- (3) The purpose of the Low impact industry zone code will be achieved through the following overall outcomes:
  - (a) uses in the zone are predominantly for low intensity, low impact Industry activities, including bulk landscape supplies, low impact industry, research and technology industry, service industry and warehouse uses;
  - (b) development of ancillary Accommodation activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;
  - (c) development of Business, Rural and Other activities which are not ancillary to, but are compatible with Industry activities, may be established in the zone. These uses include, but are not limited to agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities<sup>13</sup>;
  - (d) development of limited Community and Recreation activities, compatible with this zone may also be established. Such uses are limited to community uses, emergency services, funeral parlours and indoor sport and recreation;
  - (e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;
  - (f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;
  - (g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area,

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<sup>13</sup> Development within the Low impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

with a maximum building height of 10.0m above ground level, where slopes are not greater than 15%;

- (h) Industry activities positively contribute to the image of the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;
- (i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment, and minimise impacts on nonindustrial land and sensitive uses;
- (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (k) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network<sup>14</sup>;
- (l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (o) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>14</sup> Development within the Low impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

## **6.2.10 Low-medium density residential zone code**

### **6.2.10.1 Application**

This code applies to assessable development:

- (a) within the Low-medium density residential zone code as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Low-medium density residential zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.10.2 Purpose and overall outcomes**

- (1) The purpose of the Low-medium density residential zone code is to provide for a range and mix of dwelling types including dwelling houses and multiple dwellings supported by community uses and small-scale services and facilities that cater for local residents.
- (2) The local government purpose of the Low-medium density residential zone code is to provide for low-medium density Accommodation activities in a low to medium-rise format, comprising of a range of single and multiple residential uses for permanent residents.
- (3) The purpose of the Low-medium density residential zone code will be achieved through the following overall outcomes:
  - (a) development provides for a compatible mix of low and medium density residential dwelling choices and forms, predominantly for permanent living, including dwelling houses, dual occupancies and multiple dwellings (such as townhouses, villas, terraces and row houses);
  - (b) other low-medium density Accommodation activities such as community residence, relocatable home parks, residential care facilities, retirement facilities, short term accommodation and tourist parks may also be provided where their operation and scale is compatible with, and does not detract from, the intended residential character and amenity of the zone;
  - (c) home based businesses that are compatible with local residential amenity may be established in the zone;
  - (d) development may provide for limited Business, Community and Other activities including sales offices, shops (limited to corner stores), community uses, emergency services and utility installations which:
    - (i) directly support the day to day needs of the immediate residential community;
    - (ii) are a small-scale and low intensity;
    - (iii) are compatible with the local residential character and amenity of the area;
    - (iv) wherever possible, are co-located with similar activities within the zone;
    - (v) are accessible to the population they serve and are located on the major road network rather than local residential streets; and

- (vi) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation, generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;
- (e) residential development encourages and facilitates urban consolidation;
- (f) unless otherwise specified in a local plan code or Table 6.2.10.2.1 (Maximum building heights in Low-medium density residential zone), development has a low to medium rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 12.0m above ground level;

**Table 6.2.10.2.1 Maximum building heights in Low-medium density residential zone**

Low-medium density residential location	Maximum building height
Airlie Beach Precinct B	14m

- (g) the scale, density and layout of development facilitates an efficient land use pattern that:
  - (i) is well connected to other parts of the urban fabric and planned future development;
  - (ii) supports walkable neighbourhoods that are well connected to employment nodes, centres, open space and recreation areas, community services and educational opportunities; and
  - (iii) encourages public transport accessibility and use;
- (h) multi-storey development ensures that there is no unreasonable loss of amenity for surrounding development, having regard to:
  - (i) microclimate impacts, including the extent and duration of any overshadowing;
  - (ii) privacy and overlooking impacts;
  - (iii) impacts upon views and vistas; and
  - (iv) building massing and scale relative to its surroundings;
- (i) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;
- (j) development incorporates a high level of residential amenity, personal health and safety and protection for property;
- (k) communities are supported by interconnected open space networks and local centres incorporating attractive, comfortable, safe and convenient public spaces;
- (l) development provides for pedestrian and bicycle movement networks that maximise connectivity, permeability and ease of movement within emerging community areas and to existing urban areas;

- (m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (n) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>15</sup>;
- (o) development sensitively responds to scenic values and landscape character elements, particularly prominent ridgelines, foreshores, coastal landforms, significant landmarks, prominent stands of vegetation and rural and coastal views and vistas;
- (p) development avoids or mitigates adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location design, operation and management;
- (q) development is provided with the full range of urban services to support the needs of the community, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (s) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>15</sup> Development within the Low-medium density zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).

## **6.2.11 Major centre zone code**

### **6.2.11.1 Application**

This code applies to assessable development:

- (a) within the Major centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Major centre zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.11.2 Purpose and overall outcomes**

- (1) The purpose of the Major centre zone code is to provide for a mix of uses and activities. It includes concentrations of higher order retail, commercial, offices, residential, administrative and health services, community, cultural and entertainment facilities and other uses capable of servicing a subregion in the planning scheme area.
- (2) The local government purpose of the Major centre zone code is to accommodate a wide range of Business, Entertainment, Accommodation and Community activities in an active and vibrant mixed use environment. The scale and level of intensity of such development is consistent with the intended role and function of the Whitsunday hierarchy of centres.
- (3) The purpose of the Major centre zone code will be achieved through the following overall outcomes:
  - (a) development supports the role of the zone as the regional focus and location of the highest order and intensity of Business and Entertainment activities. Such uses include, but are not limited to food and drink outlets, offices, shops, shopping centres, clubs, function facilities, hotels, theatres and tourist attractions;
  - (b) development provides the highest order of Community activities to service the regional needs of the centre and to encourage community interaction, health and wellbeing. These Community activities include child care centres, community uses, educational establishments, emergency services, health care services and hospitals and places of worship;
  - (c) Recreation, Industry and Other activities such as indoor sport and recreation, service industries and utility installations may be established where they are compatible with the character and amenity of surrounding development;
  - (d) a mix of low-medium density Accommodation activities such as dual occupancies, multiple dwellings, rooming accommodation and short-term accommodation uses are provided that are complementary to the predominant business functions of the zone, with residential buildings incorporating non-accommodation activities at street level to activate the public realm;
  - (e) development of Business activities is of a scale and intensity that is consistent with the intended role and function of the particular activity centre and the Whitsunday hierarchy of centres<sup>16</sup>;

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<sup>16</sup> Development within the Major centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).



- (f) Development has a low to medium-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 12.0m above ground level;
- (g) development provides for an efficient pattern of land use where the greatest mix of uses and highest intensity of development is located in areas with relatively high levels of access to public transport facilities and all development has a clear connection to the pedestrian, bicycle, public transport and road transport networks and infrastructure;
- (h) wherever possible, Business and Community activities are co-located and designed to contribute to safety, security and vitality of the centre;
- (i) the built form and urban design of development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places in keeping with the primary role and focus of the zone as a major hub;
- (j) development contributes to the creation of an active, safe and legible public realm and, where appropriate, incorporates significant public open spaces including plazas, parks and gardens;
- (k) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;
- (l) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (n) development encourages public transport accessibility and use and also provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the centre;
- (o) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (p) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>17</sup>;
- (q) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
- (r) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

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<sup>17</sup> Development within the Major centre zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

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- (s) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.12 Medium impact industry zone code**

### **6.2.12.1 Application**

This code applies to assessable development:

- (a) within the Medium impact industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Medium impact industry zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.12.2 Purpose and overall outcomes**

- (1) The purpose of the Medium impact industry zone code is to provide for medium impact industry uses. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as medium impact industry in the schedule of definitions.
- (2) The local government purpose of the Medium impact industry zone code is to provide for a wide range of Industry activities at a larger scale and higher intensity relative to the Low impact industry zone.
- (3) The purpose of the Medium impact industry zone code will be achieved through the following overall outcomes:
  - (a) uses in the zone are predominantly for low to medium intensity and low to medium impact Industry activities, including bulk landscape supplies, low impact industry, medium impact industry, research and technology industry, service industry and warehouse uses;
  - (b) development of ancillary Accommodation may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation;
  - (c) development of Business, Rural and Other activities which are not ancillary to, but are compatible with, Industry activities, may be established in the zone. These uses include, but are not limited to agricultural supplies stores, hardware and trade supplies, offices, outdoor sales, showrooms, rural industries, transport depots, transport depots and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities<sup>18</sup>;
  - (d) development of limited Community activities, compatible with this zone may also be established. Such uses are limited to crematoriums, emergency services and funeral parlours;
  - (e) existing and planned Industry activities are protected from the intrusion of incompatible uses that may compromise or conflict with the primary use of premises for industry purposes;
  - (f) development provides for a range of lot sizes to cater for varying industry needs and user requirements;
  - (g) development has a predominantly low-rise built form that is sympathetic to the intended scale and character of the streetscape and surrounding area,

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<sup>18</sup> Development within the Medium impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

with a maximum building height of 15.0m above ground level where slopes are not greater than 15%;

- (h) Industry activities positively contribute to the image of the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;
- (i) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment, and minimise impacts on nonindustrial land and sensitive uses;
- (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (k) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network<sup>19</sup>;
- (l) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (m) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (o) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>19</sup> Development within the Medium impact industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

## **6.2.13 Mixed use zone code**

### **6.2.13.1 Application**

This code applies to assessable development:

- (a) within the Mixed use zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Mixed use zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.13.2 Purpose and overall outcomes**

- (1) The purpose of the Mixed use zone code is to provide for a mixture of development that may include business, retail, and residential, tourist accommodation and associated services, service industry and low impact uses.
- (2) The local government purpose of the Mixed use zone code is to provide for an appropriate mix of uses that take advantage of and support the development of key mixed use activity areas.
- (3) The purpose of the Mixed use zone code will be achieved through the following overall outcomes:
  - (a) development provides for a range of activities that are compatible with the intent of the zone;
  - (b) Community and Other activities established in the zone are appropriately designed and located to assist in maintaining public health, contribute to the comfort and safety of residents and visitors, and integrate with the built form and character of the zone. Such uses include community uses, emergency services, health care services and utility installations;
  - (c) the range, scale, and intensity of Business, Recreation and Entertainment activities provided within this zone service the needs of surrounding residents and visitors, not compromising the role and function of existing centres within the region. These activities include but are not limited to food and drink outlets, offices, shops, indoor sport and recreation, bars, clubs, hotels, nightclub entertainment facilities and tourist attractions;
  - (d) development provides for a range of Accommodation activities consistent with the mixed use environment intended in this zone. Such Accommodation activities include multiple dwellings, resort complexes, rooming accommodation and short term accommodation;
  - (e) the scale, character and built form of development contributes to a high standard of amenity in keeping with the intended role and function of the particular precinct<sup>20</sup>;
  - (f) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;
  - (g) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;

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<sup>20</sup> Development within the Mixed use zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

- (h) unless otherwise specified in a local plan code or Table 6.2.13.2.1 (Maximum building heights in Mixed use zone), development has a low to medium rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 12.0m above ground level;

**Table 6.2.13.2.1 Maximum building heights in Mixed use zone**

Mixed use location	Maximum building height
Airlie Beach Precinct A	14m
Airlie Beach Precinct C	21m
Airlie Beach Precinct F	18m
Airlie Beach Precinct G	14m

- (i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (k) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>21</sup>;
- (l) development encourages public transport accessibility and use and provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the zone;
- (m) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
- (n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (o) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

<sup>21</sup> Development within the Mixed use zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

## **6.2.14 Neighbourhood centre zone code**

### **6.2.14.1 Application**

This code applies to assessable development:

- (a) within the Neighbourhood centre zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Neighbourhood centre zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.14.2 Purpose and overall outcomes**

- (1) The purpose of the Neighbourhood centre zone code is to provide for a small mix of land uses to service residential neighbourhoods. It includes small-scale convenience shopping, professional offices, community services and other uses that directly support the immediate community.
- (2) The local government purpose of the Neighbourhood centre zone code is to provide for a limited range of small-scale Business and Community activities that support the basic convenience needs of local neighbourhoods.
- (3) The purpose of the Neighbourhood centre zone code will be achieved through the following overall outcomes:
  - (a) development provides for the convenience and day-to-day Business needs of localised residential catchments, with uses including small-scale food and drink outlets, offices and shops;
  - (b) Community, Industry and Other activities such as child care centres, community uses, emergency services, service industries and utility installations may be established in the zone where they are compatible with the amenity of surrounding residential development;
  - (c) development provides for a limited range of Accommodation activities, including caretaker's accommodation, dual occupancies and multiple dwellings where such uses are ancillary to and support the predominant business functions of the zone;
  - (d) Business and Community activities are of a small-scale and limited intensity to maintain and reinforce the role and function of higher order activity centres as the preferred location for Business activities in the region as demonstrated in the Whitsunday hierarchy of centres;
  - (e) development of Business activities in the Neighbourhood centre zone includes consideration of the following:
    - (i) the function and role of existing Business activities in the zone is maintained<sup>22</sup>;
    - (ii) any commercial or retail component of development does not exceed 150m<sup>2</sup>; and
    - (iii) site cover of the entire development does not exceed 50%;

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<sup>22</sup> Development within the Neighbourhood centre zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

- (f) development has a low-rise built form that is compatible with the intended scale and character of the streetscape and surrounding area, with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
- (g) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;
- (h) development provides an active and articulated streetscape allowing for casual surveillance and pedestrian access from the street, with demonstrated connectivity to surrounding land uses;
- (i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (j) development encourages public transport accessibility and use and also provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to the centre;
- (k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (l) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>23</sup>;
- (m) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (n) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
- (o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (p) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>23</sup> Development within the Neighbourhood centre zone may be requested to provide a Traffic assessment report in accordance with PSP SC6.7 (Growth management).



## **6.2.15 Recreation and open space zone code**

### **6.2.15.1 Application**

This code applies to assessable development:

- (a) within the Recreation and open space zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Recreation and open space zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.15.2 Purpose and overall outcomes**

- (1) The purpose of the recreation and open space zone code is to provide for a range of sporting, recreation, leisure, cultural and educational activities. It may provide for local, district and regional scale parks that serve the recreation needs of residents and visitors and may include areas for conservation. Areas such as parks, playing fields and playgrounds are generally accessible to the public; however, access may be limited in certain areas at certain times. When required to meet community needs, development may include built structures, such as shelters, amenity facilities, picnic tables, clubhouses, gymnasiums, public swimming pools and tennis courts, and other infrastructure to support the activities, provide safe access and support the management of these essential built structures.
- (2) The local government purpose of the Recreation and open space zone code is to provide for Recreation activities, open space and park functions, and ancillary uses and infrastructure which are associated with the public use of those areas.
- (3) The purpose of the Recreation and open space zone code will be achieved through the following overall outcomes:
  - (a) development provides for a range of passive and active Recreation activities that provide for the recreational needs of residents and visitors, including indoor/outdoor sport and recreation and park uses. The zone accommodates both formal and informal Recreation activities including playing fields, equestrian facilities, outdoor cultural activities, educational activities, public swimming pools and outdoor courts;
  - (b) development may provide for limited other Community and Entertainment activities where they provide support for the predominant Recreation activity. Such uses include community uses, emergency services, clubs and function facilities as well as further supporting infrastructure such as amenities blocks, shelters, spectator stands and picnic tables. Lighting infrastructure may be established in the zone where it supports the ongoing safe, comfortable and efficient operation of Recreation activities;
  - (c) recreation and open space areas may be used for temporary or periodical Business activities, such as markets or outdoor entertainment events, where these uses are of a scale that can be reasonably accommodated by the existing recreation and open space facilities and do not unduly impact on the amenity and character of the surrounding area;
  - (d) to maintain the intended character and amenity of the zone, development integrates with and compliments the streetscape and has a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;

- (e) development in the zone encourages personal safety and property security through the design of buildings and spaces, allowing for casual surveillance and the clear definition of public and private spaces;
- (f) the co-location and multiple use of sport and recreation fields and facilities by complementary Recreation activities is encouraged;
- (g) areas used for Recreation activities and open space complement and, where possible, are connected to other parts of the broader regional open space network including land included in the Environmental management and conservation zone;
- (h) development in the zone provides a high level of amenity and mitigates the potential for land use conflicts with existing and planned development in the locality;
- (i) existing and planned Recreation activities and open space areas are protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of premises for recreation and open space purposes;
- (j) foreshores provide high quality recreation areas, and are protected from further encroachment by incompatible development;
- (k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through location, design, operation and management;
- (l) development encourages public transport accessibility and use and provides for pedestrian, bicycle and vehicular movement networks that maximise connectivity, permeability and ease of movement within and to sport and recreation open space areas;
- (m) development is provided with an appropriate level of services and infrastructure that maintains public health, ensures the safety of buildings and works and avoids negative impacts on the natural environment;
- (n) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (o) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.16 Rural zone code**

### **6.2.16.1 Application**

This code applies to assessable development:

- (a) within the Rural zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Rural zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.16.2 Purpose and overall outcomes**

- (1) The purpose of the Rural zone code is to:
  - (a) provide for a wide range of rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;
  - (b) provide opportunities for non-rural uses that are compatible with agriculture, the environment, and the landscape character of the rural area where they do not compromise the long term use of the land for rural purposes; and
  - (c) protect and manage significant natural features, resources, and processes, including the capacity for primary production.
- (2) The local government purpose of the Rural zone code is to provide for a wide range of Rural activities and a limited range of non-rural activities which complement or provide a service to rural areas. Activities in rural areas are sustainably managed to protect, maintain, and enhance the productivity, character, visual amenity and ecological sustainability of the area.
- (3) The purpose of the Rural zone code will be achieved through the following overall outcomes:
  - (a) development provides for a broad range of Rural activities, including animal husbandry, cropping, roadside stalls and wholesale nurseries, animal keeping, aquaculture, intensive animal industry, intensive horticulture and rural industry provided that adverse environmental and amenity impacts are avoided or appropriately managed;
  - (b) permanent Accommodation activities are limited to dwelling houses and caretaker's accommodation on existing lots. Home based businesses, nature-based tourism, rural workers accommodation and tourist parks may also be established where the scale, intensity and nature of the use complements Rural activities and promotes the sustainable use of rural land;
  - (c) Business, Industry and Community activities that are compatible with a rural setting and support rural enterprise and community wellbeing are facilitated where they do not compromise the use of the land for Rural activities. Such uses include agricultural supply stores, veterinary services, bulk landscaping supplies, community uses and emergency services;
  - (d) non-rural activities are located, designed and operated to minimise conflicts with existing and future Rural activities on the surrounding rural lands;

- (e) intensive Rural activities are not located adjacent to sensitive uses, and are designed and operated to maintain the rural character and amenity of the zone;
- (f) development encourages the continued operation of existing agri-business and continued development of new agri-business opportunities;
- (g) development for extractive industry is appropriately designed, operated and managed to minimise significant nuisance and environmental impacts on surrounding premises;
- (h) development does not alienate or fragment agricultural land unless:
  - (i) there is an overriding need for the development in terms of public benefit; and
  - (ii) no other site is suitable for the particular purpose;
- (i) the built form of development in the zone integrates with and complements the predominant rural character and scale of the zone, and sensitively responds to the environmental and topographical features of the landscape. Development is not to occur on land with a slope greater than 15%;
- (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (k) development is provided with an appropriate level of services and infrastructure that maintains public health, ensures the safety of buildings and works and avoids negative impacts on the natural environment;
- (l) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (m) the safety and efficiency of existing and future infrastructure (i.e. road, rail, telecommunications and electrical infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.17 Rural residential zone code**


### **6.2.17.1 Application**

This code applies to assessable development:

- (a) within the Rural residential zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Rural residential zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.17.2 Purpose and overall outcomes**

- (1) The purpose of the Rural residential zone code is to provide for residential development on large lots where local government infrastructure and services may not be provided and where the intensity of residential development is generally dispersed.
- (2) The local government purpose of the Rural residential zone code is to ensure that development is low density and semi-rural in nature, developed as a logical extension, infill or consolidation of existing rural residential zoned land. These areas occur on land considered unsuitable for agricultural production with Rural activities limited to small-scale activities that do not impact on the rural residential amenity of the zone.
- (3) The purpose of the Rural residential zone code will be achieved through the following overall outcomes:
  - (a) development provides for low density Accommodation activities, in the form of dwelling houses on a range of relatively large lots within a semi-rural setting. Home based businesses may be established in the zone where the scale, intensity and nature of the activity does not disturb the rural residential character and amenity of the surrounding locality;
  - (b) Rural, Business and Community activities are limited to small-scale and low intensity uses that are compatible with the prevailing rural residential character and amenity of the zone. Such uses are limited to animal husbandry, cropping, roadside stalls, sales offices, community uses and emergency services;
  - (c) to maintain the low intensity character and rural residential amenity of the zone, development has a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
  - (d) the built form of development integrates with and complements the predominant rural residential character and scale of the zone, and is sympathetic to the environmental and topographical features of the landscape;
  - (e) development for Accommodation activities adjacent to rural land does not interfere with the existing or ongoing use of the rural land for productive agricultural purposes;
  - (f) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;

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- (g) development is provided with an appropriate level of services and infrastructure that maintains public health, ensures the safety of buildings and works and avoids negative impacts on the natural environment; and
  - (h) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.18 Special industry zone code**

### **6.2.18.1 Application**

This code applies to assessable development:

- (a) within the Special industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Special industry zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.18.2 Purpose and overall outcomes**

- (1) The purpose of the Special industry zone code is to provide for specialised industry uses including those that are noxious and hazardous. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long-term use of the land for industrial purposes. Activities considered appropriate in this zone are defined as special industry in the schedule of definitions;
- (2) The local government purpose of the Special industry zone is to provide for existing and future large scale, high intensity industry which has the potential to significantly impact sensitive uses;
- (3) The purpose of the Special industry zone code will be achieved through the following overall outcomes:
  - (a) uses in the zone are predominantly for higher intensity, higher impact Industry activities that have the potential to generate significant offsite impacts including high impact industry and special industry uses;
  - (b) development of limited Accommodation, Community and Other activities compatible with this zone may also be established. These uses are limited to caretaker's accommodation, emergency services, substations, telecommunications facilities and utility installations. Such uses must be appropriately located and designed to ensure that they do not compromise the ongoing operation and viability of Industry activities<sup>24</sup>;
  - (c) development provides for a range of lot sizes, including an appropriate proportion of larger lots to cater for larger format and land consumptive Industry activities;
  - (d) development has a built form that is compatible with the intended scale and character of the streetscape and surrounding area whilst accommodating industry operating requirements, with a maximum building height of 20.0m above ground level where slopes are not greater than 15%;
  - (e) Industry activities positively contribute to the image of the locality by providing a high quality of built form and landscaping in keeping with the expectations of a modern, safe, and attractive industrial environment;
  - (f) the viability of both existing and future noxious and hazardous Industry activities are protected from the intrusion of incompatible uses;
  - (g) uses and works for noxious and hazardous industrial purposes are located, designed and managed to maintain safety to people, avoid significant adverse effects on the natural environment and minimise impacts on adjacent

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<sup>24</sup> Development within the Special impact industry zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

non-industrial land having regard to the inherent risks associated with these types of industries;

- (h) Accommodation activities are not located within close proximity to the Industry activities in the zone;
- (i) any sensitive uses located in the Special industry zone do not compromise the viability of both existing and future Industry activities;
- (j) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (k) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network<sup>25</sup>;
- (l) development is provided with the full range of urban services to support industry and employment needs including reticulated water, sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;
- (m) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (n) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

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<sup>25</sup> Development within the Special industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).



## **6.2.19 Tourist accommodation zone code**

### **6.2.19.1 Application**

This code applies to assessable development:

- (a) within the Tourist accommodation zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Tourist accommodation zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.19.2 Purpose and overall outcomes**

- (1) The purpose of the Tourist accommodation zone code is to provide for short-term accommodation in locations where there is a strong focus on tourist attractions supported by community uses and small-scale services and facilities.
- (2) The local government purpose of the Tourist accommodation zone code is to provide development that meets the needs and expectations of visitors to the region through the co-location of a range of Accommodation and Business activities.
- (3) The purpose of the Tourist accommodation zone code will be achieved through the following overall outcomes:
  - (a) development provides for Accommodation activities, primarily in the form of relocatable home parks, resort complexes, rooming accommodation, short term accommodation and tourist parks that promote variety in visitor accommodation;
  - (b) development facilitates opportunities for establishing tourist facilities and services in urban, rural, environmental or coastal areas to complement tourist accommodation and enhance the attractiveness of tourist areas;
  - (c) development may provide for limited Business, Community and Other activities including food and drink outlets, shops, community uses, emergency services and utility installations which:
    - (i) directly support the day to day needs of the immediate visitors and residential community;
    - (ii) are a small-scale and low intensity;
    - (iii) are compatible with the local residential character and amenity of the area;
    - (iv) wherever possible, are co-located with similar activities within the zone;
    - (v) are accessible to the population they serve and are located on the major road network rather than local residential streets;
    - (vi) do not undermine the viability of nearby centres<sup>26</sup>;
    - (vii) do not have a significant detrimental impact on the amenity of surrounding residents, having regard to hours of operation,

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<sup>26</sup> Development within the Tourist accommodation zone may be requested to provide an Economic impact assessment report in accordance with PSP SC6.7 (Growth management).

generation of odours, noise, waste products, dust, traffic, electrical interference, lighting and visual impacts;

- (d) to maintain the low intensity character and residential amenity of the zone, development has a low-rise built form with a maximum building height of 8.5m above ground level, or 10.0m above ground level where located on slopes exceeding 15%;
- (e) development enhances and protects the unique local, scenic, environmental, cultural or historic character of the locality;
- (f) development is facilitated where it has a direct relationship with local scenic, environmental, recreational, cultural or historic character;
- (g) development is designed and located in a manner which makes a positive contribution to the streetscape and is sympathetic to the intended scale and character of surrounding development;
- (h) development incorporates a high level of residential amenity, personal health and safety and protection for property;
- (i) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (j) development is generally located close to centres, community facilities and open space, and is supported by transport infrastructure that is designed to provide and promote safe and efficient public transport use, walking and cycling;
- (k) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (l) development demonstrates an appropriate level of transport infrastructure is available and that development will not unreasonably interfere with the safe and efficient operation of the surrounding road network<sup>27</sup>;
- (m) development is reflective of, and responsive to, the environmental constraints of the land;
- (n) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) that form the basis of the tourist attraction. Any unavoidable impacts are minimised through sensitive location, design, operation and management;
- (o) development is provided with an appropriate level of services and infrastructure that maintains public health, ensures the safety of buildings and works and avoids negative impacts on the natural environment;
- (p) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and

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<sup>27</sup> Development within the Tourist accommodation zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).

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- (q) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## **6.2.20 Waterfront and marine industry zone code**

### **6.2.20.1 Application**

This code applies to assessable development:


- (a) within the Waterfront and marine industry zone as identified on the zoning maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Waterfront and marine industry zone code by the tables of assessment in Part 5 (Tables of assessment).

### **6.2.20.2 Purpose and overall outcomes**

- (1) The purpose of the Waterfront and marine industry zone code is to provide for waterfront and marine and business industry uses for which a location adjoining or near the waterfront is essential. It may include non-industrial and business uses that support the industrial activities where they do not compromise the long term use of the land for industrial purposes.
- (2) The local government purpose of the Waterfront and marine industry zone code is to provide a dedicated area for the establishment of waterfront and marine Industry activities as well as a limited range of non-industry activities that are allied and compatible with waterfront and marine industry.
- (3) The purpose of the Waterfront and marine industry zone code will be achieved through the following overall outcomes:
  - (a) the Waterfront and marine industry zone is predominantly used for marine industry uses, including ship and boat building, marine equipment manufacturing, marine and maritime service providers, storage, marine vessel refitting and marine vessel maintenance operations;
  - (b) other Industry activities may be established in the zone where they require access to a navigable waterway or provide support or complementary services to marine industry uses;
  - (c) development of ancillary Accommodation and Business activities may be established only where directly supporting the ongoing Industry activities of the zone. These uses are limited to caretaker's accommodation, food and drink outlets, outdoor sales and service station;
  - (d) Rural and Other activities may also be established in the zone where they are ancillary to and directly support the ongoing viability and operation of marine industry uses. These uses include rural industries (i.e. wholesale and distribution of seafood products), aquaculture, landings and port services;
  - (e) compatible non maritime uses should be co-located within the site allowing for good pedestrian access and permeability;
  - (f) the zone is protected from the intrusion of incompatible land uses that may compromise or conflict with the primary use of premises for Industry activities;
  - (g) the first stage of development incorporates a single integrated area for marine services and repair infrastructure for use by all existing and future operators located in the zone, comprising of:
    - (i) a canal basin;

- (ii) a boat ramp into the canal basin;
  - (iii) a straddle lift for vessels up to 30m in length;
  - (iv) hardstand area (with a minimum area of approximately 2 hectares);
  - (v) equipment for the removal, treatment and disposal of sewage and other solid and liquid waste from vessels, including bilge water;
  - (vi) equipment for the removal and storage of fuel from vessels;
  - (vii) a vessel wash down facility designed and constructed to industry best practice standards;
  - (viii) a location for an enclosed pressure sand blasting and painting facility; and
  - (ix) a waste treatment system for the containment, treatment and removal of waste materials from blasting, painting and surface coating activities. The waste treatment system must be located so that influx of tidal waters is prevented;
- (h) development has a built form that meets the functional needs of marine industry uses and is also sympathetic to the non-urban character and amenity of the surrounding area, with a maximum building height above ground level of:
- (i) 20.0m for buildings and structures used for the manufacturing, servicing or repair of vessels; and
  - (ii) 12.5m for all other buildings and structures;
- (i) development incorporates high quality urban design and landscaping to create an attractive, functional and legible waterfront industry precinct;
- (j) development ensures that uses and works for industrial purposes are located, designed and managed to maintain public health and safety, avoid significant adverse effects on the natural environment, and minimise impacts on nonindustrial land and sensitive uses;
- (k) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (l) Industry activities have access to the appropriate level of transport infrastructure, including encouragement of public and active transport accessibility and use, and do not interfere with the safe and efficient operation of the surrounding road network<sup>28</sup>;
- (m) vehicle movement networks are provided that facilitate convenient connections to centres and Community activities, in a manner that relieves traffic pressure on the Bruce Highway and Shute Harbour Road through the use of alternative routes;
- (n) development is provided with the full range of urban services to support industry and employment needs, including parks, reticulated water,

<sup>28</sup> Development within the Waterfront and marine industry zone may be requested to provide a Traffic impact assessment report in accordance with PSP SC6.7 (Growth management).



sewerage, stormwater drainage, sealed roads, pathways, electricity and telecommunication infrastructure;

- (o) development is located and designed to maximise the efficient extension and safe operation of infrastructure; and
- (p) the safety and efficiency of existing and future infrastructure (i.e. road, rail, pipelines, telecommunications and transmission infrastructure) is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure.

## Contents of Part 7

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## Tables in Part 7

Table 7.2.2.3.1 Benchmarks for acceptable and assessable development

## Maps in Part 7

Local plan - HILP - 01 (Heights plan)

## Part 7 Local plans

### 7.1 Preliminary

- (1) Local plans address matters at the local or district level and may provide more detailed planning for the zones.
- (2) Local plans are mapped and included in Schedule 2 (Mapping).
- (3) A precinct may be identified for part of a local plan.
- (4) The categories of development and assessment for development in a local plan are in Part 5 (Tables of assessment).
- (5) Assessment benchmarks for local plans are contained in a local plan code.
- (6) Each local plan code identifies the following:
  - (a) the application of the local plan code
  - (b) the purpose of the local plan code
  - (c) the overall outcomes that achieve the purpose of the local plan code;
  - (d) the purpose and overall outcomes for each precinct
  - (e) the performance outcomes that achieve the overall outcomes of the local plan code
  - (f) the acceptable outcomes that achieve the performance outcomes of the local plan code
  - (g) the performance and acceptable outcomes of a precinct that achieve the overall outcomes of the precinct.
- (7) The following are the local plan codes for the planning scheme:
  - (a) Hamilton island local plan



## **7.2 Local plan codes**

### **7.2.1 Hamilton island local plan code**

#### **7.2.1.1 Application**

This code applies to acceptable and assessable development within the Hamilton island local plan as identified on the zoning maps contained within Schedule 2 (Mapping).

Note – Applicants should seek guidance from Hamilton Island Enterprises prior to lodging a development application.

Editor's note – To the extent any inconsistency between the Hamilton island local plan code and any other part of the Planning scheme, the Hamilton island local plan code prevails.

#### **7.2.1.2 Purpose and overall outcomes**

- (1) The purpose of the Hamilton island local plan code is to provide a development framework that facilitates growth to sustain and strengthen the tourist centre of Hamilton Island, while retaining its valuable natural assets.
- (2) The purpose of the Hamilton island local plan code will be achieved through the following overall outcomes:
  - (a) Hamilton Island provides for an integrated tourist resort community, comprising Hamilton and Dent Islands;
  - (b) Dent Island functions as an integrated part of Hamilton Island;
  - (c) Dent Island provides low impact, small scale resort Accommodation and Recreational activities, which is less intensively developed than Hamilton Island;
  - (d) Hamilton Island's role and use as an offshore gateway to the Whitsunday Islands is maintained and enhanced;
  - (e) development does not compromise the ongoing operation of existing tourist facilities and attractions with uses contributing to the vitality and experience of Hamilton Island as a tourist destination, residential community and a cultural focal point;
  - (f) development provides for a clusters of appropriately located low and low-medium density Accommodation activities in both traditional neighbourhood and mixed use formats, providing for and supporting the residential and tourist function of the island, optimising premium hillside views to the ocean and maintaining the privacy of existing residential sites;
  - (g) development is located on ridgelines and vegetated gullies to remain generally recessive through existing vegetation and foreshore features as viewed from surrounding marine waters by way of suitable aesthetic building design, treatments and colours;
  - (h) development for Business, Entertainment, Recreation activities provide for both resident and visitor needs and support day and night time economies, being established where they are compatible with the character and amenity of surrounding development, optimise public accessibility to and visibility of waterfront areas and natural features or support marina functions and provide services to boats and boat users;
  - (i) development of Community, Industry and Other activities may be established where they support tourist, marina or aviation functions and services, and are

compatible with the scale, nature, character and amenity of surrounding development;

- (j) the character and individual identity of each development, evident in the style of buildings, landscaping and views to (and from) the surrounding waterbodies and natural features/landscapes is maintained;
- (k) development incorporates a high standard of architecture, urban design and landscaping that creates attractive and functional buildings, streets and places;
- (l) development provides for a built form that is predominately low-rise and compatible in theme, scale and character with the existing or desired form of development within the island;
- (m) development provides for an architectural character which reflects an open and relaxed lifestyle centred on the outdoors and designed to be responsive to the tropical maritime climate and environment;
- (n) development provides and maintains a high level of residential and visitor amenity;
- (o) development is linked by a series of circulation and open space networks that are designed to provide pedestrian, cyclists and other resort transport modes with direct, integrated, safe and pleasant access to centres, waterfront, marina and recreation activities;
- (p) development is located, designed and operated in a manner that does not unreasonably impact on the amenity of surrounding premises, having regard to matters such as traffic, noise, lighting, waste, fumes, odours, hours of operation, privacy, overlooking and public health and safety;
- (q) the tourism and recreation significance and the environmental and landscape values of Hamilton Island is recognised and protected with the accessibility of the surrounding marine and national parks (or other areas of conservation or scenic value) maintained for visitors and residents;
- (r) development avoids or mitigates any adverse impacts on areas of cultural heritage significance or environmental significance (including creeks, gullies, waterways, wetlands, coastal areas, habitats and vegetation) through sensitive location, design, operation and management;
- (s) development is provided with the full range of urban services, including reticulated water, sewerage, stormwater drainage, sealed roads, electricity and telecommunications infrastructure;
- (t) development is located and designed to maximise the efficient extension and safe operation of infrastructure;
- (u) the safety and efficiency of existing and future infrastructure is protected, and the amenity and safety of development is not adversely affected by proximity to such infrastructure; and
- (v) risks to people and property as a result of bushfire, coastal and landslide hazards are considered. Development should only be carried out in hazard areas where it is demonstrated that impacts are suitably avoided and managed.

### **7.2.1.3 Assessment benchmarks**

**Table 7.2.1.3.1 Benchmarks for acceptable and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>All zones</b>			
<b>Minimum lot size</b>			
<b>PO1</b>	Reconfiguring a lot provides for the size, dimensions and orientation of lots to: <ul style="list-style-type: none"> <li>(a) be appropriate for their intended use;</li> <li>(b) be compatible with the existing or preferred character and identity of the zone and local area in which the land is located;</li> <li>(c) provide for the efficient use of for appropriate, landscaping, convenient vehicle access and manoeuvrability and on-site parking;</li> <li>(d) provide for the efficient use of land whilst including sufficient area for suitable and useable private open space; and</li> <li>(e) take account of and respond sensitively to site constraints.</li> </ul>	<b>AO1.1</b>	Land is retained in lots with a minimum lot size of: <ul style="list-style-type: none"> <li>(a) 500m<sup>2</sup> within the Mixed use zone;</li> <li>(b) 1,000m<sup>2</sup> within the Low density residential zone;</li> <li>(c) 500m<sup>2</sup> within the Low-medium density residential zone; and</li> <li>(d) 1,000m<sup>2</sup> within the Low impact industry zone.</li> </ul>
<b>Built form</b>			
<b>PO2</b>	The height of a building does not unduly: <ul style="list-style-type: none"> <li>(a) overshadow adjoining dwellings; or</li> <li>(b) obstruct the outlook from adjoining lots; or</li> <li>(c) dominate the intended streetscape character.</li> </ul>	<b>AO2.1</b>	Development has a maximum building height: <ul style="list-style-type: none"> <li>(a) consistent with that provided in Local plan - HILP - 01 (Hamilton island local plan: Heights plan); or</li> <li>(b) where not specified in the Local plan - HILP - 01 (Hamilton island local plan: Heights plan): <ul style="list-style-type: none"> <li>(i) 8.5m above ground level, or</li> <li>(ii) 10.0m above ground level where located on slopes exceeding 15%.</li> </ul> </li> </ul>
		<b>AO2.2</b>	The maximum building height of a garage, carport or shed is: <ul style="list-style-type: none"> <li>(a) 4.5m above ground level to the highest point; and</li> <li>(b) 3.6m to the eaves.</li> </ul>
<b>PO3</b>	Development is sited and designed so as to: <ul style="list-style-type: none"> <li>(a) provide amenity for users of the premises whilst preserving the privacy and amenity of adjoining and nearby properties;</li> <li>(b) preserve any existing vegetation that will buffer the proposed building;</li> <li>(c) allow for landscaping to be provided between buildings</li> </ul>	<b>AO3.1</b>	For dwelling houses and dual occupancy buildings the: <ul style="list-style-type: none"> <li>(a) front boundary is setback a minimum of 3m; and</li> <li>(b) rear boundary is setback a minimum of: <ul style="list-style-type: none"> <li>(i) 6m; or</li> <li>(ii) 3m where the lot backs onto Recreation and open space or non-residential areas;</li> </ul> </li> <li>(c) side boundaries are setback:</li> </ul>

Performance Outcomes		Acceptable Outcomes							
	and street frontages and between neighbouring buildings; and (d) maintain the visual continuity and pattern of buildings and landscape elements within the street.		(i) a minimum of 3m for lots 550m <sup>2</sup> or less; or (ii) a minimum of 4m for lots greater than 550m <sup>2</sup> .						
		<b>AO3.2</b>	For all other Accommodation activities the: (a) front boundary is setback a minimum of: (i) 6m from the primary road frontage; or (ii) 3m where fronting an internal private road; and (iii) side and rear boundaries are setback a minimum of 4m.						
		<b>AO3.3</b>	For Accommodation activities fronting a waterbody (including ocean), buildings are setback a minimum of 20m from the waterbody.						
		<b>AO3.4</b>	The integrity of natural vegetation and ground is retained and left predominantly undisturbed In boundary setback areas.						
<b>PO4</b>	Buildings are sited and designed so as to: (a) provide adequate building separation distance from adjoining uses; and (b) optimise visual permeability of the built form.	<b>AO4.1</b>	New buildings or any new building levels are separated from any existing building in the following manner: (a) habitable rooms in any new building is separated from any existing building in accordance with the table below: <table border="1"> <tr><td>Building height</td></tr> <tr><td>7m</td></tr> <tr><td>12</td></tr> </table> (b) non-habitable rooms in an existing building is separated from the existing building in accordance with the table below: <table border="1"> <tr><td>Building height</td></tr> <tr><td>7m</td></tr> <tr><td>9m</td></tr> </table>	Building height	7m	12	Building height	7m	9m
Building height									
7m									
12									
Building height									
7m									
9m									
<b>PO5</b>	The building is sited and designed to: (a) provide a visibly clear pedestrian entrance to and from the building; and (b) minimise the potential for pedestrian and vehicular conflict.	<b>AO5.1</b>	The building is sited and designed such that: (a) the main pedestrian entrance to the building (or group of buildings) is located on the primary street frontage; and (b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned.						
<b>PO6</b>	Buildings are sited and designed in a manner which: (a) minimises visual bulk and	<b>AO6.1</b>	The building incorporates most or all of the following design features:						

Performance Outcomes		Acceptable Outcomes	
	<p>scale of the building mass;</p> <p>(b) provides visual interest through building articulation and architectural design features; and</p> <p>(c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape where required.</p>		<p>(a) vertical and horizontal articulation such that no unbroken elevation is longer than 15m; or</p> <p>(b) variations in plan shape, such as curves, steps, recesses, projections or splays; or</p> <p>(c) variations in the treatment and patterning of windows, sun protection and shading devices, or other elements of a facade treatment at a finer scale than the overall building structure; or</p> <p>(d) balconies, verandahs or terraces; or</p> <p>(e) planting, particularly on podiums, terraces and low level roof decks.</p>
		<b>AO6.2</b>	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		<b>AO6.3</b>	Roof forms include pitches or skillions with a substantial portion of the roof plane parallel to the ground slope.
<b>Privacy and amenity</b>			
<b>PO7</b>	Development does not unreasonably impact upon the amenity or environmental quality of its environs and especially any nearby sensitive uses.	<b>AO7.1</b>	<p>Undesirable visual, noise and odour impacts on public spaces and sensitive uses, are avoided or reduced by:</p> <p>(a) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards; and</p> <p>(b) providing an enclosed, roofed, vermin and fauna proof refuse area, incorporating cross ventilation, enclosing doors and located at driveway entries.</p>
<b>PO8</b>	<p>Fencing ensures the protection of new landscaping and existing vegetation from indigenous and introduced fauna and is designed having regard to:</p> <p>(a) privacy and overlooking;</p> <p>(b) views and vistas;</p> <p>(c) building character and appearance; and</p> <p>(d) safety and surveillance of street and entry areas, the natural landscape.</p>	<b>AO8.1</b>	<p>Street front fencing:</p> <p>(a) does not exceed 1.5 metres in height and:</p> <p>(i) is screened by landscaping for the entire length; or</p> <p>(ii) where street front fencing is not screened with landscaping, the length of the fence does not exceed 75% of the frontage or 15 metres.</p>
		<b>AO8.2</b>	<p>Side and rear boundary fencing:</p> <p>(a) does not exceed 1.8 metres in</p>

Performance Outcomes		Acceptable Outcomes	
			height; (b) is constructed of masonry, timber or chain wire coated in black or grey PVC; and (c) is screened by extensive landscaping.
<b>PO9</b>	Buildings and structures maintain the visual prominence of any significant landmarks and conserve important views and vistas.	<b>AO9.1</b>	Development ensures: (a) views from the mainland to Dent Island are of the natural landscape; (b) views from the surrounding waters and islands of the Whitsundays to both Hamilton and Dent Islands are primarily of the natural landscape; (c) views of development on Hamilton Island are available from Dent Island; and (d) views of development on Dent Island from Hamilton Island are minimised.
<b>PO10</b>	Building and structures do not dominate the natural landscape.	<b>AO10.1</b>	Buildings on sloping lots are: (a) orientated so that the longer axis is parallel to the contours; or (b) have a stepped profile following the slope of the site.
		<b>AO10.2</b>	Buildings and structures consist of lightweight and framed construction including the use of functional elements such as: (a) shaded verandahs; or (b) balconies, or (c) pergolas.
		<b>AO10.3</b>	Where the underfloor surface, services and foundation structures are visible, these are screened with physical (e.g. timber battens) or landscape elements.
		<b>AO10.4</b>	The design of garages or covered parking buggy areas and storage areas is integrated with the architecture, including materials and landscaping of each lot.
<b>PO11</b>	The design, size, frequency and location of wayfinding signage does not detract from the character and amenity of the area.	<b>AO11.1</b>	Building names and other property identification are prominently displayed and illuminated at night.
		<b>AO11.2</b>	Signage complements the architecture of the development and streetscape.
<b>Open space and landscaping</b>			
<b>PO12</b>	The development provides communal and private open space and landscaping such that residents have sufficient area to engage in communal activities,	<b>AO12.1</b>	Multiple dwellings ensure that: (a) at least 30% of the site area at ground level is provided as communal open space for clothes drying and communal

Performance Outcomes		Acceptable Outcomes	
	enjoy private and semi-private spaces, and accommodate visitors.		recreation facilities; and (b) at least 50% of this communal open space area is landscaped with planting spaces to achieve total ground cover at maturity.
		<b>AO12.2</b>	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area with: (a) a minimum of 25m <sup>2</sup> ; (b) a minimum dimension of 4m; and (c) direct access from a main living area.
		<b>AO12.3</b>	Each dwelling or rooming unit above ground floor level has a balcony or similar private open space area with: (a) a minimum area of 10m <sup>2</sup> ; (b) a minimum dimension of 2m; and (c) direct access from a main living area.
<b>PO13</b>	Landscaping complements the existing or desired character of the island, contributing to the amenity, accessibility and safety of public areas and integrating well with the natural landscape.	<b>AO13.1</b>	A minimum of 30% of the site is to be landscaped with soft landscaping exclusive of service areas, pools, paving, retaining structures and driveways.
		<b>AO13.2</b>	Accommodation activities provide for a landscaped area with a minimum width of 3m along all boundaries, exclusive of pools, paving, driveways, and retaining structures.
		<b>AO13.3</b>	Where buildings with elevated or pole construction is proposed, the open ground beneath and immediately surrounding the building is extensively revegetated where light penetrates.
		<b>AO13.4</b>	Landscaped areas in all developments are designed to integrate open space networks and the built form through use of a combination of the following: (a) provision of landscaped physical and visual connections through the site; and (b) use of a variety of plants and planting structure to provide comfortable use of public and semi-public spaces.
		<b>AO13.5</b>	Existing trees are retained where removal is not required to site new buildings.

Performance Outcomes		Acceptable Outcomes	
		<b>AO13.6</b>	Significant vegetation removed as a result of the development is replaced with vegetation of advanced size and maturity that contributes to the individual character of the surrounding area.
<b>Access and parking</b>			
<b>PO14</b>	Roads, driveways and pathways within residential areas are finished to a high visual standard with sufficient parking facilities provided.	<b>AO14.1</b>	Driveways are sealed and constructed of concrete or clay pavers or coloured or exposed aggregate finished concrete.
		<b>AO14.2</b>	On-site parking spaces are provided for a maximum of 2 buggy carts per dwelling unit.



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## Part 8 Overlays

### 8.1 Preliminary

- (1) Overlays identify areas in the planning scheme that reflect state and local level interests and that have one or more of the following characteristics:
  - (a) there is a particular sensitivity to the effects of development; or
  - (b) there is a constraint on land use or development outcomes; or
  - (c) there is the presence of valuable resources; or
  - (d) there are particular opportunities for development.
- (2) Overlays are mapped and included in Schedule 2 (Mapping).
- (3) The changed category of development or assessment, if applicable, for development affected by an overlay are in Part 5 (Tables of assessment).
- (4) Some overlays may be included for information purposes only. This should not result in a change to the category of development or assessment or any additional assessment benchmarks.
- (5) Assessment benchmarks for an overlay may be contained in one or more of the following:
  - (a) a map for an overlay; or
  - (b) a code for an overlay; or
  - (c) a zone code; or
  - (d) a local plan code; or
  - (e) a development code.
- (6) Where development is proposed on premises partly affected by an overlay, the assessment benchmarks for the overlay only relates to the part of the premises affected by the overlay.
- (7) The overlays for the planning scheme are:
  - (a) Acid sulfate soils;
  - (b) Agricultural land;
  - (c) Airport environs;
  - (d) Bushfire hazard;
  - (e) Coastal environment;
  - (f) Environmental significance;
  - (g) Extractive resources;
  - (h) Flood hazard;

- 
- (i) Heritage;
  - (j) Infrastructure;
  - (k) Landslide hazard; and
  - (l) Waterways and wetlands.

## 8.2 Overlay codes

### 8.2.1 Acid sulfate soils overlay code

#### 8.2.1.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Acid sulfate soils overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Acid sulfate soils overlay code by the tables of assessment in Part 5 (Tables of assessment).

#### 8.2.1.2 Purpose and overall outcomes

- (1) The purpose of the Acid sulfate soils overlay code is to ensure that the generation or release of acid and associated metal contaminants from acid sulfate soils does not have significant adverse effects on the natural environment, built environment, infrastructure or human health.
- (2) The purpose of the Acid sulfate soils overlay code will be achieved through the following overall outcomes:
  - (a) development ensures that the release of acid and associated metal contaminants into the environment is avoided by either:
    - (i) not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, extracting groundwater or filling land; or
    - (ii) treating and, if required, undertaking ongoing management of any disturbed acid sulfate soils and drainage waters.

#### 8.2.1.3 Assessment benchmarks

**Table 8.2.1.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Avoidance or mitigation of acid sulfate soils			
<b>PO1</b>	Where acid sulfate soils are identified, development: <ul style="list-style-type: none"> <li>(a) does not disturb ASS; or</li> <li>(b) is managed to avoid or minimise the release of acid and metal contaminants, where disturbance of ASS is unavoidable.</li> </ul>	<b>AO1.1</b>	Acid sulfate soils are: <ul style="list-style-type: none"> <li>(a) not identified on site; or</li> <li>(b) avoided or managed in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014).</li> </ul> <p>Note – This may be demonstrated by undertaking an Acid sulfate soils assessment report in accordance with PSP SC6.2 (Environmental features).</p>

## 8.2.2 Agricultural land overlay code

### 8.2.2.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Agricultural land overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Agricultural land overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.2.2 Purpose and overall outcomes

- (1) The purpose of the Agricultural land overlay code is to ensure that agricultural land is protected from development that may lead to its alienation, fragmentation or diminished productivity.
- (2) The purpose of the Agricultural land overlay code will be achieved through the following overall outcomes:
  - (a) agricultural land is used for Rural activities;
  - (b) conflict between Rural activities and sensitive uses is avoided;
  - (c) development avoids adverse impacts on agricultural land from land degradation and stormwater runoff; and
  - (d) the stock route network is protected.

### 8.2.2.3 Assessment benchmarks

**Table 8.2.2.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Conservation of Agricultural land</b>			
<b>PO1</b>	Development ensures that agricultural land is conserved to ensure its long-term availability and productive use for agriculture.	<b>AO1.1</b>	Development: (a) is for Rural activities; or (b) will not permanently alienate the ability for land to be used for Rural activities.
		<b>AO1.2</b>	Development that will result in the permanent alienation of land for future Rural activities is not located on agricultural land unless a site investigation confirms that the land is not suitable for that purpose.  Note – This may be demonstrated by undertaking an evaluation in accordance with the Draft guidelines for agricultural land evaluation in Queensland 2013.
<b>Avoidance or mitigation of land use conflict</b>			

Performance Outcomes		Acceptable Outcomes	
<b>PO2</b>	Development for Accommodation activities and other sensitive uses does not adversely impact on the ongoing operational efficiency and productive use of agricultural lands.	<b>AO2.1</b>	Any new Accommodation activities or sensitive uses are to be separated and/or buffered appropriately.  Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
<b>Rearrangement of lot boundaries</b>			
<b>PO3</b>	The boundaries of existing lots containing agricultural lands are not rearranged, unless it can be demonstrated that a rearrangement of lot boundaries would: (a) result in a more productive use and management of Agricultural land classification class A or class B land and water for Rural activities; or (b) does not lead to increased fragmentation of Agricultural land classification class A or class B land; or (c) does not increase the potential conflict between rural and non-rural activities.	<b>AO3.1</b>	The number of new lots, including the balance of the area is equal to or less than the total number of original lots.
		<b>AO3.2</b>	Provision of adequate separation areas between small lots and nearby Rural activities is provided to ensure nearby agricultural land is protected.  Note – This may be demonstrated by undertaking a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).
<b>Sediment and stormwater run-off</b>			
<b>PO4</b>	Development is located, designed and constructed to minimise the impact of sediment and stormwater run-off on agricultural lands.	<b>AO4.1</b>	Development is undertaken in accordance with PSP SC6.8 (WRC development manual).
<b>Protection of stock route networks</b>			
<b>PO5</b>	Development does not impact the integrity or connectivity of the stock route network.	<b>AO5.1</b>	Development provides for an adequate separation area where adjacent to the stock route network.
		<b>AO5.2</b>	Development ensures the connectivity and capacity of the stock route network for its primary use of stock movement.



## 8.2.3 Airport environs overlay code

### 8.2.3.1 Application

This code applies to assessable development:

- (a) subject to the Airport environs overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Airport environs overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.3.2 Purpose and overall outcomes

- (1) The purpose of the Airport environs overlay code is to protect the safety, efficiency and operational integrity of the regions airports and associated aviation facilities.
- (2) The purpose of the Airport environs overlay code will be achieved through the following overall outcomes:
  - (a) development does not create incompatible intrusions, or compromise aircraft safety in operational airspace;
  - (b) development does not adversely affect the functioning of aviation facilities;
  - (c) development avoids increasing risk to public safety in public safety areas;
  - (d) development is compatible with forecast levels of aircraft noise within the 20 ANEF contour and greater (as defined by Australian Standard 2021-2000 Acoustics – aircraft Noise intrusion – Building siting and construction (AS 2021) as adopted 7 July 2000); and
  - (e) sensitive land uses and other incompatible activities are appropriately located and designed so as they do not impact on airport operations.

### 8.2.3.3 Assessment benchmarks

**Table 8.2.3.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Operational airspace</b>			
<b>PO1</b>	Development does not create a permanent or temporary physical or transient obstruction in an airport's operational airspace.	<b>AO1.1</b>	Buildings, structures, or temporary equipment such as cranes do not encroach into an airport's operational airspace.
		<b>AO1.2</b>	Landscaping does not include vegetation that at maturity will encroach into the airport's operational airspace.
		<b>AO1.3</b>	Transient activities associated with development such as parachuting, hot air ballooning and hang-gliding will not occur within an airport's operational airspace.  Note – where development intrudes into the airport's operational airspace, the application will be referred to the airport manager for assessment.

Performance Outcomes		Acceptable Outcomes	
<b>Lighting and reflective surfaces</b>			
<b>PO2</b>	Development within the lighting buffer zone does not include external lighting or reflective surfaces that could distract or confuse pilots.	<b>AO2.1</b>	<p>Development identified within the lighting buffer zone does not :</p> <p>(a) emit light that will exceed the maximum light intensity specified for the area; or</p> <p>(b) include any of the following types of outdoor lighting:</p> <p>(i) straight parallel lines of lighting 500 m to 1000 m long;</p> <p>(ii) flare plumes; or</p> <p>(iii) upward shining lights; or</p> <p>(iv) flashing lights; or</p> <p>(v) laser lights; or</p> <p>(vi) sodium lights; or</p> <p>(vii) reflective surfaces.</p> <p><i>Note – Development which does include type(s) of lighting as listed above will be referred to the airport manager.</i></p> <p><i>Note – Civil Aviation Safety Authority (CASA) can provide advice to both Council and applicants at pre-lodgement or development assessment stage of development. They also have legislative powers to make directives to modify lighting after it has been installed – this should be avoided.</i></p>
<b>Emissions</b>			
<b>PO3</b>	Emissions within an airports operation airspace do not significantly:	<b>AO3.1</b>	<p>Within an airports operational airspace, development:</p> <p>(a) does not emit:</p> <p>(i) smoke, dust, ash or steam; or</p> <p>(ii) a gaseous plume at a velocity exceeding 4.3m/sec; or</p> <p>(b) where emitting smoke, dust ash, steam or a gaseous plume exceeding 4.3m/sec, is designed and constructed to mitigate adverse impacts of emissions upon operation airspace.</p>
<b>Wildlife hazard</b>			
<b>PO4</b>	Development does not cause wildlife to create a safety hazard within an airport's operational airspace	<b>AO4.1</b>	<p>Development located within 3km of an airport's runway:</p> <p>(a) does not involve uses listed in column 1 of Table 8.2.3.3.2 ( Land uses associated with increases in wildlife strikes and hazards); and</p> <p>(b) where involving a use listed in column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards), includes measures to reduce the potential to attract birds and</p>

Performance Outcomes		Acceptable Outcomes	
			bats.
		<b>AO4.2</b>	Development located between 3km and 8km of an airport's runway involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards) includes measures to reduce the potential to attract birds and bats
		<b>AO4.3</b>	Development located between 8 km and 13 km of a strategic airport's runway involving a use listed in column 1 or column 2 of Table 8.2.3.3.2 (Land uses associated with increases in wildlife strikes and hazards) does not increase the potential to attract birds and bats.
<b>Protection of aviation facilities</b>			
<b>PO5</b>	<p>Development within the building restricted area does not interfere with the function of aviation facilities</p> <p>Note—Development complies with this performance outcome where written confirmation from Air Services Australia confirms that the development will not impair the functioning of the aviation facility.</p>	<b>AO5.1</b>	<p>Development located within the building restricted area for an aviation facility:</p> <p>(a) does not create:</p> <ul style="list-style-type: none"> <li>(i) permanent or temporary physical obstructions in the line of sight between antennas; or</li> <li>(ii) an electrical or electromagnetic field that will interfere with signals transmitted by the facility; or</li> <li>(iii) reflective surfaces that could deflect or interfere with signals transmitted by the facility; and</li> </ul> <p>(b) is designed and constructed to mitigate adverse impacts on the function of the facility.</p> <p>Note—Advice from Air Services Australia should be sought when proposing development within the Aviation facility sub-category. Appendix 2 contained in the SPP Guideline, State interest—infrastructure, Guidance on strategic airports and aviation facilities identifies development likely to impact certain aviation facilities.</p>
<b>Public safety areas</b>			
<b>PO6</b>	Development with an airport's public safety area does not increase the risk to public safety.	<b>AO6.1</b>	<p>Development within an airport's public safety area does not:</p> <p>(a) propose greater dwelling density than a dwelling house; or</p> <p>(b) introduce or intensify business, entertainment, community or recreational activities; or</p>

Performance Outcomes		Acceptable Outcomes	
			(c) involve the manufacture, use or storage of flammable, explosive, hazardous or noxious materials.
<b>Aircraft noise</b>			
<b>PO7</b>	Development involving a sensitive land use is appropriately located and designed to prevent adverse impacts from aircraft noise.	<b>AO7.1</b>	Development within the 20–40 ANEF contour is: (a) consistent with Table 8.2.3.3.3 (Compatible and incompatible land uses within ANEF contours of the SPP guideline: Strategic airports and aviation facilities) and (b) is designed and constructed to attenuate aircraft noise by achieving the indoor design sound levels specified in Table 8.2.3.3.4 (Desirable indoor sound levels for sensitive land uses of the SPP guideline: Strategic airports and aviation facilities).

**Table 8.2.3.3.2 Land uses associated with increases in wildlife strikes and hazards**

Column 1: High risk	Column 2: Moderate risk
<u>Areas of environmental significance</u> Conservation estate (e.g. wetland)	<u>Areas of environmental significance</u> Conservation estate (all other)
<u>Rural activities</u> Cropping (turf farm) Cropping (fruit tree farm) Intensive animal industry (piggery) Aquaculture (fish processing/packing plant)	<u>Rural activities</u> Animal husbandry (cattle/dairy farm) Intensive animal industry (poultry farm)
<u>Recreation activities</u> Major sport, recreation and entertainment facility (showground)	<u>Recreation activities</u> Major sport, recreation and entertainment facility (all other) Outdoor sport and recreation Park
<u>Industry activities</u> Low-impact industry (food processing plant) Medium-impact industry (food processing plant) High-impact industry (food processing plant)	<u>Other activities</u> Non-putrescible waste facility (e.g. landfill, transfer station) Sewage/wastewater treatment facility
<u>Other activities</u> Food/organic waste facility Putrescible waste facility (e.g. landfill, transfer station)	

**Table 8.2.3.3.3 Compatible and incompatible land uses within ANEF contours**

Sensitive land uses	Compatibility of use within ANEF contour of site		
	Compatible	Compatible subject to conditions	Incompatible

Accommodation activity (except short-term accommodation, hostel), residential care facility	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Short-term accommodation Hotel Hostel	Less than 25 ANEF	25–30 ANEF	30–40 ANEF
Educational establishment Child care centre	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Hospital Health care service	Less than 20 ANEF	20–25 ANEF	25–40 ANEF
Community use Places of worship	Less than 20 ANEF	20–30 ANEF	30–40 ANEF
Office	Less than 25 ANEF	25–35 ANEF	35–40 ANEF

**Table 8.2.3.3.4 Desirable indoor design sound levels for sensitive land uses**

Land use	Location within development	Indoor design sound level dB(A)
Accommodation activities	Sleeping areas	50
Residential care facilities	Other habitable	55
Short-term accommodation Hotels	Sleeping areas	55
Educational establishments Child care centres	Libraries Classrooms, study areas Sleeping areas	50
	Teaching area, assembly areas	55
Hospitals Health care services	Wards, theatres, treatment and consulting rooms	50
	Laboratories	65
Community uses Places of worship		50
Offices	Private offices, conference rooms	55
	Open offices	65

## 8.2.4 Bushfire hazard overlay code

### 8.2.4.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Bushfire hazard overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Bushfire hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.4.2 Purpose and overall outcomes

- (1) The purpose of the Bushfire hazard overlay code is to:
  - (a) provide for the assessment of the suitability of development in Bushfire hazard areas to ensure that risk to life, property, community, economic activity and the environment during bushfire events is minimised; and
  - (b) provide for the assessment of development that maintains the safety of people and property by not exposing them to an unacceptable risk from bushfire events.
- (2) The purpose of the Bushfire hazard overlay code will be achieved through the following overall outcomes:
  - (a) development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the bushfire hazard and does not significantly increase the potential for damage on the site or to other properties;
  - (b) development is compatible with the level of risk associated with the bushfire hazard;
  - (c) development location, siting and design responds to the risk of the bushfire hazard and minimises risk to personal safety and property;
  - (d) development supports and does not compromise the ability of the disaster management response or recovery capacity and capabilities and provides efficient access for evacuation of people and emergency services and access to water supplies during bushfire events;
  - (e) where practical, community infrastructure is located and designed to function effectively during and immediately after a bushfire event; and
  - (f) natural processes and the protective function of landforms and vegetation are maintained where possible in potential Bushfire hazard areas.

### 8.2.4.3 Assessment benchmarks

**Table 8.2.4.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>PO1</b>	Development is compatible with the level of risk associated with the bushfire hazard.	<b>AO1.1</b>	Development: <ul style="list-style-type: none"><li>(a) is not located on land identified in a Bushfire hazard area: or</li><li>(b) if identified within a Bushfire hazard area, must ensure that</li></ul>


Performance Outcomes		Acceptable Outcomes	
			<p>people, property and the community are not exposed to an unacceptable or increased level of risk from a bushfire event.</p> <p>Note – This may be demonstrated by undertaking a site specific Bushfire hazard assessment report and Bushfire hazard management plan in accordance with PSP SC6.5 (Natural hazards).</p>
<b>PO2</b>	Development supports and does not unduly burden disaster management response or recovery capacity and capabilities by providing evacuation routes and access for emergency services.	<b>AO2.1</b>	<p>Access to the development is provided in the form of:</p> <ul style="list-style-type: none"> <li>(a) a public road network or alternate emergency access that separates the development from hazardous vegetation; or</li> <li>(b) a fire access trail which is contained wholly on the subject site; or</li> <li>(c) an evacuation route (with a potential exposure no greater than 2 kw/m<sup>2</sup> fire intensity that does not cross the fire access trail) to a: <ul style="list-style-type: none"> <li>(i) safe assembly zone (if by foot); or</li> <li>(ii) road which can provide escape from the area (if by car – the preferred method).</li> </ul> </li> </ul> <p>Note – This may be demonstrated by undertaking a site specific Bushfire hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>PO3</b>	Development provides for firefighting requirements including: <ul style="list-style-type: none"> <li>(a) ready access to water supplies and safety considerations for other utilities including electricity and gas supplies; and</li> <li>(b) avoidance of the release of or exposure to hazardous materials as a result of a bushfire event.</li> </ul>	<b>AO3.1</b>	<p>Development ensures that:</p> <ul style="list-style-type: none"> <li>(a) all lots are within 70m of a hydrant with reticulated water supply fully installed in accordance with AS2419.1-2005 (Fire hydrant installations); or</li> <li>(b) where a reticulated water supply is not available, one tank within 100m of each class 1, 2, 3 or 4 building has: <ul style="list-style-type: none"> <li>(i) take off connection from the tank that is at a level that allows 20,000 litres to be dedicated for firefighting purposes;</li> <li>(ii) a hardstand area allowing heavy rigid fire appliance access within 6m of tank;</li> <li>(iii) fire brigade tank fittings (50mm ball valve &amp; male camlock coupling) and above ground water</li> </ul> </li> </ul>

Performance Outcomes		Acceptable Outcomes	
			<p>pipes where fittings are metal; and</p> <p>(iv) if underground, the tank has an access hole of 200mm (minimum) to allow access for suction lines.</p> <p>Editor's Note - Plastic tanks are not recommended, however if they are submerged, they may be acceptable.</p>
		<b>AO3.2</b>	The location of water supplies is readily identified from the street frontage with clear identification directing fire fighters to its access point.
		<b>AO3.3</b>	Mains gas supplies are protected in accordance with AS1596-2002 (The storage and handling of LP gas) and the requirements of relevant authorities, and metal piping is exclusively used.
		<b>AO3.4</b>	Bulk storage of hazardous materials as defined in the <i>Work Health and Safety Act 2011</i> does not occur in an identified Bushfire hazard area.
<b>PO4</b>	<p>Development for community infrastructure is located, designed and sited to:</p> <p>(a) function efficiently to protect the safety of people during and immediately after a bushfire event;</p> <p>(b) reduce the exposure of people and vulnerable populations at risk from a bushfire event; and</p> <p>(c) mitigate the impacts of a bushfire on the community and environment.</p>	<b>AO4.1</b>	Development of community infrastructure does not occur in a Bushfire hazard area.

**Table 8.2.4.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>PO1</b>	People residing or working within the development area have relevant emergency management plans in place and ensure the safety of emergency management personal.	<b>AO1.1</b>	<p>Development allows for the safe operation of firefighting personal, by providing:</p> <p>(a) an area which is not exposed to radiant heat of more than 7kW/m<sup>2</sup> during the passing of a fire front; or</p> <p>(b) a Bushfire management plan is prepared in accordance with PSP SC6.5 (Natural hazards).</p>
<b>PO2</b>	Development provides for firefighting requirements including safety considerations for other utilities including electricity and	<b>AO2.1</b>	Electricity supplies and transmission poles in the area are protected and not vulnerable to bushfire events or associated





Performance Outcomes		Acceptable Outcomes	
	gas supplies.		activities (e.g. Falling trees).

## **8.2.5 Coastal environment overlay code**

### **8.2.5.1 Application**

This code applies to accepted and assessable development:

- (a) subject to the Coastal environment overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Coastal environment overlay code by the tables of assessment in Part 5 (Tables of assessment).

### **8.2.5.2 Purpose and overall outcomes**

- (1) The purpose of the Coastal environment overlay code is to ensure that development is designed, constructed and operated to:
  - (a) protect, conserve, rehabilitate and manage the coast, including its resources and biological diversity;
  - (b) avoid the social, financial and environmental costs arising from the adverse impacts of coastal hazards, taking into account the predicted effects of climate change;
  - (c) preferentially use land on the coast for coastal-dependent development; and
  - (d) ensure development maintains the safety of people and property.
- (2) The purpose of the Coastal environment overlay code will be achieved through the following overall outcomes:
  - (a) wherever possible, development within a Coastal hazard area avoids:
    - (i) intensification of existing uses;
    - (ii) new permanent built structures; and
    - (iii) seaward extensions to existing built structures;
  - (b) development maintains and enhances natural processes including those below tidal waters;
  - (c) development location, siting and design responds to the risk of the storm tide and tidal inundation and minimises risk to personal safety and property;
  - (d) development supports and does not compromise the ability of the disaster management response or recovery capacity and capabilities and provides for efficient evacuation and emergency services access during coastal hazard events or otherwise plans for the prospect and impact of isolation or hindered evacuation due to flooding from storm-tide and tidal inundation;
  - (e) development ensures that urban services are designed, located and operated to minimise damage to property, disruption to building function and the re-establishment time after a storm-tide or tidal inundation event;
  - (f) development does not cause or increase adverse impacts on other premises within the coastal environment from flooding and does not impede the ability of neighbouring sites to implement future coastal hazard mitigation measures;

- (g) development in areas subject to coastal hazards protects biodiversity, the loss of environmental networks and the scenic amenity of important coastal areas, landscapes and views;
- (h) development minimises the private use of land prone to permanent inundation;
- (i) development maintains public access to the coast;
- (j) development preserves opportunities for locating coastal-dependent land uses in areas adjoining tidal waters; and
- (k) development and infrastructure avoids or mitigates the impacts of predictable future coastal hazard due to increase in sea-level rise and cyclonic activity.

### 8.2.5.3 Assessment Criteria

**Table 8.2.5.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
PO1	Development involving any habitable and non-habitable part of the building is: (a) located and designed to ensure the safety of all persons and buildings from coastal hazards; and (b) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a coastal hazard event.	AO1.1	Development of a habitable building: (a) is not located on land identified in a Coastal hazard area; or (b) ensures the finished floor level of a new building is located at a minimum 300mm above the defined storm tide event (DSTE) for all habitable rooms; or (c) is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m <sup>2</sup> to an existing building.  Editor's Note – Refer to Council's detailed Coastal environment map on the website for further detail. Where no further information is provided by Council the applicant must source the information independently.
		AO1.2	Buildings are only located within a Coastal hazard area, if a registered professional engineer Queensland (RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DSTE.  Editor's Note – if part of the site is outside the Coastal hazard overlay, this is the preferred location for all buildings.
		AO1.3	Development on land identified within a Coastal hazard area ensures storage of hazardous materials is located above the DSTE.

Performance Outcomes		Acceptable Outcomes	
<b>PO2</b>	Buildings are sited and designed to protect people and property from coastal hazards and avoid the need for additional coastal environment works.	<b>AO2.1</b>	Where adjacent to or fronting the coastline, all buildings are located: (a) landward or equal to the seaward alignment of any buildings on neighbouring properties; or (b) where there are no neighbouring properties, at least 6m from the seaward property boundary of the site.
<b>PO3</b>	Marina development provides facilities for the handling and disposal of ship-sourced pollutants.	<b>AO3.1</b>	Common user facilities for the handling and disposal of ship-sourced pollutants including oil, garbage and sewage are provided at a suitable location at the marina; and (a) Facilities shall be designed and operated to ensure the risk of spillage from operations is minimised; and (b) Appropriate equipment to contain and remove spillages is stored in a convenient position near the facility and is available for immediate use; and (c) Boats visiting the marina are able to use the ship-sourced pollutants reception facilities.  Editor's note: Refer to: Australian and New Zealand Environment and Conservation Council (ANZECC), 1997, Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand.
		<b>AO3.2</b>	Where practical, the marina pollutant reception facility is connected to sewerage or other waste reception infrastructure.  Editor's note: Reception facilities require compliance assessment under the Plumbing and Drainage Act 2002. The plumbing compliance assessment process will ensure that the proposed facilities address 'peak load'.

**Table 8.2.5.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>All development in Coastal hazard areas</b>			
<b>PO1</b>	Development: (a) maintains dune crest height; or (b) where a reduction in dune crest heights cannot be avoided, mitigate risks to development from wave overtopping and storm-tide	<b>AO1.1</b>	Development avoids, or where this is not feasible, minimises reductions in dune crest height.

Performance Outcomes		Acceptable Outcomes	
	inundation.		
<b>PO2</b>	Development maintains or enhances coastal ecosystems and natural features such as mangroves and coastal wetlands, between development and tidal boulders where they protect or buffer communities and infrastructure from sea level rise and coastal inundation impacts.	<b>AO2.1</b>	Development ensures that: (a) existing natural environmental features such as mangroves and wetlands as maintained as much as possible; or (b) where changes to these natural features cannot be avoided alternate methods are used to mitigate risks to development from coastal hazards.
<b>PO3</b>	Development maintains or enhances the scenic amenity and natural character of the coastal landscape, views and vistas from the foreshore or significant viewpoints.	<b>AO3.1</b>	Development is located, scaled and designed to be sympathetic to the coastal scenic amenity: (a) maintaining or restoring vegetation buffers between development and coastal waters; or (b) where impacts on the coastal scenic amenity cannot be avoided, alternative methods are used to maintain the natural character of the coastal landscape.
<b>PO4</b>	Development avoids the release of hazardous materials into floodwaters.	<b>AO4.1</b>	Development ensures: (a) buildings used for the manufacture or storage of hazardous materials are designed to prevent the intrusion of waters from a DSTE; and (b) exposure to hazardous materials and emergency planning and contingency measures are appropriately developed and managed.
<b>PO5</b>	Development maintains the safety of people living and working on the premises from a DSTE.	<b>AO5.1</b>	Development ensures: (a) a safe refuge is available for people within the development site during a DSTE; or (b) that at least one evacuation route remains passable for emergency evacuations during a DSTE.  Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
<b>PO6</b>	Development does not negatively impact the flood characteristics of the DSTE outside of the subject site.	<b>AO6.1</b>	Buildings are only located within the Coastal hazard area, if a registered professional engineer Queensland (RPEQ) certifies that the development does not change the flood characteristics of the

Performance Outcomes		Acceptable Outcomes	
			DSTE outside the subject site.
<b>PO7</b>	Development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities.	<b>AO7.1</b>	<p>Development does not:</p> <ul style="list-style-type: none"> <li>(a) increase the number of people calculated to be at risk from the coastal hazard event; or</li> <li>(b) increase the number of people likely to need evacuation; or</li> <li>(c) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes.</li> </ul> <p>Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>Community infrastructure</b>			
<b>PO8</b>	Development involving community infrastructure remains functional to serve community needs during and immediately after a coastal hazard event.	<b>AO8.1</b>	<p>Community infrastructure is:</p> <ul style="list-style-type: none"> <li>(a) designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of a coastal hazard event on infrastructure, facilities or access and egress routes;</li> <li>(b) retains essential site access during a coastal hazard event; and</li> <li>(c) able to remain functional even when other infrastructure or services may be compromised in a coastal hazard event.</li> </ul> <p>Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>Public access to the coast</b>			
<b>PO9</b>	Development ensures that there is no net loss of public access to the foreshore and where practicable, provides enhanced opportunities for safe public access to the foreshore in a manner consistent with conserving coastal resources.	<b>AO9.1</b>	<p>Development is located, designed and operated:</p> <ul style="list-style-type: none"> <li>(a) in a manner that retains or enhances existing public access to and along the foreshore; or</li> <li>(b) where loss of public access to the foreshore cannot practicably be avoided, development provides the same or a greater amount of new public access opportunities in an alternative location.</li> </ul>

Performance Outcomes		Acceptable Outcomes	
<b>Maritime development and Maritime development areas</b>			
<b>PO10</b>	Except in limited circumstances, maritime development is located within a Maritime development area.	<b>AO10.1</b>	Maritime development: (a) is located within an identified Maritime development area; or (b) demonstrates that the site is suitable for identification as a Maritime development area; or (c) is located outside a Maritime development area if it is: (i) a minor marine development; or (ii) dredging for navigation channels; or (iii) development in a port.
<b>PO11</b>	Development in a Maritime development area: (a) is predominantly for maritime development; and (b) ensures ancillary and subsidiary development is predominantly of a commercial or public nature.	<b>AO11.1</b>	Within the Maritime development area: (a) less than half of the non-tidal component of the development site is allocated for non-maritime development (not including Accommodation activities); and (b) less than a quarter of the non-tidal component of the development site is allocated for Accommodation activities.
<b>Coastal Environment Map 1 – Storm tide inundation (Overlay map - CP1 - 01:14)</b>			
<b>Where development is in an urban area</b>			
<b>PO12</b>	Except in limited circumstances, development is located outside a high hazard storm tide area.	<b>AO12.1</b>	Development is situated wholly outside of a high hazard storm tide area except where the development is: (a) temporary and /or relocatable development; or (b) coastal-dependent development; or (c) located within a Maritime development area; or (d) does not result in an increase of development intensity on the site.
<b>PO13</b>	Development that is subject to a medium hazard storm tide area is located, designed, constructed and operated to avoid adverse coastal hazard impacts (including impacts on the development's ongoing operation) as demonstrated by a Coastal hazard assessment report prepared in accordance with PSP SC6.5 (Natural hazards) to support the development proposal.	<b>AO13.1</b>	Development within an urban area is located outside a medium hazard storm tide area unless: (a) it does not result in an increase in the intensity of development on the site; or (b) involving redevelopment that intensifies the use of a site, if the development mitigates any increase in risk to people and property from inundation impacts; or (c) a Flood risk assessment report demonstrates that the development avoids any increase in risk to people or

Performance Outcomes		Acceptable Outcomes	
			<p>property from coastal hazard impacts.</p> <p>Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>Where development is in a non-urban area</b>			
<b>PO14</b>	Except in limited circumstances, development does not occur within a non-urban area that is subject to storm tide hazard.	<b>AO14.1</b>	<p>Development within a non-urban area that is subject to storm tide hazard is:</p> <p>(a) located within a Maritime development area; or</p> <p>(b) for tourist attractions and tourist accommodation, and the development:</p> <p>(i) locates Accommodation activities outside the high hazard storm tide area; or</p> <p>(ii) is located, designed, constructed and operated to avoid adverse storm tide hazard impacts (including impacts on the development's ongoing operation) as demonstrated by a Flood risk assessment report prepared to support the development proposal.</p> <p>Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>Coastal Environment Map 2 – Erosion prone areas and permanent inundation (Overlay map - CP2 - 01:14)</b>			
<b>PO15</b>	Except in limited circumstances, development is located outside of an Erosion prone or Permanent inundation area.	<b>AO15.1</b>	<p>Development is situated wholly outside of an Erosion prone or Permanent inundation area except where the development is:</p> <p>(a) temporary and /or relocatable development; or</p> <p>(b) located within a Maritime development area; or</p> <p>(c) redevelopment that intensifies the use of a site in an urban area, if the development mitigates any increase in risk to people and property from adverse coastal erosion impacts.</p>
		<b>AO15.2</b>	<p>Development is situated wholly outside of an Erosion prone or Permanent inundation area except where:</p> <p>(a) community infrastructure; or</p> <p>(b) able to be abandoned; and</p>



Performance Outcomes		Acceptable Outcomes	
			<p>(c) demonstrates that:</p> <ul style="list-style-type: none"> <li>(i) it is not feasible to locate the development outside an Erosion prone or Permanent inundation area; or</li> <li>(ii) buildings and structures are located landward of alignment of adjacent habitable buildings; or</li> <li>(iii) where it is demonstrated that item (ii) is not reasonable, buildings and structures are located as far landward as practicable.</li> </ul>
<b>PO16</b>	Redevelopment occurring within an Erosion prone or Permanent inundation area mitigates any increase in risk to people and property from adverse coastal erosion or permanent inundation impacts.	<b>AO16.1</b>	<p>Redevelopment relocates buildings and structures:</p> <ul style="list-style-type: none"> <li>(a) outside of an Erosion prone or Permanent inundation area; or</li> <li>(b) relocates buildings and structures landward of the alignment of adjacent habitable buildings; or</li> <li>(c) where it is demonstrated that item (b) is not reasonable, buildings and structures are located as far landward as practicable; and</li> <li>(d) provides sufficient space seaward of the development within the premises to allow for the construction of erosion control structures, such as a sea wall.</li> </ul>
		<b>AO16.2</b>	<p>Redevelopment in an Erosion prone or Permanent inundation area that results in an intensification of a use mitigates the coastal erosion or permanent inundation threat to the development, having regard to the:</p> <ul style="list-style-type: none"> <li>(a) layout of the development so as to minimise the footprint of the development within the Erosion prone or Permanent inundation area and locates the development as far landward as possible;</li> <li>(b) ability of buildings or structures to be decommissioned, disassembled or relocated either on the site or to another site;</li> <li>(c) use of appropriate foundations for the building or</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			<p>structure; and</p> <p>(d) installation and maintenance of site erosion control structures.</p> <p>Note – This may be demonstrated by undertaking a Coastal hazard assessment report in accordance with PSP SC6.5 (Natural hazards).</p>
<b>PO17</b>	Coastal-dependent development or development within a Maritime development area mitigates any increase in risk to people and property from the impacts of Storm tide inundation, Erosion prone and Permanent inundation areas.	<b>AO17.1</b>	<p>Coastal-dependent development:</p> <p>(a) installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation; or</p> <p>(b) locates, designs and constructs buildings or structures to withstand coastal erosion or permanent inundation impacts.</p>
		<b>AO17.2</b>	<p>Development within Maritime development area that is not coastal-dependent development:</p> <p>(a) is located outside an Erosion prone or Permanent inundation area; or</p> <p>(b) installs and maintains coastal environment works to mitigate adverse impacts to people and property from coastal erosion or permanent inundation at the location.</p>

## 8.2.6 Environmental significance overlay code

### 8.2.6.1 Application

This code applies to assessable development:

- (a) subject to the Environmental significance overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Environmental significance overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.6.2 Purpose and overall outcomes

- (1) The purpose of the Environmental significance overlay code is to ensure that:
  - (a) matters of environmental significance are protected; and
  - (b) ecological connectivity and habitat extent are maintained or enhanced.
- (2) The purpose of the Environmental significance overlay code will be achieved through the following overall outcomes:
  - (a) matters of environmental significance are valued and protected;
  - (b) the health and resilience of biodiversity is maintained or enhanced to support ecological integrity;
  - (c) development conserves and enhances biodiversity values and associated ecosystem services in the Whitsunday region;
  - (d) development protects and establishes appropriate buffers to native vegetation and significant fauna habitat;
  - (e) development protects known populations and supporting habitat of:
    - (i) matters of national environmental significance as listed in the Environment Protection and Biodiversity Conservation Act 1999;
    - (ii) endangered, vulnerable and near threatened flora and fauna species, as listed in the Nature Conservation Act 1992; and
    - (iii) regulated vegetation protected under the Vegetation Management Act 1999;
  - (f) development is located, designed and managed to avoid or mitigate adverse direct or indirect impacts on ecological systems and processes; and
  - (g) development ensures that viable connectivity is maintained or enhanced between matters of environmental significance and biodiversity values.

### 8.2.6.3 Assessment benchmarks

**Table 8.2.6.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>All development</b>			
<b>PO1</b>	Development avoids significant impacts on matters of	<b>AO1.1</b>	Development: (a) does not result in a significant

Performance Outcomes		Acceptable Outcomes	
	environmental significance.		<p>impact on identified environmental values; or (b) is located, designed and operated to avoid or mitigate significant impacts on the identified environmental values.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>
<b>PO2</b>	Development avoids significant impacts on areas designated as a Protected or Legally secured offset areas.	<b>AO2.1</b>	<p>Development is wholly situated outside of an area designated as a Protected or Legally secured offset areas.</p> <p>Editor's Note – For guidance of offset areas refer to the <i>Environmental Offsets Act 2014</i>.</p>
<b>PO3</b>	Development does not result in the short or long-term degradation of ecological values of Protected areas due to edge effects.	<b>AO3.1</b>	<p>Development provides for buffer(s) of:</p> <p>(a) not less than 25m width, between the development and Protected areas; or (b) dimensions and characteristics that protect the long term viability of matters of environmental significance located on and/or adjacent to the site.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>
<b>PO4</b>	Development protects and enhances ecological connectivity and/or habitat extent.	<b>AO4.1</b>	<p>Development retains vegetation in areas large enough to maintain ecological values, functions and processes.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>
<b>Where development is within an urban area</b>			
<b>PO5</b>	Development does not result in the short or long-term degradation of ecological values of Wildlife habitat and Regulated vegetation areas due to edge effects.	<b>AO5.1</b>	<p>Development provides for a buffer(s):</p> <p>(a) along the boundary adjoining Wildlife habitat and Regulated vegetation areas; or (b) of dimensions and characteristics that protect the long term viability of the matters of environmental significance located on and/or adjacent to the site.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>

Performance Outcomes		Acceptable Outcomes	
Where development is within a non-urban area			
<b>PO6</b>	Development avoids significant impacts on Wildlife habitat and Regulated vegetation areas.	<b>AO6.1</b>	Development is: (a) wholly situated outside of a Wildlife habitat and Regulated vegetation area; and (b) setback 25m or 1.5 times the height of the vegetation, whichever is the greater.
<b>PO7</b>	Development provides for the long term management and maintenance of the stream protection zone.	<b>AO7.1</b>	The stream protection zone is protected through a covenant for environmental purposes.
<b>PO8</b>	Development of premises adjoining or containing Regulated vegetation intersecting a watercourse must not adversely affect the integrity of the riparian corridor.	<b>AO8.1</b>	Proposed roads and vehicle crossings must not be located within areas designated as Regulated vegetation intersecting a watercourse.
		<b>AO8.2</b>	Development: (a) maintains hydrological processes and the physical integrity of watercourses, lakes and springs; (b) ensures that impacts from works on the long-term sustainable use of the watercourse or lake or spring are avoided; and (c) the stability of beds and banks of watercourses and the condition and natural functions of water bodies is maintained.

## 8.2.7 Extractive resources overlay code

### 8.2.7.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Extractive resources overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Extractive resources overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.7.2 Purpose and overall outcomes

- (1) The purpose of the Extractive resources overlay code is protect and maintain the sustainable and viable use of extractive resources within the Whitsunday region by preventing incompatible development and land uses from encroaching on the extractive resource/processing areas and associated separation areas and transport routes.
- (2) The purpose of the Extractive resources overlay code will be achieved through the following overall outcomes:
  - (a) development occurring within or adjacent to extractive resource areas does not adversely affect or impair the ability of existing or future extractive industries to viably win the resource;
  - (b) development occurring within or adjacent to transport routes for extractive resources does not constrain or otherwise conflict with the ongoing safe and efficient transportation of the extractive resource; and
  - (c) the potential negative impacts of extractive industries on sensitive uses within or adjacent to extractive resource areas and associated transport routes is mitigated to maintain high levels of safety and amenity.

### 8.2.7.3 Assessment benchmarks

**Table 8.2.7.3.1 Benchmarks for accepted and assessable development**

Performance outcome		Acceptable solution	
<b>Development within a Local resource or Key resource area (KRA) resource/processing area</b>			
<b>PO1</b>	Development does not constrain, prevent or otherwise interfere with the current or future viability of the winning or processing of extractive resources.	<b>AO1.1</b>	Development is limited to: <ul style="list-style-type: none"> <li>(a) extractive industry uses; or</li> <li>(b) uses that are directly associated with an extractive industry; or</li> <li>(c) temporary or non-intensive development that is compatible with future extractive industry operations (e.g. forestry for wood production).</li> </ul>
<b>Development within a KRA separation area</b>			
<b>PO2</b>	Development does not materially increase the number of people living within a KRA separation area.	<b>AO2.1</b>	Development does not result in an increase in residential density.
		<b>AO2.2</b>	Reconfiguring a lot: <ul style="list-style-type: none"> <li>(a) does not result in the creation of additional lots used or</li> </ul>

Performance outcome		Acceptable solution	
			<p>capable of being used for Accommodation activities; and</p> <p>(b) where rearranging boundaries, does not worsen the existing situation with respect to the distance between available house sites and the resource processing area.</p>
<b>PO3</b>	Development minimises the potential adverse impacts (e.g. noise, dust, vibration and blasting) from existing or future extractive industry operations upon people working or congregating within a KRA separation area given the proposed development's location.	<b>AO3.1</b>	<p>Development ensures that:</p> <p>(a) the number of people working or congregating is not increased; or</p> <p>(b) it is compatible with the potential adverse impacts arising from existing or future extractive industry operations; or</p> <p>(c) incorporates design, orientation and construction measures that mitigate the potential adverse effects from existing or future extractive industry operations to acceptable levels.</p> <p>Note — In order to demonstrate compliance with AO3 applicant should demonstrate the regulations of Environmental Protection Act and relevant policies (i.e. EPP Noise) can be achieved.</p>
<b>PO4</b>	Extractive industry development maintains the function and integrity of a KRA separation area as an efficient and effective buffer between extractive/processing operations and incompatible uses beyond the separation area.	<b>AO4.1</b>	Development for an extractive industry use is not located within a KRA separation area.
<b>Development within a Transport route or Transport route separation area</b>			
<b>PO5</b>	Development does not materially increase the number of people living within a Transport route separation area.	<b>AO5.1</b>	Development does not result in an increase in residential density.
<b>PO6</b>	Development involving a sensitive use (other than for an Accommodation activity) maintains an acceptable level of amenity.	<b>AO6.1</b>	Development involving a sensitive use (other than an Accommodation activity) ensures an acceptable level of amenity by incorporating mitigation measures such as landscape buffer strips and maintaining adequate separation distances.
<b>PO7</b>	Development does not adversely affect the safe and efficient movement and operation of vehicles transporting extractive materials along a Transport route.	<b>AO7.1</b>	<p>Development ensures that:</p> <p>(a) the number of premises with access points to an identified Transport route is not increased; or</p> <p>(b) access points are designed to avoid adversely affecting the safe and efficient operation of</p>

Performance outcome		Acceptable solution	
			vehicles transporting extractive materials along a Transport route.



## **8.2.8 Flood hazard overlay code**

### **8.2.8.1 Application**

This code applies to accepted and assessable development that is:

- (a) subject to the Flood hazard overlay maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Flood hazard overlay code by the tables of assessment in Part 5 (Tables of assessment).

Note – Where flood hazard is mapped from more than one flood source for a single property or is also identified in the Coastal hazard overlay map, the assessment criterion that provides the highest level of protection from any source of flooding applies.

### **8.2.8.2 Purpose and overall outcomes**

- (1) The purpose of the Flood hazard overlay code is to:
  - (a) provide for the assessment of the suitability of development in the Flood hazard overlay area to ensure that risk to life, property, community, economic activity and the environment during flood events is minimised; and
  - (b) ensure that development does not increase the potential for flood damage on-site or to other property, both upstream and downstream.
- (2) The purpose of the Flood hazard overlay code will be achieved by the following outcomes:
  - (a) floodplains and the flood conveyance capacity of waterways are protected;
  - (b) incompatible uses are not located in areas susceptible to flood hazard;
  - (c) development location, siting, layout, and access responds to the risk of the flooding and minimises risk to personal safety and property;
  - (d) development supports and does not compromise the ability of the disaster management response or recovery capacity and capabilities and provides for efficient evacuation and emergency services access during flooding events or otherwise plans for the prospect and impact of isolation or hindered evacuation during flooding;
  - (e) development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the flood event and does not materially increase the extent or impact of the flood event on the site or to other properties;
  - (f) development ensures that urban services are designed, located and operated to minimise damage to property, disruption to building function and re-establishment time after a flood event;
  - (g) natural processes and the protective function of landforms and/or vegetation are maintained where possible in Flood hazard areas;
  - (h) where practical, community infrastructure is located and designed to function effectively during and immediately after a flood events; and
  - (i) development for new premises mitigates the impacts of predictable future flood hazards.

### 8.2.8.3 Assessment benchmarks

**Table 8.2.8.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>PO1</b>	<p>Development involving any habitable and non-habitable part of the building is:</p> <p>(a) located and designed to ensure the safety of all persons and buildings from flood hazards; and</p> <p>(b) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a flood event.</p>	<b>AO1.1</b>	<p>Development of a habitable building:</p> <p>(a) is not located on land in a Flood hazard area; or</p> <p>(b) ensures the finished floor level of a new building is located at a minimum 300mm above the defined flood level (DFL) for all habitable rooms; or</p> <p>(c) is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m<sup>2</sup> to an existing building.</p> <p>Editor's Note – Refer to Council's detailed Flood hazard map on the website for further detail. Where no further information is provided by Council the applicant must source the information independently.</p>
		<b>AO1.2</b>	<p>Buildings are only located within the Flood hazard area, if a registered professional engineer Queensland (RPEQ) certifies that the development is structurally designed to be able to resist hydrostatic and hydrodynamic loads associated with flooding up to and including the DFL.</p> <p>Editor's Note – If part of the site is outside the Flood hazard overlay area, this is the preferred location for all buildings.</p>
		<b>AO1.3</b>	<p>Development within a Flood hazard area ensures storage of hazardous materials is located above the DFL.</p>
<b>PO2</b>	<p>Development directly, indirectly and cumulatively avoids any increase in water flow velocity or flood level, and does not increase the potential for flood damage either on site or on other properties.</p> <p>Note – Where assessable development PO2 may be achieved by demonstrating that development will not:</p> <p>(a) result in any reductions of on-site flood storage capacity and contain within the subject site any changes to depth/duration/velocity of flood waters; or</p> <p>(b) change flood characteristics outside the subject site in ways that result in:</p> <p>(i) loss of flood storage; or</p> <p>(ii) loss of/changes to flow paths; or</p>	<b>AO2.1</b>	<p>Buildings and infrastructure in non-urban areas are set back 50m from natural riparian corridors to maintain their natural function of reducing velocity of flood waters.</p>
		<b>AO2.2</b>	<p>Development does not involve a net increase in filling greater than 50m<sup>3</sup> in urban areas or 500m<sup>3</sup> in non-urban areas within a Flood hazard area.</p> <p>Editor's Note – Berms/mounds are considered to be an undesirable built form outcome and are not supported.</p>
		<b>AO2.3</b>	<p>The design and layout of buildings within a Flood hazard area provides:</p> <p>(a) non-habitable uses at ground</p>

Performance Outcomes		Acceptable Outcomes	
	<p>(iii) acceleration or retardation of flows; or</p> <p>(c) increase stormwater ponding on sites upstream, downstream or in the general vicinity of the subject site.</p>		<p>level; and</p> <p>(b) allows for the flow through of flood water below the DFL.</p> <p>Editor's Note - The highset 'Queenslander' style house is a resilient low-density housing solution in floodplain areas. Higher density residential development should ensure only non-habitable rooms (e.g. garages and laundries) are located on the ground floor.</p> <p>Businesses should ensure that they have the necessary continuity plans in place to account for the potential need to relocate property prior to a flood event (e.g. allow enough time to transfer stock to the upstairs level of a building or off site).</p> <p>The relevant building assessment provisions under the Building Act 1975 apply to all building work within the Flood hazard area and need to take account of the flood potential within the area.</p>

**Table 8.2.8.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
All development			
<b>PO1</b>	Development avoids the release of hazardous materials into flood waters.	<b>AO1.1</b>	Development within a Flood hazard area ensures: (a) buildings used for the manufacture or storage of hazardous materials are designed to prevent the intrusion of waters from a DFE; and (b) exposure to hazardous materials and emergency planning and contingency measures are appropriately managed.
<b>PO2</b>	Development does not materially increase the number of people at risk of flood hazard.	<b>AO1.2</b>	For Reconfiguring a lot, additional lots are: (a) not located in a Flood hazard area; or (b) demonstrated to be above the DFL identified for the site.
<b>PO3</b>	The development supports, and does not unduly burden, disaster management response or recovery capacity and capabilities.	<b>AO2.1</b>	Development does not: (a) increase the number of people calculated to be at risk from flooding; or (b) increase the number of people likely to need evacuation; or (c) shorten flood warning times; or (d) impact on the ability of traffic to use evacuation routes, or unreasonably increase traffic volumes on evacuation routes.

Performance Outcomes		Acceptable Outcomes	
			Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).
<b>PO4</b>	Development involving any habitable and non-habitable part of the building is: (a) located and designed to ensure the safety of all persons and buildings from flood hazard; and (b) located to minimise amenity impacts, disruptions to residents, recovery time, rebuilding and restoration costs after a flood event; and (c) compatible with the level of risk associated with the flood hazard.	<b>AO3.1</b>	Development of the following uses is not to occur on land inundated by the DFL: (a) residential care facility; or (b) retirement facility; or (c) community care centre; or (d) child care centre.
<b>Community infrastructure</b>			
<b>PO5</b>	Development involving community infrastructure remains functional to serve community need during and immediately after a flood event.	<b>AO4.1</b>	Community infrastructure is: (a) provided with the level of flood immunity set out in Table 8.2.8.3.3 (Flood immunity for community infrastructure and services); (b) designed, sited and operated to avoid adverse impacts on the community or the environment due to the impacts of flooding on infrastructure, facilities or access and egress routes; (c) retains essential site access during a flood event; and (d) able to remain functional even when other infrastructure or services may be compromised in a flood event.  Note – This may be demonstrated by preparing a Flood hazard assessment report in accordance with PSP SC6.5 (Natural hazards).

**Table 8.2.8.3.3 Flood immunity for community infrastructure and services**

Development	Level of immunity Annual exceedance probability (AEP)
Development involving: (a) emergency services; (b) hospitals and associated facilities; and (c) major electricity infrastructure.	0.2% AEP flood event

Development	Level of immunity Annual exceedance probability (AEP)
Development involving: <ul style="list-style-type: none"> <li>(a) emergency/evacuation shelters;</li> <li>(b) the storage of valuable records or items of historic /cultural significance (e.g. libraries, galleries);</li> <li>(c) telecommunication facilities;</li> <li>(d) substations;</li> <li>(e) water treatment plants;</li> <li>(f) regional fuel storage;</li> <li>(g) food storage warehouses; and</li> <li>(h) retirement facilities and residential care facilities.</li> </ul>	0.5% AEP flood event
Sewerage treatment plants (requiring licensing as an environmentally relevant activity).	1% AEP flood event

## 8.2.9 Heritage overlay code

Editor's Note – This code does not apply to indigenous cultural heritage which is protected under the Aboriginal Cultural Heritage Act 2003. In accordance with this legislation, a person who carries out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage (“the cultural heritage duty of care”).

### 8.2.9.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Heritage overlay map contained within **Schedule 2 (Mapping)**; and
- (b) identified as requiring assessment against the Heritage overlay code by the tables of assessment in **Part 5 (Tables of assessment)**.

### 8.2.9.2 Purpose and overall outcomes

- (1) The purpose of the Heritage overlay code is to ensure development on a Heritage place is compatible with the cultural heritage significance of the place outlined in the place card.
- (2) The purpose of the Heritage overlay code will be achieved through the following overall outcomes:
  - (a) the cultural heritage significance of the Heritage place is conserved;
  - (b) development of the Heritage place is compatible with the cultural heritage significance of the place by:
    - (i) preventing the demolition or removal of Heritage places, unless there is no prudent and feasible alternative to its demolition or removal; and
    - (ii) maintaining or encouraging, as far as practicable, the appropriate use, or adaptive re use of Heritage places;
    - (iii) protecting, as far as practicable, the materials and setting of the Heritage place;
    - (iv) ensuring, as far as practicable, development on a Heritage place is compatible with the cultural heritage significance of the place; and
  - (c) development is compatible with the conservation and management of the cultural heritage significance of the Heritage place.

### 8.2.9.3 Assessment benchmarks

**Table 8.2.9.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
PO1	Development of the Heritage place is: (a) subservient to the features and values of the Heritage place; and (b) compatible with the conservation and management of the cultural	AO1.1	Development: (a) does not alter, remove or conceal significant attributes of the Heritage place; or (b) is minor and necessary to maintain a significant use for the Heritage place.
		AO1.2	Development of the Heritage

Performance Outcomes		Acceptable Outcomes	
	heritage significance of the Heritage place.		<p>place is undertaken with reference to the ICOMOS Charter for the conservation of places of cultural heritage (Burra Charter 2013).</p> <p>Note – This may be demonstrated by undertaking a Heritage impact assessment report in accordance with PSP SC6.3 (Heritage).</p>
<b>PO2</b>	<p>The Heritage place or part of the Heritage place may not be demolished and/or removed unless it can be demonstrated that:</p> <p>(a) there is no prudent or feasible alternative; or</p> <p>(b) the Heritage place, or part of the Heritage place is not of local cultural heritage significance.</p>	<b>AO2.1</b>	<p>Prior to the demolishing or removal of a Heritage place it must be demonstrated that:</p> <p>(a) beyond reasonable doubt there is no prudent or feasible alternative to the demolition or removal of part or all of the Heritage place. The proposal must be supported by a report from an appropriate expert; and</p> <p>(b) where the Heritage place or part of the Heritage place is to be demolished or removed, a Heritage management plan outlining the removal/demolition process must be developed by an appropriate expert having regard for the Burra Charter 2013.</p> <p>Note – This may be demonstrated by undertaking a Heritage management plan in accordance with PSP SC6.3 (Heritage).</p>
<b>PO3</b>	Changes to a Heritage place are appropriately managed and documented on the place card of the Heritage place.	<b>AO3.1</b>	Development is compatible with a Conservation management plan prepared in accordance with the Australian ICOMOS Charter for places of cultural significance (Burra Charter, 2013).
		<b>AO3.2</b>	Any development is appropriately documented on the place card of the Heritage place.
<b>PO4</b>	The identified archaeological significance or potential archaeological significance of the Heritage place is conserved.	<b>AO4.1</b>	Where a ground breaking activity is required within the boundary of the Heritage place that has been identified as an archaeological place, a suitably qualified and experienced archaeologist must be appointed to assess the impact of the ground breaking activity on any identified and/or potential archaeological artefacts and features. The archaeologist must develop and, where required by Council, oversee the implementation of an Archaeological management plan that outlines how the project will

Performance Outcomes		Acceptable Outcomes	
			<p>manage impacts to the archaeological significance and potential of the place.</p> <p>Note – This may be demonstrated by undertaking an Archaeological management plan in accordance with PSP SC6.3 (Heritage).</p>



## **8.2.10 Infrastructure overlay code**

### **8.2.10.1 Application**

This code applies to accepted and assessable development:

- (a) subject to the Infrastructure overlay shown on the overlay maps contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Infrastructure overlay code by the tables of assessment in Part 5 (Tables of assessment).

### **8.2.10.2 Purpose and overall outcomes**

- (1) The purpose of the Infrastructure overlay code is to ensure that development is compatible with, and does not adversely affect the viability, integrity, operation and maintenance of the following existing and planned infrastructure and facilities with the Whitsunday region:
  - (a) major roads (State controlled roads);
  - (b) railways;
  - (c) major electricity infrastructure;
  - (d) substations;
  - (e) bulk water supply infrastructure;
  - (f) gas pipelines;
  - (g) strategic ports;
  - (h) public passenger transport facilities;
  - (i) wastewater treatment facilities; and
  - (j) waste management facilities.
- (2) The purpose of the Infrastructure overlay code will be achieved through the following overall outcomes:
  - (a) existing and planned infrastructure facilities, networks and corridors are protected from incompatible development;
  - (b) development in proximity to existing and planned infrastructure facilities, networks and corridors is appropriately located, designed, constructed and operated to:
    - (i) avoid compromising the integrity, operational efficiency and maintenance of infrastructure and facilities; and
    - (ii) protect the amenity, health and safety of people and property.

### 8.2.10.3 Assessment benchmarks

**Table 8.2.10.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Infrastructure Map 1 – Transport infrastructure (Overlay map - INF1 - 01:29)</b>			
<b>Road noise corridor and Railway buffers</b>			
<b>PO1</b>	Sensitive uses are located, designed and constructed to ensure that noise emissions from major road corridors and railway corridors do not adversely affect: (a) the development's primary function; or (b) the wellbeing of occupants including their ability to sleep, work or otherwise undertake quiet enjoyment without unreasonable interference from road traffic or railway noise.	<b>AO1.1</b>	Development of sensitive uses: (a) does not occur within a Railway buffer; or (b) where within a Railway buffer complies with the acoustic noise quality objectives specified in Environmental Protection (Noise) Policy 2008.
		<b>AO1.2</b>	Development of sensitive uses located within a Road noise corridor, are sited and designed to comply with the QDC MP4.4 (Buildings in a transport noise corridor).
<b>PO2</b>	Development within a Road noise corridor or Railway buffer does not adversely impact on the associated infrastructure.	<b>AO2.1</b>	Development within a Road noise corridor or Railway buffer maintains and, where practicable, enhances the safety, efficiency and effectiveness of the infrastructure.
<b>Strategic port areas and buffers</b>			
<b>PO3</b>	Development within a Strategic port area or buffer does not interfere with an aid to navigation or associated signals.	<b>AO3.1</b>	Development does not result in significant electrical or electro-magnetic emissions which may impede the operation of aids to navigation.
		<b>AO3.2</b>	All lights on or above the development site: (a) are shielded to prevent glare or reflection; (b) do not include flood lights; (c) do not involve flashing or flickering lights which may be confused with aids to navigation; and (d) are not coloured lights such as green, blue or red lights which may be confused with aids to navigation.
		<b>AO3.3</b>	Lighting complies with AS 4282-1997(Control of the obtrusive effects of outdoor lighting).
<b>Public passenger transport facilities and buffers</b>			
<b>PO4</b>	Development supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future Public passenger transport facilities.	<b>AO4.1</b>	Roads catering for buses are major collector, arterial or sub-arterial roads or their equivalent.
		<b>AO4.2</b>	Roads catering for buses provide convenient connections to existing and future Public passenger transport facilities.

Performance Outcomes		Acceptable Outcomes	
		<b>AO4.3</b>	Development on bus routes does not impact bus stop infrastructure or the efficient running of bus services.
		<b>AO4.4</b>	Roads catering for buses are designed and constructed in accordance with Part 2 of the Transport Planning and Coordination Regulation 2005 (Code for IDAS).
<b>PO5</b>	Development enhances connectivity between existing and future Public passenger transport facilities and other transport modes.	<b>AO5.1</b>	The road network supports modal interchange by integrating with existing and future Public passenger transport facilities.
		<b>AO5.2</b>	Development provides direct linkages for passengers between existing and future Public passenger transport facilities and other transport modes.
		<b>AO5.3</b>	Development provides way-finding information for existing Public passenger transport facilities and interconnecting transport modes.
<b>PO6</b>	Development optimises the walkable catchment to existing and future Public passenger transport facilities.	<b>AO6.1</b>	Development connects to an existing or planned pedestrian/cycle network that links to existing and future Public passenger transport facilities.
		<b>AO6.2</b>	Development provides convenient through-site connections for pedestrians and cyclists to existing and future Public passenger transport facilities.
<b>PO7</b>	Development provides direct and safe access to and use of Public passenger transport facilities.	<b>AO7.1</b>	Through-site pathway connections to Public passenger transport facilities are provided in accordance with Part 6A of Austroads guide to road design (Pedestrian and cyclist paths).
		<b>AO7.2</b>	Pathway connections are available at all times.
		<b>AO7.3</b>	Direct and legible pedestrian and cycle paths and crossings provide connections to existing and future Public passenger transport facilities.
		<b>AO7.4</b>	Development incorporates landscaping, boundary treatments and lighting that enhances the safety of pedestrians and cyclists accessing Public passenger transport facilities by providing for casual surveillance.

Performance Outcomes		Acceptable Outcomes	
		<b>AO7.5</b>	Development of Business activities provides active frontages oriented towards Public passenger transport facilities.
		<b>AO7.6</b>	Accommodation activities address street frontages and provide casual surveillance of Public passenger transport facilities.
<b>Infrastructure Map 2 – Utility infrastructure (Overlay map - INF2 - 01:29)</b>			
<b>Major electricity infrastructure and substation buffers</b>			
<b>PO8</b>	Development involving a sensitive use is sufficiently separated from major electricity infrastructure or substations to minimise the likelihood of nuisance or complaint.	<b>AO8.1</b>	Sensitive uses maintain the following separation distances from the substation or easement for major electricity infrastructure: (a) 20m for transmission lines up to 132kV; (b) 30m for transmission lines between 133kV and 275kV; and (c) 40m for transmission lines exceeding 275kV.
<b>PO9</b>	Major electricity infrastructure on private land is included in an easement.	<b>AO9.1</b>	Existing infrastructure easements are maintained and where none currently exist, new easements are created which are sufficient for electricity provider's requirements.
<b>Bulk water supply pipelines and buffers</b>			
<b>PO10</b>	Development within a water supply infrastructure buffer: (a) is located, designed and constructed to protect the integrity of the water supply pipeline; and (b) maintains adequate access for any required maintenance or upgrading work to the water supply pipeline.	<b>AO10.1</b>	Buildings and structures are setback a minimum of 20m from a water supply pipeline.
<b>PO11</b>	Development is located and designed to maintain required access to water supply infrastructure.	<b>AO11.1</b>	Development does not restrict access to bulk water supply infrastructure of any type or size, having regard to: (a) buildings or structures; (b) gates and fences; (c) storage of equipment or materials; and (d) landscaping, earthworks, stormwater or other infrastructure.
<b>Petroleum pipeline buffers</b>			
<b>PO12</b>	Development within a Petroleum pipeline buffer reduces the risk of harm to sensitive uses, people and property.	<b>AO12.1</b>	Development within a Petroleum pipeline buffer provides and maintains adequate separation between the use or works and a Petroleum pipeline corridor so as to minimise risk of harm to

Performance Outcomes		Acceptable Outcomes	
			sensitive uses, people and property.
<b>PO13</b>	Development and works within a Petroleum pipeline buffer does not adversely impact on associated infrastructure.	<b>AO13.1</b>	Uses and works within a Petroleum pipeline buffer are constructed and operated to avoid: <ul style="list-style-type: none"> <li>(a) compromising the viability of the Petroleum pipeline corridor; or</li> <li>(b) damaging or adversely affecting the existing or future operation of major petroleum pipelines and the supply of petroleum.</li> </ul>
<b>Waste water treatment facilities and buffers</b>			
<b>PO14</b>	Accommodation activities and other sensitive uses are not adversely affected by odour emissions from existing or planned Waste water treatment facilities.	<b>AO14.1</b>	A sensitive use involving an Accommodation activity is not located or intensified within a Waste water treatment facility buffer.
		<b>AO14.2</b>	Any sensitive use (other than an accommodation activity) located within a Waste water treatment facility buffer: <ul style="list-style-type: none"> <li>(a) incorporates appropriate measures to minimise odour impacts; or</li> <li>(b) demonstrates that occupants and users will not be adversely affected by odour emissions from activities associated with the Waste water treatment facility.</li> </ul>
		<b>AO14.3</b>	Reconfiguring a lot within a Waste water treatment facility buffer: <ul style="list-style-type: none"> <li>(a) does not result in the creation of additional lots used or capable of being used for Accommodation activities; and</li> <li>(b) where rearranging boundaries, does not worsen the existing situation with respect to the distance between available residential sites and the Waste water treatment facility.</li> </ul>
<b>Waste management facility buffer</b>			
<b>PO15</b>	Accommodation activities and other sensitive uses are not adversely affected by noise emissions from existing or planned Waste management facilities.	<b>AO15.1</b>	A sensitive use involving an Accommodation activity is: <ul style="list-style-type: none"> <li>(a) not located or intensified within a Waste management facility buffer; or</li> <li>(b) where located within a Waste management facility buffer complies with the following the acoustic quality design</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			objectives specified in Environmental Protection (Noise) Policy 2008.
		<b>AO15.2</b>	Any sensitive use (other than an Accommodation activity) located within a Waste management facility buffer complies with the acoustic quality design objectives specified in <i>Environmental Protection (Noise) Policy 2008</i> .

## 8.2.11 Landslide hazard overlay code

### 8.2.11.1 Application

This code applies to accepted and assessable development:

- (a) subject to the Landslide overlay maps contained within Schedule 2 (Mapping); or
- (b) identified as requiring assessment against the Landslide overlay code by the tables of assessment in Part 5 (Tables of assessment).

### 8.2.11.2 Purpose and overall outcomes

- (1) The purpose of the Landslide overlay code is to:
  - (a) provide for the assessment of the suitability of development in an area subject to landslide hazard to ensure that risk to life, property, community, economic activity and the environment is minimised; and
  - (b) ensure that development does not increase the potential damage from landslide events on-site or to other property.
- (2) The purpose of the Landslide overlay code will be achieved through the following overall outcomes:
  - (a) development is compatible with the level of risk associated with the landslide hazard;
  - (b) development siting, design, layout and access responds to the risk of the landslide hazard and minimises risk to personal safety and property;
  - (c) development supports and does not unduly burden disaster management response or recovery capacity and capabilities;
  - (d) development directly, indirectly and cumulatively avoids an unacceptable increase in severity of the landslide hazard and does not significantly increase the potential for damage on the site or to other properties;
  - (e) where practical, community infrastructure is located and designed to function effectively during and immediately after a landslide event;
  - (f) development avoids the release of hazardous materials as a result of the landslide hazard; and
  - (g) natural processes and the protective function of landforms and/or vegetation are maintained in Landslide hazard areas.

### 8.2.11.3 Assessment benchmarks

**Table 8.2.11.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>PO1</b>	Development maintains the safety of people, property and hazardous materials (manufactured or stored in bulk) from the risk of a landslide hazard.	<b>AO1.1</b>	Development: <ul style="list-style-type: none"><li>(a) is not located on land identified in a Landslide hazard area; or</li><li>(b) if identified within a Landslide hazard area ensures:</li></ul>

Performance Outcomes		Acceptable Outcomes	
			<ul style="list-style-type: none"> <li>(i) the long term stability of the site including associated buildings and infrastructure;</li> <li>(ii) that the site will not be adversely affected by landslide activity originating from other land, including land above the site; and</li> <li>(iii) that filling and excavation does not redirect the flow of, or concentrate surface water or groundwater on the site or neighbouring sites.</li> </ul> <p>Note – This may be demonstrated by undertaking a site specific Landslide hazard (geotechnical) assessment report in accordance with PSP SC6.5 (Natural hazards).</p> <p>The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard.</p>
<b>PO2</b>	Community infrastructure maintains the safety of people and property and is not adversely affected by a landslide hazard.	<b>AO2.1</b>	<p>Development of community infrastructure within an identified Landslide hazard area ensures:</p> <ul style="list-style-type: none"> <li>(a) the long term stability of the site including associated building and infrastructure;</li> <li>(b) that access to the site will not be impeded by a landslide event;</li> <li>(c) that the site will not be adversely affected by landslides originating from other land, including land above the site; and</li> <li>(d) the primary function of the community infrastructure is maintained during a landslide event.</li> </ul> <p>Note – A site-specific landslide hazard (geotechnical) report is required to demonstrate compliance with PO2. The Landslide hazard (geotechnical) assessment report is to be prepared in accordance with PSP SC6.5 (Natural hazards).</p> <p>The building assessment provisions must address the stability of buildings and structures in relation to landslide hazard.</p>



## **8.2.12 Waterways and wetlands overlay code**

### **8.2.12.1 Application**

This code applies to accepted and assessable development:

- (a) subject to the Waterways and wetlands overlay map contained within Schedule 2 (Mapping); and
- (b) identified as requiring assessment against the Waterways and wetlands overlay code by the tables of assessment in Part 5 (Tables of assessment).

### **8.2.12.2 Purpose and overall outcomes**

- (1) The purpose of the Waterways and wetlands overlay code is to ensure that:
  - (a) matters of environmental significance are protected;
  - (b) ecological connectivity and habitat extent are maintained or enhanced;
  - (c) wetlands and waterways are protected, maintained or enhanced; and
  - (d) development in or adjacent to wetlands in Great Barrier Reef catchments is planned, designed, constructed and operated to prevent the loss or degradation of the wetlands and their environmental values.
- (2) The purpose of the Waterways and wetlands overlay code will be achieved through the following overall outcomes:
  - (a) development maintains or enhances the biodiversity values and associated ecosystem services of waterways and wetlands within the Whitsunday region;
  - (b) development protects and establishes appropriate buffers to waterways and wetlands;
  - (c) development protects known populations and supporting habitat of:
    - (i) matters of national environmental significance as listed in the Environment Protection and Biodiversity Conservation Act 1999;
    - (ii) endangered, vulnerable and near threatened flora and fauna species, as listed in the Nature Conservation Act 1992; and
    - (iii) regulated vegetation protected under the Vegetation Management Act 1999;
  - (d) development is planned, designed, constructed and managed to avoid or mitigate significant direct or indirect impacts on environmental values and processes of waterways and wetlands;
  - (e) development ensures that viable connectivity is maintained or enhanced between matters of environmental significance and biodiversity values;
  - (f) development protects the ecological values and processes, physical extent and buffering of waterways and wetlands;
  - (g) development enhances existing wetland environmental values or avoids adverse effects on wetland environmental values;

### 8.2.12.3 Assessment benchmarks

**Table 8.2.12.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>All development</b>			
<b>PO1</b>	Development avoids significant impacts on matters of environmental significance.	<b>AO1.1</b>	<p>Development:</p> <p>(a) does not result in a significant impact on the identified environmental values; or</p> <p>(b) is located, designed and operated to avoid or mitigate significant impacts on the identified environmental values.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>
<b>PO2</b>	Development protects and enhances ecological connectivity and/or habitat extent.	<b>AO2.1</b>	<p>Development retains vegetation in areas large enough to maintain ecological values, functions and processes.</p> <p>Note – This may be demonstrated by preparing an Ecological assessment report in accordance with PSP SC6.2 (Environmental features).</p>
<b>Where development is within an urban area</b>			
<b>Plan to avoid/minimise new impacts</b>			
<b>PO3</b>	The development is planned and designed considering the land use constraints of the site for achieving stormwater design objectives.	<b>AO3.1</b>	<p>A site stormwater quality management plan (SQMP) is prepared ensuring it:</p> <p>(a) is consistent with any local area stormwater management planning, and</p> <p>(b) provides for achievable stormwater quality treatment measures meeting design objectives listed in Table 8.2.12.3.2 (Stormwater management design objectives – Construction phase) and Table 8.2.12.3.3 (Stormwater management design objectives – Post construction phase), or current best practice environmental management, reflecting land use constraints, such as:</p> <ul style="list-style-type: none"> <li>(i) erosive, dispersive and/or saline soil types;</li> <li>(ii) landscape features (including landform);</li> <li>(iii) acid sulfate soil and management of nutrients of concern; and</li> <li>(iv) rainfall erosivity.</li> </ul> <p>Note – The Urban stormwater quality</p>

Performance Outcomes		Acceptable Outcomes	
			<p>planning guideline (EHP 2010) provides best practice information for the management of development and construction activities.</p> <p>Editor's Note – Local area stormwater management planning may include Urban stormwater quality management plans, Catchment or waterway management plans, Healthy waters management plans, Water quality improvement plans or Natural resource management plans.</p>
PO4	Development does not discharge wastewater to a waterway or off site unless demonstrated to be best-practice environmental management for that site.	AO4.1	<p>A wastewater management plan (WWMP) is prepared by a suitably qualified person and addresses:</p> <ul style="list-style-type: none"> <li>(a) wastewater type;</li> <li>(b) climatic conditions;</li> <li>(c) water quality objectives (WQOs); and</li> <li>(d) best practice environmental management.</li> </ul>
		AO4.2	<p>The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that:</p> <ul style="list-style-type: none"> <li>(a) avoids wastewater discharges to waterways; or</li> <li>(b) if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.</li> </ul>
PO5	Any non-tidal artificial waterway is located in a way that is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.	AO5.1	<p>If the proposed development involves a non-tidal artificial waterway:</p> <ul style="list-style-type: none"> <li>(a) environmental values in downstream waterways are protected;</li> <li>(b) any groundwater recharge areas are not affected;</li> <li>(c) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway; and</li> <li>(d) existing areas of ponded water are included.</li> </ul>
		AO5.2	<p>Non-tidal artificial waterways are located:</p> <ul style="list-style-type: none"> <li>(a) outside natural wetlands and any associated buffer areas;</li> <li>(b) to minimise the disturbance of soils or sediments; and</li> <li>(c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient hazardous areas.</li> </ul>

Performance Outcomes		Acceptable Outcomes	
<b>PO6</b>	Any non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	<b>AO6.1</b>	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: <ul style="list-style-type: none"> <li>(a) there is sufficient flushing or a tidal range of &gt;0.3 m; or</li> <li>(b) any tidal flow alteration does not adversely impact on the tidal waterway; or</li> <li>(c) there is no introduction of salt water into freshwater environments.</li> </ul>
<b>Design to avoid/minimise new impacts</b>			
<b>PO7</b>	Stormwater does not discharge directly to a non-tidal artificial waterway without treatment to manage stormwater quality management.	<b>AO7.1</b>	Any non-tidal artificial waterway is designed and managed for any of the following end-use purposes: <ul style="list-style-type: none"> <li>(a) amenity (including aesthetics, landscaping and recreation); or</li> <li>(b) flood management; or</li> <li>(c) stormwater harvesting as part of an integrated water cycle management plan; or</li> <li>(d) aquatic habitat.</li> </ul>
		<b>AO7.2</b>	The end-use purpose of any non-tidal artificial waterway is designed and operated in a way that protects water environmental values.
<b>Construct to avoid/minimise new impacts</b>			
<b>PO8</b>	Construction activities avoid or minimise adverse impacts on stormwater quality.	<b>AO8.1</b>	An Erosion and sediment control plan (ESCP) demonstrates that the release of sediment-laden stormwater is avoided for the nominated design storm and minimised when the nominated design storm is exceeded. <p>Editor's note – ESCP must address relevant design objectives outlined within SDAP Module 8.</p> <p>Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).</p>
		<b>AO8.2</b>	Erosion and sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate recommendations from a suitably qualified person experienced with technical expertise in the field of Environmental engineering.

Performance Outcomes		Acceptable Outcomes	
			Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).
		<b>AO8.3</b>	<p>The ESCP demonstrates how stormwater quality will be managed in accordance with an acceptable regional or local guideline so that target contaminants are treated.</p> <p>Editor's note – ESCP must address relevant design objectives outlined within SDAP Module 8.</p> <p>Note – An Erosion and sediment control plan is to be prepared in accordance with PSP SC6.8 (WRC development manual).</p>
<b>Operate to avoid/minimise new impacts</b>			
<b>PO9</b>	Operational activities for the development avoids or minimises changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.	<b>AO9.1</b>	<p>Development (both construction and post-construction) incorporates stormwater flow control measures to achieve the design objectives set out in:</p> <p>(a) Table 8.2.12.3.2 (Stormwater management design objectives – Construction phase); and</p> <p>(b) Table 8.2.12.3.3 (Stormwater management design objectives – Post construction phase); or</p> <p>(c) current best practice environmental management, including management of frequent flows, peak flows, and construction phase hydrological impacts.</p>
<b>PO10</b>	Wastewater discharge to a waterway is managed in a way that maintains ecological processes, riparian vegetation, waterway integrity and downstream ecosystem health.	<b>AO10.1</b>	Wastewater discharge to non-tidal artificial waterways is managed to avoid or minimise the release of nutrients of concern so as to minimise the occurrence, frequency and intensity of coastal algal blooms.
		<b>AO10.2</b>	<p>Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology.</p> <p>Note – Compliance with this outcome may be demonstrated by following the management advice in the guideline: Implementing policies and plans for</p>

Performance Outcomes		Acceptable Outcomes	
			managing nutrients of concern for coastal algal blooms in Queensland by the Department of Environment and Heritage Protection.
<b>PO11</b>	Any non-tidal artificial waterway is managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	<b>AO11.1</b>	Any non-tidal artificial waterway is designed, constructed and managed under the responsibility of a suitably qualified registered professional engineer, Queensland (RPEQ) with specific experience in establishing and managing artificial waterways.
		<b>AO11.2</b>	Monitoring and maintenance programs adaptively manage water quality in any non-tidal artificial waterway to achieve relevant water-quality objectives downstream of the waterway.
		<b>AO11.3</b>	Aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%). Pests and vectors (such as mosquitoes) are managed through avoiding stagnant water areas, providing for native fish predators and any other best practices for monitoring and treating pests.
		<b>AO11.4</b>	Any non-tidal artificial waterway is managed and operated by a responsible entity under agreement for the life of the waterway. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that: <ul style="list-style-type: none"> <li>(a) identifies the waterway;</li> <li>(b) states a period of responsibility for the entity;</li> <li>(c) states a process for any transfer of responsibility for the waterway;</li> <li>(d) states required actions under the agreement for monitoring the water quality of the waterway and receiving waters;</li> <li>(e) states required actions under the agreement for maintaining the waterway to achieve the outcomes of this code and any relevant conditions of a development approval; and</li> <li>(f) identifies funding sources for the above, including bonds, infrastructure charges or levies.</li> </ul>

Performance Outcomes		Acceptable Outcomes	
Where development is within or adjacent to waterways or Matters of state environmental significance (MSES) wetland			
<b>PO12</b>	Development ensures stormwater treatment is located clear of waterways and wetland areas.	<b>AO12.1</b>	Stormwater treatment devices are located entirely outside of waterways, waterway buffers and wetland areas.
<b>PO13</b>	Development: (a) retains, enhances and maintains the environmental values and functioning of waterways; and (b) provides and maintains adequate vegetated buffers and setbacks to waterways.	<b>AO13.1</b>	Cleared, degraded or disturbed waterway and waterway buffer areas within the site are rehabilitated. Such areas are rehabilitated along their full length to a suitable buffer width in accordance with expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental significance).
		<b>AO13.2</b>	Site layout does not impact upon the natural drainage systems associated with the waterway.
		<b>AO13.3</b>	Development is undertaken in accordance with an approved Vegetation management plan prepared in accordance with PSP SC6.2 (Environmental features) that protects the waterway.
<b>PO14</b>	Bank stability, channel integrity and in-stream habitat is protected from degradation and maintained or improved at a standard commensurate with predevelopment environmental conditions.	<b>AO14.1</b>	No direct interference or modification of waterway channels, banks or riparian and in-stream habitat occurs.
<b>PO15</b>	Existing natural flows of surface and groundwater are not altered through channelization, redirection or interruption of flows.	<b>AO15.1</b>	Development ensures that the natural surface water and groundwater hydrologic regimes of waterways and associated buffers are maintained to the greatest extent possible.
<b>PO16</b>	Development on land adjacent to a waterway maintains an appropriate extent of public access to waterways and minimises edge effects.	<b>AO16.1</b>	Development adjacent to a waterway provides that: (a) no new lots directly adjoin the riparian area; and (b) a new road is located between the riparian buffer and the proposed development areas.
<b>PO17</b>	Development is not carried out in a wetland area.	<b>AO17.1</b>	Development is located outside: (a) the mapped boundary of a wetland area; or (b) an alternative mapped boundary of the wetland area, (submitted to Council and supported by a site assessment and analysis of the wetland to delineate its extent, in accordance with

Performance Outcomes		Acceptable Outcomes	
			expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental features)).
<b>PO18</b>	Development does not result in the short or long-term degradation of environmental values of wetlands due to edge effects.	<b>AO18.1</b>	Development, including associated infrastructure, provides for a buffer along the boundary adjoining wetland areas.
		<b>AO18.2</b>	Development provides for buffer(s) of: (a) not less than 100m width, incorporating vegetated (representative of local native habitat) and degraded areas requiring rehabilitation between the development and wetlands located on and/or adjacent to the site; or (b) dimension and characteristics that protect the long term viability of the wetlands located on and/or adjacent to the site from negative impacts associated with the development on the site, in accordance with expert ecological advice provided as part of the approved Ecological assessment report prepared in accordance with PSP SC6.2 (Environmental significance).
<b>PO19</b>	The existing surface water hydrological regime of the wetland area is enhanced or maintained.	<b>AO19.1</b>	Development must: (a) provide a net ecological benefit and improvement to the environmental values and functioning of a wetland area; or (b) rehabilitate the existing hydrological regime, or restore the natural hydrological regime of the wetland area to enhance the ecological functions and biodiversity values of the wetland.
		<b>AO19.2</b>	Development ensures the: (a) existing surface water hydrological regime of a wetland area does not change, including through channelization, redirection or interruption of flows, as demonstrated in the approved Ecological assessment report



Performance Outcomes		Acceptable Outcomes	
			<p>prepared in accordance with PSP SC6.2 (Environmental features); or</p> <p>(b) extent of any change to the existing surface water hydrological regime is minimised to ensure wetland values and functioning are protected. The change is minimised if:</p> <p>(i) there is no change to the reference duration high-flow and low-flow duration frequency curves, low-flow spells frequency curve and mean annual flow to and from the wetland; or</p> <p>(ii) any relevant stream flows into the wetland comply with the relevant flow objectives of the applicable water resource plan for the area; or</p> <p>(iii) for development resulting in an increase to the velocity or volume of stormwater flows into the wetland – the collection and re-use of stormwater occurs in accordance with (a) or (b).</p>

**Table 8.2.12.3.2 Stormwater management design objectives – Construction phase (Ref: SPP Appendix 3)**

Issue	Design Objectives	Issue
Drainage control	Temporary drainage works	<p>(1) Design life and design storm for temporary drainage works:</p> <p>(a) disturbed area open for &lt;12 months—1 in 2-year ARI event;</p> <p>(b) disturbed area open for 12–24 months—1 in 5-year ARI event;</p> <p>(c) disturbed area open for &gt; 24 months—1 in 10-year ARI event.</p> <p>(2) Design capacity excludes minimum 150 mm freeboard.</p> <p>(3) Temporary culvert crossing—minimum 1 in 1-year ARI hydraulic capacity.</p>
Erosion control	Erosion control measures	<p>(1) Minimise exposure of disturbed soils at any time.</p> <p>(2) Divert water run-off from undisturbed areas around disturbed areas.</p> <p>(3) Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods.</p>

Issue	Design Objectives	Issue
		(4) Implement erosion control methods corresponding to identified erosion risk rating.
Sediment control	Sediment control measures  Design storm for sediment control basins  Sediment basin dewatering	(1) Determine appropriate sediment control measures using: (a) potential soil loss rate; or (b) monthly erosivity; or (c) average monthly rainfall. (2) Collect and drain stormwater from disturbed soils to sediment basin for design storm event: (a) design storm for sediment basin sizing is 80th% five-day event or similar. (3) Site discharge during sediment basin dewatering: (a) TSS < 50 mg/L TSS; (b) turbidity not >10% receiving waters turbidity; and (c) pH 6.5–8.5.
Water quality	Litter and other waste, hydrocarbons and other contaminants	(1) Avoid wind-blown litter; remove gross pollutants. (2) Ensure there is no visible oil or grease sheen on released waters. (3) Dispose of waste containing contaminants at authorised facilities.
Waterway stability and flood flow management	Changes to the natural waterway hydraulics and hydrology	(1) For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.

**Table 8.2.12.3.3 Stormwater Management Design Objectives - Post construction phase (Ref: SPP Appendix 3)**

Climatic region	Design Objectives Minimum reductions in mean and annual load from unmitigated development (%)				Application
	Total suspended solids	Total phosphorus	Total Nitrogen	Gross pollutants >5mm	
Central Queensland (North)	75	60	40	90	Development for urban purposes within population centres greater than 3,000 persons.
All	N/A	N/A	N/A	N/A	Excludes development that is less than 25% impervious.  In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.
	Waterway stability management  Limit the peak 1-year ARI event discharge within the receiving waterway to the pre-development				Catchments contributing to un-lined receiving waterway may not require

	peak 1-year ARI event discharge.	compliance if the waterway is degraded.  For peak flow the 1-year ARI event, use co-located storages to attenuate site discharge rate of stormwater.
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## Part 9 Development codes

### 9.1 Preliminary

- (1) Development codes are codes for assessment where identified as an applicable code in Part 5 (Tables of assessment).
- (2) The following codes and requirements apply to development under schedule 6 of the Regulation are relevant for the planning scheme.
- (3) Use codes and other development codes are specific to each planning scheme area.
- (4) The following are the codes and requirements under the Regulation for development in the planning scheme area:
  - (a) Community residence code requirements applying to development that may not be made assessable development under the planning scheme
  - (b) Cropping (involving forestry for wood production) code applying to development that may not be made assessable development under the planning scheme
  - (c) Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code applying to development for which code assessment is required under schedule 10, part 12 and schedule 10, part 14 division 2 of the Regulation.
- (5) The following are the use codes for the planning scheme:
  - (a) Business activities code
  - (b) Caretaker's accommodation code
  - (c) Child care centre code
  - (d) Dual occupancy code
  - (e) Dwelling house code
  - (f) Extractive industry code
  - (g) Home based business code
  - (h) Industry activities code
  - (i) Market code
  - (j) Multi-unit code
  - (k) Relocatable home park and tourist park code
  - (l) Residential care and retirement facility code
  - (m) Rural activities code
  - (n) Sales office code
  - (o) Service station code

- 
- (p) Telecommunication facility code
- (6) The following are the other development codes for the planning scheme:
- (a) Advertising devices code
  - (b) Construction management code
  - (c) Excavation and filling code
  - (d) Infrastructure code
  - (e) Landscaping code
  - (f) Reconfiguring a lot code
  - (g) Transport and parking code



## 9.2 Development that cannot be made assessable in accordance with Schedule 6 of the Planning Regulation 2017

### 9.2.1 Community residence requirements

Development for a community residence that complies with the acceptable outcomes in Table 9.2.3.1 is accepted development.

**Table 9.2.3.1 Community residence for accepted development only**

Requirements	
1.	The premises are in a residential zone or rural residential zone.
2.	No more than 7 support workers attend the residence in a 24-hour period.
3.	At least 2 car parks are provided on the premises for use by residents and visitors.
4.	At least 1 of the car parks stated in (3) is suitable for persons with disabilities.
5.	At least 1 car park is provided on the premises for use by support workers.

Editor's note—Schedule 6, Part 2, (6) of the Regulation states the development the planning scheme is prohibited from making assessable development for a material change of use for community residence.

## 9.2.2 Requirements for Cropping involving forestry for wood production code for accepted development

**Table 9.2.3.11 Code for accepted development that is a material change of use for cropping (involving forestry for wood production) or operational work for harvesting trees for wood production.**

<b>Requirements</b>	
<b>Setbacks</b>	
1	The use or work is at a distance of at least the separation distance stated in <b>Table 9.2.3.12</b> below taken from the Regulation Schedule 13 Part 2 Table 1, column 2 Separation distances>—Separation distances.
2	Seedlings within the separation distance stated in requirement (1) are removed if the seedlings: <ul style="list-style-type: none"> <li>(i) are the same species as the trees to be harvested; and</li> <li>(ii) are not native to the local area.</li> </ul>
<b>Impacts on soil structure, fertility and stability</b>	
3	For land with a slope of more than 10% but less than 25% - the development uses only— <ul style="list-style-type: none"> <li>(a) mechanical strip cultivation on the contour; or</li> <li>(b) spot cultivation; or</li> <li>(c) manual cultivation.</li> </ul>
4	For land with a slope of 25% or more – the development uses only— <ul style="list-style-type: none"> <li>(a) spot cultivation; or</li> <li>(b) manual cultivation.</li> </ul>
5	The construction, operation or maintenance of a track or road for the development does not adversely affect – <ul style="list-style-type: none"> <li>(a) a natural drainage feature on the land; or</li> <li>(b) land that is subject to erosion or landslide.</li> </ul>
6	A track or road for the development – <ul style="list-style-type: none"> <li>a) is appropriately drained; and</li> <li>b) has a stable surface.</li> </ul>
7	Drainage structures for a track or road for the development are regularly maintained.
8	Drainage water from a track or road for the development is directed away from exposed soils, and onto undisturbed ground or other areas with a stable surface.
<b>Fire risk</b>	
9	For development involving a forest for wood production that is less than 40ha - a fire break that is at least 7m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
10	For development involving a forest for wood production that is at least 40ha, but less than 100ha — a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained.
11	For development involving a forest for wood production that is 100ha or more— <ul style="list-style-type: none"> <li>(a) a fire break that is at least 20m wide, measured from the base of the outermost tree in the forest to be harvested, is established and maintained; or</li> <li>(b) both of the following things are established and maintained—</li> </ul>

	<p>(i) a fire break that is at least 10m wide, measured from the base of the outermost tree in the forest to be harvested;</p> <p>(ii) a fuel reduction area immediately behind the fire break that is at least 10m wide.</p>
12	Trees to be harvested in the fuel reduction area are pruned to a minimum height of 5m when the trees reach a height of 10m.
13	Fire breaks are kept clear of flammable material with a height of more than 1m.
14	Fire access tracks and roads that are at least with a minimum width of 4m wide are established and maintained on the premises.
15	Each part of the forest for wood production is within 250m of a fire access track or road.
16	<p>Despite requirement (1), the following works may be carried out within the separation distance mentioned in <b>Table 9.2.3.12 - Separation distances</b>—</p> <p>a) the construction of roads and tracks for the development;</p> <p>b) maintenance works for the development.</p>

**Table 9.2.3.12 - Separation distances**

<b>Column 1 Structure or thing</b>	<b>Column 2 Separation distance</b>
1 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as stream order 1 to 2 under the <u>Strahler stream order classification system</u>	5m from the defining bank of the watercourse
2 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 3 to 5 under the <u>Strahler stream order classification system</u>	10m from the defining bank of the watercourse.
3 A watercourse shown on the regulated vegetation management map (1:100,000) and classified as a stream order 6 under the <u>Strahler stream order classification system</u>	20m from the defining bank of the watercourse.
4 A State-owned protected area or forest reserve under the <i>Nature Conservation Act 1992</i>	10m from the boundary of the protected area or forest reserve
5 category A area, category B area, category C area or category R area	10m from the boundary of the area
6 A dwelling	100m from the dwelling, or another distance that complies with the Building Code and AS 3959-2009 ' <i>Construction of buildings in bushfire prone areas</i> '
7 A machinery shed	<p>A distance that is the greater of the following —</p> <p>(a) 25m from the machinery shed; or</p> <p>(b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested</p>

8 A transmission grid, supply network or above-ground pipeline, that services more than 1 premises and is not the subject of an easement.

A distance that is the longer of the following—

- (a) 25m from the structure;
- (b) A distance from the structure that equals 1.5 times the maximum height of the trees to be harvested

## 9.2.3 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code

### 9.2.3.1 Purpose

The purpose of the Reconfiguring a lot (subdividing one lot into two lots) and associated operational works code is for assessing applications for development for reconfiguring a lot that requires assessment as regulated in Part 5, section 5.4 under Table 5.4.2 (Regulated categories of assessment: reconfiguring a lot).

Editor's note—Schedule 12 (3) of the Regulation sets out the assessment benchmarks for the reconfiguring a lot.

This code applies to a reconfiguring of a lot if –

- (a) The lot is in an industrial zone or residential zone (other than a park residential zone or rural residential zone); and
- (b) The reconfiguration is the subdivision of 1 lot, other than a rear lot, into 2 lots (each a created lot); and
- (c) Each created lot is at least the minimum lot size for the relevant zone stated in a local instrument; and
- (d) the reconfiguration is consistent with the purpose statement for the relevant zone stated in a local instrument.

However, this code does not apply if –

- (a) all or part of the premises, are in an erosion prone area or any of the following areas under a local instrument –
  - (i) a flood hazard area;
  - (ii) a bushfire hazard area;
  - (iii) a landslide hazard area;
  - (iv) a storm tide inundation area; or
- (b) an overlay in a local instrument applies to all or part of the premises, or any part of the premises.

For this section –

**Industrial zone** means area, (however described), designated in a local categorising instrument as industrial.

**Relevant zone** means the zone applying to premises under a local instrument.

A reference to a local instrument is a reference to a local instrument applying to the premises.

**Table 9.2.3.1 Reconfiguring a lot (subdividing one lot into two lots) and associated operational works requiring code assessment**

Requirements	
1.	The frontage of each created lot complies with the minimum frontage requirements for the relevant zone stated in a local instrument.
2.	The building envelope of each created lot complies with the building envelope requirements for the relevant zone stated in a local instrument.
3.	The reconfiguration involved the creation of a rear lot only if the local instrument states that a rear lot is consistent with the relevant zone.
4.	The number of lots, including rear lots adjoining each created lot complies with the maximum number of adjoining lots of the relevant zone stated in a local instrument.

5.	If the reconfiguration creates a rear lot— <ul style="list-style-type: none"> <li>(i) An access strip for the rear lot does not adjoin the access strip of more than 1 other rear lot; and</li> <li>(ii) No more than 2 rear lots are accessed from the head of a single cul-de-sac</li> </ul>
6.	If a local instrument states minimum setback distances for the relevant zone—the distance of a building or structure from a boundary of a created lot complies with the minimum distances stated in the local instrument.
7.	If the reconfiguration is in a residential zone and a local instrument does not state minimum setback distances for the zone— the distance of an existing building or structure from a boundary of a created lot complies with the minimum setback distances stated in the Queensland Development Code, parts 1.1 to 1.3
8.	A new building or structure on the premises — <ul style="list-style-type: none"> <li>(iii) Will comply with the Queensland Development Code, part 1.4; and</li> <li>(iv) Will be outside of an existing or planning infrastructure easement.</li> </ul>
9.	Each created lot has access to the road network through— <ul style="list-style-type: none"> <li>(i) Direct road frontage; or</li> <li>(ii) An access strip; or</li> <li>(iii) An access easement, if a local instrument states that an access easement is consistent with the relevant zone.</li> </ul>
10.	Access from each created lot to the road network is- <ul style="list-style-type: none"> <li>(i) Lawful, safe and practical; and</li> <li>(ii) Designed and built in accordance with requirements for the relevant zone stated in a local instrument, including requirements about width, length or gradient;</li> </ul>
11.	If a local instrument does not state a minimum width requirement for an access strip or access easement in the relevant zone – an access strip or access easement for a created lot has a minimum width of – <ul style="list-style-type: none"> <li>(i) For reconfiguring a lot in a residential zone—5m; or</li> <li>(ii) For reconfiguring a lot in an industry zone— 8m.</li> </ul>
12.	If a local instrument does not state a maximum length requirement for an access strip or access easement in the relevant zone – an access strip or access easement for a created lot has a maximum length of 50m.
13.	If the premises are in a reticulated water area – each created lot is connected to the reticulated water supply system.
14.	If the premises are not in a reticulated water area – each created lot has an alternative potable water supply source that complies with the minimum storage capacity requirements for the relevant zone stated in a local instrument.
15.	If the premises are in an area with a sewerage service – each created lot is connected to the sewerage service.
16.	If the premises are not in an area with a sewerage service – each created lot has an effluent treatment and disposal system designed and built in accordance with the requirements stated in a local instrument.
17.	Each lot is connected to a supply network and telecommunication network, if required under a local instrument.
18.	Any other infrastructure necessary to service the lots will be provided, designed and built in accordance with the requirements stated in a local instrument.
19.	The release of sediment from the premises, including from erosion and sediment-laden stormwater runoff- <ul style="list-style-type: none"> <li>(i) is minimised during and after construction; and</li> <li>(ii) complies with the requirements stated in a local instrument.</li> </ul>
20.	Filling and excavation on the premises – <ul style="list-style-type: none"> <li>(i) does not cause a vertical change to the natural ground level of more than 1</li> </ul>

	<p>metre; and</p> <p>(ii) does not result in ponding on the premises or adjoining land; and</p> <p>(iii) complies with the requirements stated in a local instrument.</p>
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## 9.3 Use codes

### 9.3.1 Business activities code

#### 9.3.1.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Business activities code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.1.2 Purpose and overall outcomes

- (1) The purpose of the Business activities code is to ensure that Business activities:
  - (a) are developed in a manner consistent with the Whitsunday regions hierarchy of centres; and
  - (b) are of a high quality design which reflects good centre design principles and appropriately responds to local character, environment and amenity considerations.
  
- (2) The purpose of the Business activities code will be achieved through the following overall outcomes:
  - (a) a Business activity is of a type, scale and intensity that is consistent with and reinforces the Whitsunday regions hierarchy of centres;
  - (b) a Business activity incorporates building and landscape design that responds to the region's tropical climate as well as the character of the particular local area;
  - (c) a Business activity is integrated into its surrounds and reflects high quality town centre design, streetscape and landscaping principles; and
  - (d) a Business activity avoids or mitigates adverse impacts upon the amenity, privacy or environmental quality of nearby Accommodation activities.

#### 9.3.1.3 Assessment benchmarks

**Table 9.3.1.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Relationship of buildings to streets and public spaces			
PO1	The Business activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.	AO1.1	The building is located close to the street frontage and other urban spaces for all or most of its length so as to create a continuous or mostly continuous edge.
		AO1.2	The building is sited and designed such that: <ol style="list-style-type: none"> <li>(a) the main pedestrian entrance to the building (or group of buildings) is located on the primary street frontage;</li> <li>(b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned from the primary</li> </ol>



Performance Outcomes		Acceptable Outcomes	
			street frontage; and (c) the building addresses the street and has its pedestrian entrances fronting the street.
		<b>AO1.3</b>	Car parking areas, service areas and driveways: (a) are located and configured so that they do not dominate the streetscape; and (b) are separate from the pedestrian access.
<b>PO2</b>	The Business activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	<b>AO2.1</b>	Any building provides adequate and appropriate shelter along or around the street in the form of an awning, colonnade, verandah or the like with a width: (a) of 3.2m to 4m; or (b) consistent with the width of shelter provided to adjoining premises.
<b>PO3</b>	The Business activity is in a building which is designed to create vibrant and active streets and public spaces.	<b>AO3.1</b>	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear or relatively clear windows and glazed doors.
		<b>AO3.2</b>	The building incorporates activities that are likely to foster casual, social and business interaction for extended periods such as shops, food and drink outlets and the like.
		<b>AO3.3</b>	Development minimises vehicular access across active street frontages.
<b>Building mass and composition</b>			
<b>PO4</b>	The Business activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that: (a) is closely related to streets, public spaces and pedestrian routes; (b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building; (c) ensures access to attractive views and prevailing cooling breezes; and (d) avoids excessively large building floor plates and building facades.	<b>AO4.1</b>	Except where otherwise provided for in a zone or local plan code: (a) site cover of a building does not exceed: (i) 70% for that part of a building not exceeding 8.5m in height; and (ii) 50% for that part of a building exceeding 8.5m in height; (b) buildings are set back from street frontages: (i) not more than 3m for that part of a building not exceeding 8.5m in height; and (ii) at least 6m for that part of a building exceeding 8.5m in height; (c) buildings are set back from other site boundaries:

Performance Outcomes		Acceptable Outcomes	
			<ul style="list-style-type: none"> <li>(i) 0m if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site;</li> <li>(ii) at least 3m if not exceeding 8.5m in height and adjoining an existing wall with openings on an adjoining site; and</li> <li>(iii) at least 6m for that part of a building exceeding 8.5m in height.</li> </ul>
		<b>AO4.2</b>	Any projection above the podium level outside the boundaries of the building envelope is limited to balconies that do not project more than 1.5m into the setback.
		<b>AO4.3</b>	All storeys of a building above the third storey have a plan area that does not exceed 1,000m <sup>2</sup> in plan area with no horizontal dimension exceeding 45m.
<b>Building features and articulation</b>			
<b>PO5</b>	The Business activity is in a building which: <ul style="list-style-type: none"> <li>(a) provides visual interest through form and facade design;</li> <li>(b) provides outdoor or semi-enclosed public spaces that complement adjoining indoor spaces; and</li> <li>(c) responds to the character and amenity of neighbouring premises and the streetscape.</li> </ul>	<b>AO5.1</b>	The building has articulated and textured facades that incorporates some or all of the following design features to create a high level of openness and visual interest, and provide shading to walls and windows: <ul style="list-style-type: none"> <li>(a) wide colonnades, verandahs, awnings, balconies and eaves; or</li> <li>(b) recesses, screens and shutters; or</li> <li>(c) windows that are protected from excessive direct sunlight during warmer months.</li> </ul>
		<b>AO5.2</b>	Outdoor or semi-enclosed public spaces are sited to promote an attractive central core or entrance space with plantings and seating arrangements that foster its function as a desirable meeting or resting point.
		<b>AO5.3</b>	The building is articulated and finished in ways that respond to significant built form elements of adjacent buildings and the streetscape such as continuity of colonnades, verandahs, balconies, eaves, parapet lines and roof forms.
		<b>AO5.4</b>	The building incorporates vertical

Performance Outcomes		Acceptable Outcomes	
			and horizontal articulation such that no unbroken elevation is longer than 15m.
		<b>AO5.5</b>	The building has a top level and roof form that is shaped to: (a) provide a visually attractive skyline silhouette; and (b) screen mechanical plant and equipment from view.
<b>PO6</b>	Where the Business activity involves the development of a multi storey building the building is designed to display the functional differences between the ground level and the above ground level spaces.	<b>AO6.1</b>	A building having a height of more than 8.5m incorporates built form elements that help to differentiate between the podium and other building levels.
Environmental management and amenity of residential premises			
<b>PO7</b>	The Business activity does not unreasonably impact upon the amenity or environmental quality of its environs and especially any nearby sensitive uses.	<b>AO7.1</b>	Undesirable visual, noise and odour impacts on public spaces and sensitive uses, are avoided or reduced by: (a) where appropriate, limiting the hours of operation of the Business activity to maintain acceptable levels of residential amenity relative to the site context and setting; (b) providing vehicle loading/unloading and refuse storage/collection facilities within enclosed service yards or courtyards; and (c) not locating site service facilities and areas along any frontage to a public street, sensitive uses or other urban space.
		<b>AO7.2</b>	Where the Business activity requires the use of acoustic attenuation measures to mitigate adverse impacts on nearby sensitive uses, such measures are designed and constructed to be compatible with surrounding development and the local streetscape.
		<b>AO7.3</b>	Glare conditions or excessive 'light spill' onto adjacent sites and public spaces are avoided or minimised through measures such as: (a) selection and location of light fixtures; (b) use of building design/architectural elements or landscape treatments to block or reduce excessive light spill to locations where it

Performance Outcomes		Acceptable Outcomes	
			would cause a nuisance to residents or the general public; and (c) alignment of streets, driveways and servicing areas to minimise vehicle headlight impacts on adjacent residential premises.
<b>PO8</b>	The Business activity maintains the reasonable privacy and amenity of Accommodation activities such that the use of indoor and outdoor living areas by residents is not unreasonably diminished.	<b>AO8.1</b>	Where the development is adjacent to an existing or approved building containing Accommodation activities, the reasonable privacy and amenity of such uses is maintained by: (a) siting and orienting buildings to minimise the likelihood of overlooking occurring; (b) having windows and outdoor areas, (including balconies and terraces) located and designed so that they do not look into dwellings or rooming units; and (c) incorporating screening over building openings.
<b>PO9</b>	Where the Business activity is part of a mixed use development involving Accommodation activities in the same building, the development provides residents with reasonable levels of privacy and security.	<b>AO9.1</b>	Entry areas for the residents of and visitors to dwellings or rooming units are provided: (a) separately from entrances for other building users; and (b) for safe entry from streets, car parking areas and servicing areas.
		<b>AO9.2</b>	Clearly marked, safe and secure parking areas are provided for residents and visitors which are separate from parking areas provided for other building users.
		<b>AO9.3</b>	Security measures are installed such that other building users do not have access to areas that are intended for the exclusive use of residents of and visitors to Accommodation activities.
		<b>AO9.4</b>	Buildings provide opportunities for casual surveillance of any adjoining street or other public space.
		<b>AO9.5</b>	All access points, footpaths, car parks, building entrances and foyers are illuminated.
		<b>AO9.6</b>	The Business activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the Environmental

Performance Outcomes		Acceptable Outcomes	
			Protection (Noise) Policy.
<b>Requirements for a shop (corner store) in a residential zone</b>			
<b>PO10</b>	Where the Business activity involves the establishment of a corner store in a residential zone, the corner store is: (a) appropriately located in the residential zone taking account of the size and configuration of the neighbourhood and the location of other existing or approved retail facilities; and (b) compatible with the scale and intensity of development in the neighbourhood.	<b>AO10.1</b>	The corner store is located on a site that is more than 400m radial distance from any: (a) existing shop; or (b) site with a current approval for a shop; or (c) land included in a centre zone.
		<b>AO10.2</b>	The building in which the corner store is located does not exceed a gross floor area of 150m <sup>2</sup> .
<b>Requirements for a Business activity in an industry zone</b>			
<b>PO11</b>	Buildings and structures associated with the Business activity are: (a) of a scale and design which is appropriate to an industrial setting whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive uses.	<b>AO11.1</b>	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary where adjoining a sensitive land use or land in a residential zone or the Community facilities zone; or (d) 0.75m from any the side or rear boundary where not adjoining a sensitive land use or land in a residential zone or the Community facilities zone; or (e) where less than .75m to the boundary, maintenance free.

## 9.3.2 Caretaker's accommodation code

### 9.3.2.1 Application

This code applies to accepted and assessable development:

- (a) being a material change of use for caretaker's accommodation; and
- (b) identified as requiring assessment against the Caretaker's accommodation code by the tables of assessment in Part 5 (Tables of assessment).

### 9.3.2.2 Purpose and overall outcomes

- (1) The purpose of the Caretaker's accommodation code is to provide for the development of bona fide caretaker's accommodation use which provides acceptable levels of amenity for occupants.
- (2) The purpose of the Caretaker's accommodation code will be achieved through the following overall outcomes:
  - (a) caretaker's accommodation is used for genuine caretaking or property management purposes;
  - (b) caretaker's accommodation remains ancillary to non-residential premises on the same site;
  - (c) an acceptable level of residential amenity is provided for occupants of caretaker's accommodation; and
  - (d) caretaker's accommodation does not adversely impact upon the amenity of the local area.

### 9.3.2.3 Assessment benchmarks

**Table 9.3.2.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Bona fide use</b>			
<b>PO1</b>	The caretaker's accommodation is used for bona fide caretaking or property management purposes.	<b>AO1.1</b>	The caretaker's accommodation is occupied by a person or persons having responsibility for the security, maintenance or management of non-residential activities conducted on the same site and, if applicable, that person's immediate family.
<b>PO2</b>	The caretaker's accommodation is ancillary to the non-residential premises on the same site.	<b>AO2.1</b>	The caretaker's accommodation has a gross floor area not exceeding 70m <sup>2</sup> .
		<b>AO2.2</b>	No more than one caretaker's accommodation is established on the site.
		<b>AO2.3</b>	The caretaker's accommodation does not have a separate land title from the balance of the site.
<b>Protection of residential amenity</b>			
<b>PO3</b>	The design of the caretaker's accommodation achieves an acceptable level of residential	<b>AO3.1</b>	Bedrooms and living rooms of the caretaker's accommodation face away from and do not

Performance Outcomes		Acceptable Outcomes	
	amenity for residents of the caretaker's accommodation.		adjoin noise generating activities conducted on the site or adjoining sites.
		<b>AO3.2</b>	Waste service areas are located at least: (a) 1m away from any adjacent side or rear property boundary; and (b) 3m from bedrooms, living rooms and private open space of the caretaker's accommodation.
<b>PO4</b>	The caretaker's accommodation is provided with adequate private open space that is useable and directly accessible from the caretaker's accommodation.	<b>AO4.1</b>	The caretaker's accommodation contains an area of private open space which is directly accessible from a habitable room, and: (a) if at ground level, has an area of not less than 16m <sup>2</sup> , with no horizontal dimension of less than 4m; or (b) if a balcony, verandah or deck has an area of not less than 10m <sup>2</sup> , with no horizontal dimension of less than 2.5m.
<b>PO5</b>	The design of the caretaker's accommodation is compatible with the preferred character of the zone in which it is located.	<b>AO5.1</b>	The caretaker's accommodation does not exceed the maximum building height for the zone in which it is located as specified in the applicable zone code.
<b>On-site car parking</b>			
<b>PO6</b>	Sufficient on-site car parking is provided to satisfy the projected needs of the caretaker's accommodation and is appropriately designed to facilitate ease of use.	<b>AO6.1</b>	A minimum of 1 on-site parking space is provided for exclusive use by the occupants of the caretaker's accommodation.
		<b>AO6.2</b>	Development provides access driveways, internal circulation, manoeuvring areas and on-site car parking areas in accordance with AS2890 (Parking facilities: Off-street car parking).

### 9.3.3 Child care centre code

#### 9.3.3.1 Application

This code applies to assessable development:

- (a) being a material change of use for a child care centre; and
- (b) identified as requiring assessment against the Child care centre code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.3.2 Purpose and overall outcomes

- (1) The purpose of the Child care centre code is to ensure child care centres are appropriately located and are designed in a manner which provides a safe environment for users and protects the amenity of surrounding premises.
- (2) The purpose of the Child care centre code will be achieved through the following overall outcomes:
  - (a) a viable child care centre network is established and maintained for the Whitsunday region;
  - (b) a child care centre is located in a convenient location close to residential communities or major employment nodes;
  - (c) the health and safety of children is not compromised by incompatible land use activities or poor design; and
  - (d) a child care centre does not have a detrimental impact on the amenity of surrounding residential premises.

#### 9.3.3.3 Assessment benchmarks

**Table 9.3.3.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
<b>PO1</b>	The child care centre is co-located with other compatible Community activities or Business activities so as to maximise accessibility.	<b>AO1.1</b>	The child care centre is located: <ol style="list-style-type: none"> <li>(a) within 400m of, or is integrated with, another compatible Community activity; or</li> <li>(b) on a conveniently accessible site at the entrance to a residential neighbourhood; or</li> <li>(c) in an activity centre or other employment area.</li> </ol>
<b>PO2</b>	The child care centre is located on a road which is accessible and safe but which is not predominately used by local residential traffic.	<b>AO2.1</b>	The child care centre is located on a site with access and frontage to a collector street.
<b>PO3</b>	The child care centre is located and designed to ensure that children and staff are not exposed to unacceptable levels of noise, unhealthy air emissions contaminants or other	<b>AO3.1</b>	The child care centre is located on a site where: <ol style="list-style-type: none"> <li>(a) soils are not contaminated by pollutants which represent a health or safety risk to children and staff;</li> </ol>



Performance Outcomes		Acceptable Outcomes	
	unacceptable risks (i.e. Gas, sewerage tanks, medium and high industry) and other nuisances.		(b) maximum concentrations of air pollutants are less than those recommended by the National Health and Medical Research Council; and (c) noise levels from external sources (measured at the maximum L10 [1 hour]) are less than: (i) 35dB(A) within buildings; and (ii) 55dB(A) when measured at the centre of any outdoor play area.
<b>PO4</b>	The child care centre is located on a site that is capable of accommodating a well-designed, safe and integrated facility.	<b>AO4.1</b>	The child care centre is located on a site having: (a) a slope of not more than 10%; and (b) a regular shape.
<b>Protection of residential amenity</b>			
<b>PO5</b>	The child care centre is sited and designed to complement the local streetscape and reflect the character of the locality while maintaining residential amenity and mitigating adverse impacts such as noise and light nuisance.	<b>AO5.1</b>	All buildings, structures and outdoor play areas are set back at least 3m from all site boundaries adjoining an Accommodation activity or land included in a residential zone.
		<b>AO5.2</b>	A 2m high acoustic screen fence is erected along the full length of all site boundaries adjoining an Accommodation activity or land included in a residential zone.
<b>Services and utilities</b>			
<b>PO6</b>	An appropriate level of water and sewerage infrastructure is provided to the child care centre so as to: (a) allow for the efficient functioning of the facility; and (b) maintain acceptable public health and environmental standards.	<b>AO6.1</b>	(a) The childcare centre is connected to the reticulated water supply and sewerage network; or (b) Where a reticulated water supply and sewerage network is not available: (i) satisfactory alternative means of potable water supply is provided; and (ii) an adequate standard of on-site effluent treatment and disposal is provided.
<b>Parking and access</b>			
<b>PO7</b>	A safe set-down and pick-up area is provided, with all on-site parking and vehicle manoeuvring areas located and designed to minimise conflicts between private motor vehicles and pedestrians.	<b>AO7.1</b>	Set down and pick up areas: (a) provide an appropriate number of bays, with a drive through lane and located at the front of the site; (b) provide good visibility; and (c) are adequately covered to provide protection from weather elements.
		<b>AO7.2</b>	Convenient, safe and clearly

Performance Outcomes		Acceptable Outcomes	
			visible pedestrian access is available within and to the site which does not cross access driveways.

### 9.3.4 Dual occupancy code

#### 9.3.4.1 Application

This code applies to accepted and assessable development:

- (a) being for building work for a dual occupancy; and
- (b) identified as requiring assessment against the Dual occupancy code by the tables of assessment in Part 5 (Tables of Assessment).

#### 9.3.4.2 Purpose and overall outcomes

- (1) The purpose of the Dual occupancy code is to ensure that development involving a dual occupancy achieves a high level of comfort and amenity for occupants, maintains the amenity and enjoyment of neighbouring premises and is compatible with the character of the streetscape and surrounding area.
- (2) The purpose of the Dual occupancy code will be achieved through the following overall outcomes:
  - (a) a dual occupancy makes a positive contribution to the streetscape character of the area in which it is located;
  - (b) a dual occupancy is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;
  - (c) a dual occupancy provides a high level of amenity and safety for residents of the dual occupancy; and
  - (d) a dual occupancy is provided with an acceptable level of infrastructure and services.

#### 9.3.4.3 Assessment benchmarks

**Table 9.3.4.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Site suitability</b>			
<b>PO1</b>	The dual occupancy is located on a site which is convenient to local services and public transport and has sufficient area to accommodate the dual occupancy and associated access, parking, landscaping and setback requirements.	<b>AO1.1</b>	The dual occupancy is located on a lot in the Low-medium density residential zone or a centre zone.
		<b>AO1.2</b>	The dual occupancy is located on a lot having a minimum area of 800m <sup>2</sup> .
<b>Road setbacks</b>			
<b>PO2</b>	The location of a building or structure facilitates an acceptable streetscape, appropriate for: <ol style="list-style-type: none"> <li>(a) the bulk of the building or structure;</li> <li>(b) the road boundary setbacks of neighbouring buildings or structures;</li> <li>(c) the outlook and views of neighbouring residents; and</li> </ol>	<b>AO2.1</b>	The dual occupancy is setback in accordance with MP 1.3 A1 of the QDC.
		<b>AO2.2</b>	Garage openings facing the street do not exceed 6m or 50% of the street frontage, whichever is the lesser.

Performance Outcomes		Acceptable Outcomes	
	(d) nuisance and safety to the public.		
<b>Building and structures</b>			
<b>PO3</b>	Buildings and structures: (a) provide adequate day light and ventilation to habitable rooms; (b) allow adequate light and ventilation to habitable rooms of buildings on adjoining lots; and (c) do not adversely impact on the amenity and privacy of residents on adjoining lots.	<b>AO3.1</b>	The dual occupancy and associated structures have a side and rear boundary setback in accordance with MP 1.3 A2 of the QDC.
<b>Site cover</b>			
<b>PO4</b>	Adequate open space is provided for recreation, service facilities and landscaping.	<b>AO4.1</b>	The maximum site cover of the dual occupancy is provided in accordance with MP 1.3 A3 of the QDC.
<b>Building height</b>			
<b>PO5</b>	The height of a building does not unduly: (a) overshadow adjoining dwellings; or (b) obstruct the outlook from adjoining lots; or (c) dominate the intended streetscape character.	<b>AO5.1</b>	The maximum building height of the dual occupancy is provided in accordance with MP 1.3 A4 of the QDC.
		<b>AO5.2</b>	The maximum building height of a garage, carport or shed is: (a) 4.5m above ground level to the highest point; and (b) 3.6m to the eaves.
<b>Visual privacy</b>			
<b>PO6</b>	Buildings are sited and designed to provide adequate visual privacy for neighbours.	<b>AO6.1</b>	The dual occupancy is provided in accordance with MP1.3 A5 of the QDC.
<b>Structure on corner sites</b>			
<b>PO7</b>	The size and location of structures on corner sites provide for adequate sight lines.	<b>AO7.1</b>	The dual occupancy is provided in accordance with MP 1.3 A7 of the QDC.
<b>Building maintenance</b>			
<b>PO8</b>	The location of a building or structure facilitates normal maintenance.	<b>AO8.1</b>	A wall is set back in accordance with MP 1.3 A6 of the QDC.
<b>On-site car parking</b>			
<b>PO9</b>	Development provides sufficient space for on-site car parking to satisfy the projected needs of residents and visitors, appropriate for: (a) the availability of public transport; (b) the availability of on-street parking; (c) the desirability of on-street parking in respect to the streetscape; and (d) the residents' likelihood to have or need a vehicle.	<b>AO9.1</b>	Parking is provided in accordance with MP 1.3 A8 of the QDC.
		<b>AO9.2</b>	Car parking spaces may be in tandem, provided one space is behind the road setback required in AO2.1.
<b>PO10</b>	Development ensures that the layout and design of vehicle	<b>AO10.1</b>	Development provides access driveways, internal circulation

Performance Outcomes		Acceptable Outcomes	
	access, on-site circulation systems and parking areas are safe, convenient and legible.		and manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
<b>Private open space</b>			
<b>PO11</b>	Each dwelling has private open space available which is: <ul style="list-style-type: none"> <li>(a) a suitable size, dimension and slope to allow residents to extend their living activities outdoors;</li> <li>(b) available for the sole use of the residents of individual dwellings; and</li> <li>(c) adequately separated from each other to provide visual privacy.</li> </ul>	<b>AO11.1</b>	Each dwelling has clearly defined private open space which is provided in accordance with MP 1.3 A9 of the QDC.
<b>Services and utilities</b>			
<b>PO12</b>	The dual occupancy is provided with and connected to essential infrastructure and services.	<b>AO12.1</b>	The dual occupancy is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks and has an electricity supply.
<b>PO13</b>	The dual occupancy is provided with adequate areas for the storage of waste and recyclable items, in appropriate containers, which are convenient to use and service.	<b>AO13.1</b>	Waste storage areas are provided as: <ul style="list-style-type: none"> <li>(a) separate areas for each dwelling to accommodate the permanent storage of waste and recyclable items in standard waste containers; or</li> <li>(b) shared areas over which each dwelling has control via access rights or ownership is provided to accommodate the permanent storage of waste and recyclable items in standard waste containers.</li> </ul>
		<b>AO13.2</b>	Waste storage areas are screened from public view.
<b>Flood immunity</b>			
<b>PO14</b>	Development involving any habitable part of the building is located and designed to ensure the safety of all persons and buildings from flood hazards.	<b>AO14.1</b>	Development of a habitable building: <ul style="list-style-type: none"> <li>(a) ensures the finished floor levels for all habitable rooms are a minimum of 300mm above the DFL; or</li> <li>(b) is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m<sup>2</sup> to an existing building.</li> </ul> <p>Editor's Note – Refer to Overlay map - FH - 01:29 (Flood hazard overlay) for further detail.</p>

## 9.3.5 Dwelling house code

### 9.3.5.1 Application

This code applies to accepted and assessable development:

- (a) being for building work for a dwelling house; and
- (b) identified as requiring assessment against the Dwelling house code by the tables of assessment in Part 5 (Tables of Assessment).

Editor's note – in accordance with Schedule 1 (Definitions), a reference to a dwelling house includes outbuildings and works normally associated with a dwelling, including a secondary dwelling.

### 9.3.5.2 Purpose and overall outcomes

- (1) The purpose of the Dwelling house code is to ensure the design and siting of detached houses protects residential amenity and maintains streetscape character and that associated dwellings and outbuildings are of an appropriate scale and intensity.
- (2) The purpose of the Dwelling house code will be achieved through the following overall outcomes:
  - (a) the building form, siting design and use of the dwelling house is consistent with the desired amenity and character of the area;
  - (b) a dwelling house is sited and designed to protect the amenity, privacy and access to sunlight of adjoining residential premises;
  - (c) a dwelling house provides a high level of amenity and safety for residents of the dwelling house; and
  - (d) a dwelling house is provided with an acceptable level of infrastructure and services.
  - (e) outbuildings are of an appropriate scale and intensity and a compatible with surrounding development;
  - (f) secondary dwellings are small in scale and ancillary to the principal use for a dwelling house; and
  - (g) a dwelling house is not at an unacceptable risk from natural hazards.

### 9.3.5.3 Assessment benchmarks

Editor's note – an approved plan of development for a variation approval overriding the planning scheme or reconfiguring a lot may vary or specify alternative assessment benchmarks for a dwelling house. In such cases, compliance with these alternative assessment benchmarks will be deemed to represent compliance with the comparable provisions of the Dwelling house code.

**Table 9.3.5.3.1 Benchmarks for acceptable and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Road setbacks</b>			
<b>PO1</b>	The location of a dwelling house facilitates an acceptable streetscape, appropriate for: (a) the bulk of the building or	<b>AO1.1</b>	Any dwelling house on a lot less than 450m <sup>2</sup> is setback in accordance with MP 1.1 A1 of the QDC.

Performance Outcomes		Acceptable Outcomes	
	structure; (b) the road boundary setbacks of neighbouring buildings or structures; (c) the outlook and views of neighbouring residents; and (d) nuisance and safety to the public.	<b>AO1.2</b>	Any dwelling house on a lot greater than or equal to 450m <sup>2</sup> is setback in accordance with MP 1.2 A1 of the QDC.
<b>Building structures</b>			
<b>PO2</b>	The location of buildings and structures: (a) provide adequate daylight and ventilation to habitable rooms; (b) allow adequate light and ventilation to habitable rooms on adjoining lots; and (c) does not adversely impact on the amenity and privacy of residents on adjoining lots.	<b>AO2.1</b>	Where on a lot less than 450m <sup>2</sup> , the dwelling house and associated structures have a side and rear setback in accordance with MP 1.1 A2 of the QDC.
		<b>AO2.2</b>	Where on a lot greater than or equal to 450m <sup>2</sup> the dwelling house and associated structures have a side and rear setback in accordance with MP 1.2 A2 of the QDC.
<b>Site cover</b>			
<b>PO3</b>	Adequate open space is provided for recreation, service facilities and landscaping.	<b>AO3.1</b>	Where on a lot less than 450m <sup>2</sup> the maximum site cover of the dwelling house is provided in accordance with MP 1.1 A3 of the QDC.
		<b>AO3.2</b>	Where on a lot greater than or equal to 450m <sup>2</sup> the maximum site cover of the dwelling house is provided in accordance with MP 1.2 A3 of the QDC.
<b>Building Height</b>			
<b>PO4</b>	The height of a dwelling house does not unduly: (a) overshadow adjoining detached dwellings; (b) obstruct the outlook from adjoining lots; and (c) dominate the intended streetscape character.	<b>AO4.1</b>	The maximum building height is for a dwelling house: (a) 8.5m above ground level where on a slope up to 15%; or (b) 10m above ground level where on a slope greater than 15%.
		<b>AO4.2</b>	The maximum building height for a garage, carport or shed: (a) 4.5m above ground level to the highest point; or (b) 3.6m above ground level to the eaves.
<b>Visual Privacy</b>			
<b>PO5</b>	Buildings are sited and designed to provide adequate visual privacy for neighbours.	<b>AO5.1</b>	Where on a lot less than 450m <sup>2</sup> , the dwelling house is provided in accordance with MP 1.1 A5 of the QDC.
		<b>AO5.2</b>	Where on a lot greater than or equal to 450m <sup>2</sup> , and the dwelling house is provided in accordance with MP 1.2 A5 of the QDC.
<b>Structures on Corner Sites</b>			
<b>PO6</b>	The size and location of	<b>AO6.1</b>	Where on a lot less than 450m <sup>2</sup> ,

Performance Outcomes		Acceptable Outcomes	
	structures on corner sites provide for adequate sight lines.		the dwelling house is provided in accordance with MP 1.1 A7 of the QDC.
		<b>AO6.2</b>	Where on a lot greater than or equal to 450m <sup>2</sup> , the dwelling house is provided in accordance with MP 1.2 A7 of the QDC.
<b>On –site car parking</b>			
<b>PO7</b>	Sufficient space for on-site car parking to satisfy the projected needs of residents and visitors, appropriate for: (a) the availability of public transport; (b) the availability of on-street parking; (c) the desirability of on-street parking in respect to the streetscape; and (d) the resident’s likelihood to have or need a vehicle.	<b>AO7.1</b>	Where on a lot less than 450m <sup>2</sup> , parking is provided in accordance with MP 1.1 A8 of the QDC.
		<b>AO7.2</b>	Where on a lot greater than or equal to 450m <sup>2</sup> , parking is provided in accordance with MP 1.2 A8 of the QDC.
		<b>AO7.3</b>	Development provides access driveways, internal circulation and manoeuvring areas and parking areas in accordance AS2890 (Parking facilities: Off street car parking).
<b>Private open space (for lots less than 450m<sup>2</sup> only)</b>			
<b>PO8</b>	A detached dwelling has its own individual outdoor living space which: (a) has suitable size and slope is to allow residents to extend their living activities outdoors; (b) is available for the sole use of the residents of individual dwellings; and (c) is adequately separated from each other to provide visual privacy.	<b>AO8.1</b>	Where on a lot less than 450m <sup>2</sup> , private open space is provided in accordance with MP 1.1 A9 of the QDC.
<b>Services and utilities</b>			
<b>PO9</b>	The dwelling house is provided with and connected to essential infrastructure and services.	<b>AO9.1</b>	The dwelling house is: (a) connected to reticulated water supply, sewerage and stormwater drainage infrastructure networks in accordance with PSP SC6.8 (WRC Development manual); and (b) has an electricity supply.
		<b>AO9.2</b>	The dwelling house where in a Rural or Rural residential zone has an electricity supply and is connected to a: (c) reticulated water supply; or potable water supply and water storage collection system having: (i) a minimum storage capacity of 70,000 litres; and (ii) a first flush system;



Performance Outcomes		Acceptable Outcomes	
			(d) reticulated sewerage system or an alternative on-site effluent and wastewater treatment system consistent with the Queensland plumbing and wastewater code.
<b>Flood immunity</b>			
<b>PO10</b>	Development involving any habitable part of the building is located and designed to ensure the safety of all persons and buildings from flood hazards.	<b>AO10.1</b>	Development of a habitable building: (a) ensures the finished floor levels for all habitable rooms are a minimum of 300mm above the DFL; or (b) is not less than the floor level of existing habitable room(s) where involving an extension for no greater than 75m <sup>2</sup> to an existing building.  Editor's Note – Refer to Overlay map - FH - 01:29 (Flood hazard overlay) for further detail.
<b>Secondary dwellings</b>			
<b>PO11</b>	A secondary dwelling is subordinate in bulk and scale so as to maintain the appearance of a dwelling house with ancillary buildings when viewed from the street.	<b>AO11.1</b>	Only one secondary dwelling is established in association with a dwelling house.
		<b>AO11.2</b>	A secondary dwelling has a maximum gross floor area of 70m <sup>2</sup> and a total use area of 100m <sup>2</sup> , excluding car parking areas.
		<b>AO11.3</b>	A minimum of one on-site car parking space is provided to service the secondary dwelling.

### 9.3.6 Extractive industry code

#### 9.3.6.1 Application

This code applies to assessable development:

- (a) being a material change of use for extractive industry; and
- (b) identified as requiring assessment against the Extractive industry code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.6.2 Purpose and overall outcomes

- (1) The purpose of the Extractive industry code is to ensure that the exploitation of extractive resources is undertaken in a sustainable manner which protects environmental and landscape values, public safety and the amenity of surrounding premises.
- (2) The purpose of the Extractive industry code will be achieved through the following overall outcomes:
  - (a) exploitation of extractive resources occurs in a sustainable manner;
  - (b) natural values and water quality are protected from any environmental degradation potentially arising from extractive industry operations;
  - (c) extractive industry operations are located, designed and constructed to avoid or effectively mitigate adverse impacts on any sensitive use, in particular residential or rural residential premises;
  - (d) transport routes allow extractive materials to be transported with the least amount of impact on development along those roads and on the function of those roads; and
  - (e) land used for extractive industry operations is effectively rehabilitated.

#### 9.3.6.3 Assessment benchmarks

**Table 9.3.6.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Site planning</b>			
<b>PO1</b>	The extractive industry is designed and established having regard to the availability of other appropriate infrastructure, characteristics of the natural environment and the proximity of sensitive land uses, so as to provide: <ol style="list-style-type: none"> <li>(a) adequate separation distance to protect the surrounding area from significant noise, dust, vibration and visual impacts of operations;</li> <li>(b) suitable vehicle access and haulage routes;</li> <li>(c) protection against erosion;</li> </ol>	<b>AO1.1</b>	The extractive industry is undertaken in accordance with an approved environmental management plan which addresses environmental and social impacts of operations.

Performance Outcomes		Acceptable Outcomes	
	<ul style="list-style-type: none"> <li>(d) acceptable quality of water leaving the site;</li> <li>(e) public safety;</li> <li>(f) acceptable restoration measures;</li> <li>(g) protection of groundwater quality and quantity;</li> <li>(h) avoidance of land contamination;</li> <li>(i) effective stormwater management; and</li> <li>(j) waste management practices which maximise recycling and reuse of wastes.</li> </ul>		
<b>PO2</b>	The extractive industry maintains suitable and sustainable landscaping on the extractions site.	<b>AO2.1</b>	The volumes of anticipated extraction are planned and staged, allowing for appropriate landscape form.
<b>Vehicle access and manoeuvring</b>			
<b>PO3</b>	Vehicle access to, from, and within the extractive industry site is provided so as to: <ul style="list-style-type: none"> <li>(a) be adequate for the type and volume of traffic to be generated;</li> <li>(b) not create or worsen any traffic hazard;</li> <li>(c) not have adverse effects on the amenity of the locality; and</li> <li>(d) ensure disturbance to surrounding land uses is minor and that impacts from emissions are minimised.</li> </ul>	<b>AO3.1</b>	The proposed transport route to and from the site is along sealed roads and does not require heavy vehicles to traverse residential or rural residential streets.
		<b>AO3.2</b>	All driveways are sealed, with internal manoeuvring and car parking areas suitably surfaced.
		<b>AO3.3</b>	Site accesses and egresses located to provide: <ul style="list-style-type: none"> <li>(a) a minimum sight distance in all directions of 200 metres;</li> <li>(b) a maximum gradient of 1:10 (10%) on all roads, including haul roads, within 100 metres of such access or egress;</li> <li>(c) a minimum access/egress width of 12 metres; and</li> <li>(d) a minimum separation to any road intersection or property access of 50 metres.</li> </ul>
		<b>AO3.4</b>	Acceleration and deceleration lanes in accordance with Austroads guidelines are provided to site ingress and egress points.
		<b>AO3.5</b>	Rubble pad, wheel wash or other suitable method installed at heavy vehicle egresses to prevent material being carried onto roadway during bulk haulage.
		<b>AO3.6</b>	Vehicle access is provided in accordance with the standards specified PSP SC6.8 (WRC development manual).
<b>Separation distances</b>			

Performance Outcomes		Acceptable Outcomes	
<b>PO4</b>	The extractive industry is located on a site which has sufficient area to provide for adequate setback of operations from road frontages, site boundaries, surrounding sensitive uses such that the extractive industry achieves an acceptable standard of visual amenity and control of noise, light, dust and vibration impacts.	<b>AO4.1</b>	Extractive industry involving blasting or crushing is not carried out within 1km of any sensitive use.
		<b>AO4.2</b>	Extractive industry not involving blasting or crushing is not carried out within 100m of any sensitive use.
		<b>AO4.3</b>	A mounded vegetated buffer strip having a minimum width of 10m is provided to all boundaries of the site.
<b>Site drainage</b>			
<b>PO5</b>	The extractive industry provides on-site drainage that is designed, constructed and maintained so as to: (a) prevent ponding in excavated areas; (b) avoid erosion; (c) prevent pollution of groundwater and surface water; (d) protect downstream water quality; and (e) provide opportunities to recycle water for reuse in processing, washing and/or screening materials, dust suppression and on product stockpiles, overburden stockpiles, revegetation or rehabilitation areas and wheel wash facilities.	<b>AO5.1</b>	Banks and channels are constructed to divert stormwater run-off away from excavated areas.
		<b>AO5.2</b>	Sediment basins are provided to detain stormwater run-off from disturbed areas such that there is no off-site discharge likely to cause environmental harm.
		<b>AO5.3</b>	Bunding and treatment and disposal of industrial wastes are carried out such that no environmental harm is caused.
		<b>AO5.4</b>	Lining or other suitable treatment of erosion-prone areas is established and maintained at discharge points.
<b>Management of blasting and other operations</b>			
<b>PO6</b>	The extractive industry provides for blasting, crushing, screening and loading to be carried out safely and in accordance with best practice management standards so that disturbance to surrounding land uses is minor and that impacts from emissions are minimised.	<b>AO6.1</b>	Blasting and other operations are confined to the periods identified in Table 9.3.6.3.2 (Extractive industry operations periods).
		<b>AO6.2</b>	Public signage to warn of operations and safety hazards is provided to all boundaries of the site.
		<b>AO6.3</b>	Blasting and other operations are undertaken in a manner which complies with best practice approaches to vibration avoidance and management such as those identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and shock induced vibration in buildings (1-80Hz)).
		<b>AO6.4</b>	Blasting operations are designed and planned to minimise risk of dust and fume emissions.

Performance Outcomes		Acceptable Outcomes	
<b>Safety fencing</b>			
<b>PO7</b>	Entry to extractive industry operational areas is restricted to authorised personnel and authorised vehicles.	<b>AO7.1</b>	A 2m high fence is erected and maintained around all extractive industry operations and associated infrastructure.
<b>Site rehabilitation</b>			
<b>PO8</b>	Rehabilitation of the extractive industry site restores the environmental and economic values of the land and provides: <ul style="list-style-type: none"> <li>(a) progressive/staged rehabilitation works;</li> <li>(b) appropriate clean-up works (taking particular account of areas of possible soil contamination);</li> <li>(c) agreed landform and soil profiles;</li> <li>(d) suitable revegetation; and</li> <li>(e) establishment phase requirements.</li> </ul>	<b>AO8.1</b>	The extractive industry provides for all rehabilitation works to be undertaken in accordance with an approved expected final landform design and site rehabilitation plan.  Editor's note—the Council may require rehabilitation works to be bonded to ensure the affective return of disturbed areas to acceptable land use suitability.

**Table 9.3.6.3.2 Extractive industry operation periods**

Extractive industry activity	Hours of operation
Blasting operation	9am to 5pm Monday to Friday
	No operations Saturday, Sunday or public holidays
Other operations	6am to 6pm, Monday to Friday
	7am to 1pm Saturday
	No operations Sunday or public holidays

## 9.3.7 Home based business code

### 9.3.7.1 Application

This code applies to accepted and assessable development:

- (a) being a material change of use for home based business; and
- (b) identified as requiring assessment against the Home based business code by the tables of assessment in Part 5 (Tables of assessment).

### 9.3.7.2 Purpose and overall outcomes

- (1) The purpose of the Home based business code is to facilitate legitimate home based business conducted in a manner which is appropriate to the preferred character of the area and protects the amenity of surrounding premises.
- (2) The purpose of the Home based business code will be achieved through the following overall outcomes:
  - (a) a home based business is domestic in scale and operates in a manner that is subservient and ancillary to the Accommodation activity of the premises;
  - (b) a home based business is conducted in a manner that maintains the residential character and amenity of the locality; and
  - (c) a home based business is operated in a safe manner and does not impose an unreasonable load on infrastructure services.

### 9.3.7.3 Assessment benchmarks

**Table 9.3.7.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Operation as a bona fide working from home activity</b>			
<b>PO1</b>	The home based business is conducted as a bona fide working from home activity.	<b>AO1.1</b>	Other than a bed and breakfast, the home based business is conducted within a dwelling house, dual occupancy or multiple dwelling.
		<b>AO1.2</b>	For a home based business operating as a bed and breakfast, the bed and breakfast is conducted only within the dwelling house.
<b>Scale of use and protection of amenity</b>			
<b>PO2</b>	The home based business is limited in size and scale so that: <ul style="list-style-type: none"> <li>(a) the amenity of the existing neighbourhood is protected; and</li> <li>(b) the home based business remains ancillary to the Accommodation activity of the premises.</li> </ul>	<b>AO2.1</b>	For a home based business, other than a bed and breakfast, conducted in association with a dwelling house or dual occupancy: <ul style="list-style-type: none"> <li>(a) the total area (both in and outside of the dwelling) used for the home based business does not exceed:               <ul style="list-style-type: none"> <li>(i) 40m<sup>2</sup> where the dwelling is located on a lot not more than 2,000m<sup>2</sup> in area; or</li> </ul> </li> </ul>

Performance Outcomes		Acceptable Outcomes	
			<ul style="list-style-type: none"> <li>(ii) 80m<sup>2</sup> where the dwelling is located on a lot more than 2,000m<sup>2</sup> in area;</li> <li>(b) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and</li> <li>(c) the home based business does not involve more than:               <ul style="list-style-type: none"> <li>(i) 2 persons, including residents of the dwelling; or</li> <li>(ii) where the site is in the Rural zone, 4 persons, including residents of the dwelling.</li> </ul> </li> </ul>
		<b>AO2.2</b>	<p>For a home based business conducted within a multiple dwelling:</p> <ul style="list-style-type: none"> <li>(a) the total gross floor area used for the home based business does not exceed:               <ul style="list-style-type: none"> <li>(i) 20m<sup>2</sup>; or</li> <li>(ii) 10% of the area of any floor level on which the home based business is located;</li> </ul> </li> <li>(b) the home based business does not involve outdoor use areas;</li> <li>(c) no more than 2 customers or clients are present at any one time and no more than 8 customers or clients are present in any one day; and</li> <li>(d) the home based business involves only the persons who are residents of the dwelling.</li> </ul>
		<b>AO2.3</b>	<p>For a home based business operating as a bed and breakfast:</p> <ul style="list-style-type: none"> <li>(a) the use is conducted from a dwelling house;</li> <li>(b) at least one bedroom within the dwelling house is excluded from use by guests; and</li> <li>(c) the maximum number of bedrooms used to accommodate guests is 3 and the maximum number of guests accommodated at any one time is 6.</li> </ul>
		<b>AO2.4</b>	Not more than one home based business is conducted on the premises.

Performance Outcomes		Acceptable Outcomes	
<b>PO3</b>	The home based business does not involve any materials, equipment or processes that cause nuisance or detrimentally impact on residential amenity.	<b>AO3.1</b>	The home based business does not produce any dust emissions.
		<b>AO3.2</b>	The home based business does not produce any offensive odour emissions beyond the site boundaries.
		<b>AO3.3</b>	The home based business does not produce noise which exceeds the background noise level plus 5 dB(A) (8.00am – 6.00pm) (measured as an adjusted sound level).
		<b>AO3.4</b>	Glare conditions or excessive 'light spill' into dwellings, adjacent sites and public spaces is avoided or minimised through measures such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		<b>AO3.5</b>	Loading or unloading of goods is not undertaken by a vehicle larger than a small rigid vehicle (SRV).
		<b>AO3.6</b>	A maximum of 1 commercial vehicle (not including a heavy rigid vehicle (HRV) or articulated vehicle (AV)) associated with the home based business is parked/garaged on the premises.
		<b>AO3.7</b>	Not more than 2 customer vehicles are associated with the home based business at any one time.
		<b>AO3.8</b>	In addition to the parking required for the primary Accommodation activity, the following onsite parking is provided, where applicable: (a) 1 space for customer parking; plus (b) 1 space per non-resident employee; plus (c) 1 space per guest room, where a Bed and breakfast.  Note – Any required on-site parking spaces may be provided in tandem to the



Performance Outcomes		Acceptable Outcomes	
			residential parking spaces.
		<b>AO3.9</b>	No vehicle is fuelled, serviced or repaired on the premises.
		<b>AO3.10</b>	Materials or equipment used or goods manufactured, serviced or repaired are stored within a building on the premises.
		<b>AO3.11</b>	Trade person's storage and activities are located at the rear of the dwelling and any vehicle, or stored equipment or materials, is screened from view from all public places and adjoining residential premise.
		<b>AO3.12</b>	Refuse and waste storage and service areas associated with the home based business are suitably screened from the street.
		<b>AO3.13</b>	Quantities of chemicals, gases or other hazardous materials do not exceed the limits normally associated with a residential activity.
		<b>AO3.14</b>	The home based business does not involve any activity defined as an environmentally relevant activity in the Environmental Protection Regulation 2008.
<b>PO4</b>	The hours of operation of the home based business do not cause a nuisance or detrimentally impact on residential amenity.	<b>AO4.1</b>	Where goods are offered for sale from the premises, there is no public display of such goods.
<b>Signage</b>			
<b>PO5</b>	Signage associated with the home based business is small, unobtrusive and appropriate to its location and setting.	<b>AO5.1</b>	Not more than 1 advertising device is erected on the premises and the sign: (a) includes only the name of the occupier, the business conducted on the premises and associated contact/address details; (b) has a maximum sign face area of 0.3m <sup>2</sup> ; (c) is attached to a fence or wall; and (d) is not illuminated or in motion.
<b>Services and utilities</b>			
<b>PO6</b>	The home based business does not detrimentally impact on the capacity of infrastructure services.	<b>AO6.1</b>	No greater load is imposed on any public utility than would reasonably be expected from that normally associated with a residential activity.
<b>Storage of chemicals</b>			
<b>PO7</b>	The risk to occupiers, employees and neighbouring residents from	<b>AO7.1</b>	Storage of flammable and combustible liquids complies

<b>Performance Outcomes</b>		<b>Acceptable Outcomes</b>	
	the storage of chemicals and hazardous substances is minimised.		with the minor storage provisions of AS1940 (The storage and handling of flammable and combustible liquids).
<b>Additional requirements for bed and breakfast accommodation</b>			
<b>Temporary Accommodation</b>			
<b>PO8</b>	Bed and breakfast accommodation is provided for short-term stay only.	<b>AO8.1</b>	Guests stay no more than 14 consecutive nights.
<b>Guest facilities</b>			
<b>PO9</b>	An acceptable standard of facilities is provided for guests of the bed and breakfast.	<b>AO9.1</b>	Guests are provided with a bedroom capable of being enclosed to prevent visual or other intrusion by members of the host family or other guests.
		<b>AO9.2</b>	A separate bathroom and toilet facility is provided within the dwelling house for the exclusive use of guests.

### 9.3.8 Industry activities code

#### 9.3.8.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Industry activities code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.8.2 Purpose and overall outcomes

- (1) The purpose of the Industry activities code is to ensure Industry activities are designed and operated in a manner which meets the needs of the Industry activity, protects public safety and environmental values and appropriately responds to amenity considerations.
- (2) The purpose of the Industry activities code will be achieved through the following overall outcomes:
  - (a) the scale and intensity of an Industry activity is compatible with its location and setting;
  - (b) an Industry activity incorporates a site layout and building design that provides for the efficient and safe conduct of industrial activities and contributes to a well organised development that is attractive when viewed from the street;
  - (c) an Industry activity does not cause environmental harm or nuisance, including the contamination of land or water;
  - (d) an Industry activity avoids or effectively mitigates adverse impacts on the amenity of adjoining and nearby non-industrial activity where these activities are located in a zone other than an industry zone; and
  - (e) an Industry activity incorporates service areas and waste management processes that are efficient and maximise opportunities for reuse or recycling.

#### 9.3.8.3 Assessment benchmarks

**Table 9.3.8.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Built form, streetscape character and protection of amenity			
PO1	Buildings and structures associated with the industrial activity are: (a) of a scale and design which is appropriate to an industrial setting whilst contributing positively to the visual character and streetscape of the area; and (b) designed to avoid or mitigate the potential for adverse amenity impacts on adjoining or nearby sensitive land uses.	AO1.1	The site cover of all buildings and structures on the site does not exceed 75%.
		AO1.2	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 10m from any side or rear boundary where adjoining a sensitive land use or land in a residential zone or the Community facilities zone; or (d) .75m from any the side or rear boundary where not

Performance Outcomes		Acceptable Outcomes	
			<p>adjoining a sensitive use or land in a residential zone or the community facilities zone; or</p> <p>(e) where less than .75m to the boundary, maintenance free.</p>
		<b>AO1.3</b>	<p>Where the site has a common boundary with a sensitive land use or land in a residential zone or the community facilities zone:</p> <p>(a) no openings occur in walls facing a common boundary;</p> <p>(b) acoustic screening is provided to all areas where work could be conducted outside of the building, including waste storage and refuse areas, so that off-site noise emissions are avoided or do not cause a nuisance; and</p> <p>(c) noise emitting services such as air conditioning equipment, pumps and ventilation fans are located as far away as possible from residential areas.</p>
		<b>AO1.4</b>	<p>The main entry to any building is easily identifiable, and directly accessible, from the street, or the primary street frontage if the site has more than one street frontage.</p>
		<b>AO1.5</b>	<p>Where adjoining a sensitive land use, or land included in a residential zone or the community facilities zone, a minimum 2m high solid screen fence is provided for the full length of the common boundary.</p>
<b>PO2</b>	The industrial activity is attractive when viewed from a major road.	<b>AO2.1</b>	<p>Where the industrial activity has frontage to or overlooks a major road:</p> <p>(a) building design incorporates variations in parapet design, roofing heights and treatments; and</p> <p>(b) any security fencing is set within or located behind the landscaping strip rather than adjacent to the major road.</p>
<b>Services and utilities</b>			
<b>PO3</b>	The industrial activity is provided with:	<b>AO3.1</b>	The industrial activity is connected to the reticulated water supply, sewerage, stormwater drainage and electricity infrastructure networks.
	(a) a safe and reliable water supply;		
	(b) a waste disposal system and stormwater drainage which		

Performance Outcomes		Acceptable Outcomes	
	<p>maintains acceptable public health and environmental standards;</p> <p>(c) electricity infrastructure;</p> <p>(d) appropriate frontage works; and</p> <p>(e) refuse storage areas that are suitably screened from the street.</p>	<b>AO3.2</b>	Kerb and channel is constructed for the full length of the road frontage.
		<b>AO3.3</b>	The layout and design of the industrial activity provides for the on-site loading and unloading of goods and the storage of refuse to the rear of the site.
Environmental performance			
<b>PO4</b>	<p>The industrial activity ensures that any emissions of odour, dust, air pollutants, noise, light or vibration does not cause nuisance to, or have an unreasonable adverse impact on, adjoining or nearby premises.</p> <p>Editor's note—development involving Industry activities will need to comply with relevant environmental legislation including the Environmental protection act 1994 and subordinate legislation.</p>	<b>AO4.1</b>	The industrial activity achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the Environmental protection (noise) policy.
		<b>AO4.2</b>	The industrial activity achieves the environmental values and air quality objectives set out in the Environmental protection (air) policy.
		<b>AO4.3</b>	The industrial activity does not produce any offensive odour emissions beyond the site boundaries.
		<b>AO4.4</b>	The industrial activity ensures that any external lighting is provided in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		<b>AO4.5</b>	Vibrations resulting from the industrial activity do not exceed the maximum acceptable levels identified in AS2670.2 (Evaluation of human exposure to whole of body vibration - Continuous and shock induced vibration in buildings (1-80Hz)).
<b>PO5</b>	<p>The industrial activity provides for the collection, treatment and disposal of all liquid waste such that:</p> <p>(a) there is no off-site release of contaminants;</p> <p>(b) all wastes are collected and disposed of in accordance with relevant license and approval conditions and/or relevant government or industry standards; and</p> <p>(c) there are adverse impacts on the quality of surface water or groundwater resources.</p>	<b>AO5.1</b>	Sealed impervious surfaces, draining to receptors and/or storage containers are provided in areas where potential spills of contaminants can occur.
		<b>AO5.2</b>	Waste water associated with the industrial activity is disposed to Council's sewerage system or an on-site industrial waste treatment system.
		<b>AO5.3</b>	Liquid wastes that cannot be disposed to Council's sewerage system or the onsite industrial waste treatment system are disposed of off-site to an approved waste disposal facility.
		<b>AO5.4</b>	No discharge of waste occurs to local waterways (including dry waterways) or natural wetlands.

Performance Outcomes		Acceptable Outcomes	
		<b>AO5.5</b>	Oil arrestor or other pre-treatment infrastructure is provided to remove contaminants from industrial waste water where discharged to the sewer or environment.
<b>PO6</b>	The industrial activity does not contaminate or pollute stormwater runoff from the site.	<b>AO6.1</b>	Areas where hazardous materials or potentially contaminating substances are stored or used are roofed.
		<b>AO6.2</b>	Provision is made for spills to be bunded and retained on site for removal and disposal by an approved means.
		<b>AO6.3</b>	Stormwater is diverted away from contaminated areas.
<b>On-site retail sales</b>			
<b>PO7</b>	Any retail sales conducted from the premises are ancillary and subordinate to the industrial activity.	<b>AO7.1</b>	On-site retail sales are limited to goods manufactured or assembled on the premises, or goods associated with those manufactured on the site.
		<b>AO7.2</b>	Parking for on-site retail sales is provided at the same rate as required for a shop (refer Table 9.4.7.3.3 (Minimum on-site parking requirements)).

**Table 9.3.8.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Location and site suitability</b>			
<b>PO1</b>	The Industry activity is established on land included in an industry zone or another zone that is suitable having regard to: (a) the suitability of the land for an Industry activity; (b) the nature, scale and intensity of the Industry activity; (c) the infrastructure and services needs of the Industry activity; and (d) the preferred character of the local area.	<b>AO1.1</b>	The Industry activity is established on a site with sufficient area and dimensions to accommodate required buildings, machinery, parking and service areas, storage areas, vehicle access, on-site movement and landscaping.
<b>Site layout</b>			
<b>PO2</b>	The layout and design of the industrial activity is functional and compatible with surrounding development.	<b>AO2.1</b>	The industrial activity that: (a) the premises are safe, secure and legible; (b) movement systems (including roads and pathways) and accessible on-site parking and manoeuvring areas, meet the needs of users and employees; (c) the premises address to the street, with buildings

Performance Outcomes		Acceptable Outcomes	
			<p>integrated with landscaping and security fencing to provide a quality contemporary appearance; and</p> <p>(d) surplus areas that may become unsightly or difficult to manage due to their size, configuration or access limitations are not created.</p>
<b>Requirements for an Industry activity within a centre zone</b>			
<b>Built form</b>			
<b>PO3</b>	<p>The Industry activity is in a building that enhances the character and amenity of streets and neighbouring premises via a built form that:</p> <p>(a) is closely related to streets, public spaces and pedestrian routes; and</p> <p>(b) maintains some area free of buildings at ground level to facilitate pedestrian movement and other functions associated with the building.</p>	<b>AO3.1</b>	<p>Where within a centre zone:</p> <p>(a) Buildings are set back from street frontages:</p> <p>(i) not more than 3m for that part of a building not exceeding 8.5m in height; and</p> <p>(ii) at least 6m for that part of a building exceeding 8.5m in height;</p> <p>(b) buildings are set back from other site boundaries:</p> <p>(i) 0m if not exceeding 8.5m in height and adjoining an existing blank wall or vacant land on an adjoining site;</p> <p>(ii) at least 3m if not exceeding 8.5m in height and adjoining an existing wall with openings on an adjoining site; and</p> <p>(iii) at least 6m for that part of a building exceeding 8.5m in height.</p>
<b>Relationship of buildings to streets and public areas</b>			
<b>PO4</b>	<p>The Industry activity is in a building that clearly defines frames or encloses the street and other useable public and semi-public open space.</p>	<b>AO4.1</b>	<p>The building is located close to the street frontage and other urban spaces for all or most of its length so as to create a continuous or mostly continuous edge.</p>
		<b>AO4.2</b>	<p>The building is sited and designed such that:</p> <p>(a) the main pedestrian entrance to the building (or group of buildings) is located on the primary street frontage; and</p> <p>(b) pedestrian access to the entrance of the building(s) or individual dwellings is easily discerned from the primary street frontage.</p>
		<b>AO4.3</b>	<p>Car parking areas, service areas</p>

Performance Outcomes		Acceptable Outcomes	
			and driveways are located and configured so that they do not dominate the streetscape.
		<b>AO4.4</b>	Vehicular access to the site is separate from the pedestrian access.
<b>PO5</b>	The Industry activity provides for footpaths, walkways and other spaces intended primarily for pedestrians to be comfortable to use and adequately sheltered from excessive sunlight and inclement weather.	<b>AO5.1</b>	Any building provides adequate and appropriate shelter along or around the street in the form of an awning, colonnade, verandah or the like with a width of 3.2m to 4m or that is otherwise consistent with the width of shelter provided to adjoining premises.
<b>PO6</b>	The Industry activity is in a building which is designed to create vibrant and active streets and public spaces.	<b>AO6.1</b>	Development provides for a minimum of 65% of the building frontage to a public street or other public space to present with clear or relatively clear windows and glazed doors.
<b>Requirements for an Industry activity in a Rural zone</b>			
<b>PO7</b>	The Industry activity is located on a site which has sufficient area to accommodate the use.	<b>AO7.1</b>	Where within a rural zone: (a) buildings are set back 50m from street frontages; and (b) buildings are setback 10m from other site boundaries.



### 9.3.9 Market code

#### 9.3.9.1 Application

This code applies to accepted and assessable development:

- (a) being a material change of use for a market; and
- (b) identified as requiring assessment against the Market code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.9.2 Purpose and overall outcomes

- (1) The purpose of the Market code is to ensure markets are appropriately located, and are operated in a manner which is economically, environmentally and socially sustainable and appropriately responds to local amenity issues.
- (2) The purpose of the Market code will be achieved through the following overall outcomes:
  - (a) markets are established in locations of community attraction;
  - (b) markets are established where infrastructure and services are available or can easily be provided to meet the needs of users;
  - (c) markets operate in a manner which takes account of:
    - (i) the amenity of the local area; and
    - (ii) the viability of local businesses.

#### 9.3.9.3 Assessment benchmarks

**Table 9.3.9.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Location and site suitability</b>			
<b>PO1</b>	The market is operated at a location where the attraction of a large number of people is consistent with the preferred character of the local area.	<b>AO1.1</b>	The market use is not located in a residential zone.
<b>PO2</b>	The market minimises economic impacts on established businesses in the vicinity of the market.	<b>AO2.1</b>	Where market stalls are proposed to be located adjacent to existing shops, the market is not held on more than 2 days per week.
<b>Site layout</b>			
<b>PO3</b>	The market is designed to provide for: (a) convenient pedestrian access and movement; (b) legibility and accessibility between stalls and existing surrounding uses; and (c) pedestrian comfort and safety, including the provision of public convenience facilities.	<b>AO3.1</b>	Pedestrian access or pathways, a minimum of 2m wide are provided between: (a) stall fronts; and (b) stalls and existing shop fronts.
		<b>AO3.2</b>	Public toilets: (a) are provided within the area of the market or are located within 250m of the market; (b) remain open and accessible

Performance Outcomes		Acceptable Outcomes	
			for use during market hours; and (c) are maintained in a clean, safe and tidy state.
		<b>AO3.3</b>	Directional signage is provided to identify the location of and the entry to public toilet facilities.
<b>Operation and protection of amenity</b>			
<b>PO4</b>	The market is operated in a manner that does not cause environmental nuisance or adverse amenity impacts to neighbouring and nearby residents and other sensitive uses having regard to the (a) generation of noise, dust, odour and light; and (b) hours and frequency of operation.	<b>AO4.1</b>	The market is conducted, including setup and pack-up time, between the hours of 5.00am and 10.00pm.
		<b>AO4.2</b>	The use of amplified music, megaphones, public address systems and noise generating plant and equipment is avoided.
		<b>AO4.3</b>	Noise generated from the market complies with the level of noise emissions prescribed under the Environmental protection (noise) regulations 1997.
		<b>AO4.4</b>	Any outdoor lighting associated with the market is designed, installed, operated and maintained in accordance with AS4282 (Control of the obtrusive effects of outdoor lighting).
		<b>AO4.5</b>	Any temporary lighting is dismantled immediately on closure of the markets.
<b>Waste management</b>			
<b>PO5</b>	The market is established and operated to provide a safe and healthy environment and provides waste disposal facilities which are appropriate to the type and scale of the market.	<b>AO5.1</b>	The area used for market purposes is maintained in a clean, safe and tidy state: (a) during market hours; and (b) at the conclusion of each day's trading.
		<b>AO5.2</b>	An appropriate number of waste containers are provided.
<b>Access and parking</b>			
<b>PO6</b>	The design and management of access, parking and vehicle movement protects the functioning of the road network and provides safe vehicular, pedestrian and cyclist access to and from the site.	<b>AO6.1</b>	Where the market is conducted on a footpath and the adjoining road remains open to vehicle use, a minimum 1.2m clearance from the kerb to any market structure or use area is provided.
		<b>AO6.2</b>	Access is provided for emergency services vehicles.

## 9.3.10 Multi-unit uses code

### 9.3.10.1 Application

This code applies to assessable development identified as requiring assessment against the Multi-unit uses code by the tables of assessment in Part 5 (Tables of assessment).

### 9.3.10.2 Purpose and overall outcomes

- (1) The purpose of the Multi-unit uses code is to ensure multi-unit uses are of a high quality design which appropriately responds to local character, environment and amenity considerations.
- (2) The purpose of the Multi-unit uses code will be achieved through the following overall outcomes:
  - (a) a multi-unit use is visually attractive with a built form which addresses the street and integrates with surrounding development;
  - (b) a multi-unit use incorporates building design that responds to the character of the particular local area;
  - (c) a multi-unit use incorporates high quality landscaping and well designed and useable communal and private open space areas that provide visual relief to the built form;
  - (d) a multi-unit use provides a high standard of privacy and amenity for residents; and
  - (e) a multi-unit use incorporates and is supported by infrastructure and services commensurate with the scale of the use and its location.

### 9.3.10.3 Assessment benchmarks

**Table 9.3.10.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Site layout and relationship of buildings to site features</b>			
<b>PO1</b>	The multi-unit use is located on a site which has an area and dimensions capable of accommodating a well-designed and integrated multi-unit development incorporating: <ol style="list-style-type: none"> <li>(a) vehicle access, parking and manoeuvring areas;</li> <li>(b) communal and private open space areas; and</li> <li>(c) any necessary buffering to incompatible uses or sensitive environments.</li> </ol>	<b>AO1.1</b>	The multi-unit use is located on a lot having a minimum area of 800m <sup>2</sup> .
<b>Relationship of buildings to streets, public spaces and private open space</b>			
<b>PO2</b>	The multi-unit use is sited and designed to: <ol style="list-style-type: none"> <li>(a) provide a visibly clear pedestrian entrance to and from the building; and</li> <li>(b) minimise the potential for pedestrian and vehicular</li> </ol>	<b>AO2.1</b>	The building is sited and designed such that: <ol style="list-style-type: none"> <li>(a) the main pedestrian entrance to the building (or group of buildings) is located on the primary street frontage;</li> <li>(b) pedestrian access to the</li> </ol>

Performance Outcomes		Acceptable Outcomes	
	conflict.		entrance of the building(s) or individual dwellings is easily discerned; and (c) vehicular access to the site is separate from the pedestrian access.
<b>PO3</b>	The multi-unit use is sited and designed to: (a) address and provide a semi-active frontage to the street, adjacent parkland or other public areas; (b) promote casual surveillance of public and semi-public spaces; (c) contribute to a residential character; and (d) achieve a high level of amenity for dwellings within the site.	<b>AO3.1</b>	The building is sited and designed such that: (a) street and parkland frontages of the site comprise “semi-active uses/spaces” such as habitable rooms, common recreation areas (indoor and outdoor) and landscaped areas, to facilitate casual surveillance; and (b) the number of dwellings, rooming units, windows and balconies of habitable rooms that address adjoining streets, communal recreation areas and open spaces is optimised.
<b>PO4</b>	The multi-unit use is designed to ensure that car parking areas, services and mechanical plant do not visually dominate the site or surrounding area.	<b>AO4.1</b>	Any car parking area or other associated structures are integrated into the design of the development such that: (a) they are screened from view from frontages to streets, parks and adjoining land; (b) they are not located between the building and the street address; and (c) a basement or undercroft car parking area does not protrude above the adjacent ground level by more than 1m.
		<b>AO4.2</b>	Services and mechanical plant, including individual air conditioning equipment for dwellings or rooming units, are visually integrated into the design and finish of the building or effectively screened from view.
<b>Building mass and composition</b>			
<b>PO5</b>	The multi-unit use is sited and designed in a manner which: (a) minimises building mass and scale; (b) provides visual interest through building articulation and architectural design features; and (c) allows sufficient area at ground level for communal open space, site facilities, resident and visitor parking,	<b>AO5.1</b>	Buildings do not exceed 60% total site coverage.
		<b>AO5.2</b>	The building incorporates most or all of the following design features: (a) vertical and horizontal articulation such that no unbroken elevation is longer than 15m; or (b) variations in plan shape, such as curves, steps,

Performance Outcomes		Acceptable Outcomes	
	landscaping and maintenance of a residential streetscape.		recesses, projections or splays; or (c) variations in the treatment and patterning of windows, sun protection and shading devices, or other elements of a facade treatment at a finer scale than the overall building structure; or (d) balconies, verandahs or terraces; or (e) planting, particularly on podiums, terraces and low level roof decks.
<b>PO6</b>	The multi-unit use is sited and designed so as to: (a) provide amenity for users of the premises whilst preserving the privacy and amenity of adjoining and nearby properties; (b) provide adequate separation distance from adjoining uses; (c) preserve any existing vegetation that will buffer the proposed building; (d) allow for landscaping to be provided between buildings and street frontages and between neighbouring buildings; and (e) maintain the visual continuity and pattern of buildings and landscape elements within the street.	<b>AO6.1</b>	Buildings and structures comply with the minimum boundary setbacks in Table 9.3.10.3.2 (Minimum boundary setbacks for multi-unit uses).
		<b>AO6.2</b>	The building has a top level and roof form that is shaped to: (a) reduce the bulk of the building; (b) provide a visually attractive skyline silhouette; and (c) screen mechanical plant and equipment from view.
<b>Privacy and amenity</b>			
<b>PO7</b>	The multi-unit use ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy and amenity.	<b>AO7.1</b>	Non-habitable room windows of one dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit unless views are controlled by screening devices, distance, landscaping or design of the opening.
		<b>AO7.2</b>	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit within 2m at the ground storey or 9m at levels above the ground storey, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; or (b) fixed opaque glazing being applied to any part of a window below 1.5m above floor level; or

Performance Outcomes		Acceptable Outcomes	
			(c) fixed external screens; or (d) if at ground level, screen fencing to a minimum height of 2m.
		<b>A07.3</b>	For development up to and including 3 storeys in height, the outlook from windows, balconies, stairs, landings, terraces and decks or other private, communal or public areas is screened where direct view is available into private open space of an existing dwelling.
<b>PO8</b>	The multi-unit use appropriate lighting for the security of residents, whilst not impacting on the amenity of surrounding residents whilst not diminishing residential amenity of surrounding residents.	<b>A08.1</b>	Glare conditions or excessive 'light spill' into dwellings, rooming units, adjacent sites and public spaces is avoided or minimised through measures such as: (a) the use of building design and architectural elements or landscape treatments to block or reduce excessive light spill to locations where it would cause a nuisance to residents or the general public; and (b) the alignment of driveways and servicing areas to minimise vehicle headlight impacts on residential accommodation and private open space.
		<b>A08.2</b>	All access points, footpaths, car parks, building entrances and foyers are provided with adequate illumination.
		<b>A08.3</b>	All external lighting complies with AS4282 (Control of the obtrusive effects of outdoor lighting), and does not exceed 8 lux measured at any lot boundary and at any level.
<b>Open space and landscaping</b>			
<b>PO9</b>	The multi-unit use provides communal and private open space and landscaping such that residents have sufficient area to engage in communal activities, enjoy private and semi-private spaces, and accommodate visitors.	<b>A09.1</b>	At least 30% of the site area is provided as communal and private open space.
		<b>A09.2</b>	Each ground floor dwelling or rooming unit has a courtyard or similar private open space area directly accessible from the main living area and complying with the following minimum areas and dimensions respectively: (a) 10m <sup>2</sup> and 2.5m for a studio or rooming unit; (b) 18m <sup>2</sup> and 2.5m for a 1 bedroom unit; and

Performance Outcomes		Acceptable Outcomes	
			(c) 20m <sup>2</sup> and 3.0m for a 2 or more bedroom unit.
		<b>AO9.3</b>	Each dwelling or rooming unit above ground floor level has a balcony or similar private open space area directly accessible from the living area and complying with the following minimum areas and dimensions respectively: (a) 4.5m <sup>2</sup> and 1.7m for a studio or rooming unit; (b) 5.5m <sup>2</sup> and 2.1m for a 1 bedroom unit; and (c) 8m <sup>2</sup> and 2.5m for a 2 or more bedroom unit.
		<b>AO9.4</b>	Where not adjoining a park or similar public open space, a minimum 2m high solid screen fence is provided and maintained along the full length of any side or rear boundary.
		<b>AO9.5</b>	Communal open space is provided on-site and complies with the following minimum areas and dimensions: (a) minimum width of 4m; or (b) area equal to 15% of total area of the site.
<b>Site facilities and waste management</b>			
<b>PO10</b>	Adequate communal clothes drying facilities are provided where dwellings or rooming units are not provided with individual drying facilities.	<b>AO10.1</b>	Where dwellings or rooming units are not provided with individual clothes drying facilities, one or more outdoor communal clothes drying areas are provided in an accessible location, equipped with robust clothes lines.
<b>PO11</b>	Refuse disposal areas are located in convenient and unobtrusive positions and are capable of being serviced by the Council's refuse collection contractor.	<b>AO11.1</b>	The multi-unit use provides for the on-site storage of refuse.
		<b>AO11.2</b>	Refuse disposal areas and storage areas are screened by a solid fence or wall having a minimum height of 1.2m.
		<b>AO11.3</b>	Refuse storage areas are not directly visible from the road.
<b>Additional requirements for rooming accommodation or short term accommodation</b>			
<b>PO12</b>	The rooming accommodation or short term accommodation use is provided with sufficient facilities to accommodate the needs of temporary residents and staff.	<b>AO12.1</b>	Facilities including but not limited to kitchens, dining rooms, laundries and common rooms are provided for the use of temporary residents and staff.

**Table 9.3.10.3.2 Minimum boundary setbacks for multi-unit uses**

Building height	Boundary type	Minimum setback
Up to 8.5	Side	2m
	Front (primary)	6m

	Front (secondary)	3m
	Rear	2m
8.5m up to 11m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m
11m to 16m	Side	4m
	Front (primary)	6m
	Front (secondary)	4m
	Rear	6m
16m up to 21m	Side	6m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	6m
21m and above	Side	8m
	Front (primary)	6m
	Front (secondary)	6m
	Rear	8m



### 9.3.11 Relocatable home park and tourist park code

#### 9.3.11.1 Application

This code applies to assessable development:

- (a) being a material change of use for a relocatable home park or tourist park (being a caravan park); and
- (b) identified as requiring assessment against the Relocatable home park and tourist park code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.11.2 Purpose and overall outcomes

- (1) The purpose of the Relocatable home park and tourist park code is to ensure relocatable home parks and tourist parks are appropriately located and are designed in a manner which meets the needs of residents and visitors and protects the amenity of surrounding premises.
- (2) The purpose of the Relocatable home park and tourist park code will be achieved through the following overall outcomes:
  - (a) a relocatable home park and tourist park is well designed located and offers convenient access to the services and facilities required to support residents' and travellers' needs;
  - (b) a relocatable home park and tourist park provides high quality amenities and facilities commensurate with its setting, the types of accommodation supplied and the length of stay accommodated;
  - (c) a relocatable home park and tourist park is of a scale and intensity that is compatible with the preferred character of the local area;
  - (d) a relocatable home park and tourist park does not adversely impact on the amenity of rural and residential areas or the viable operation of Rural activities; and
  - (e) a relocatable home park and tourist park is provided with appropriate infrastructure services.

#### 9.3.11.3 Assessment benchmarks

**Table 9.3.11.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Provisions for combined Relocatable home parks and tourist parks			
Location and site suitability			
<b>PO1</b>	The relocatable home park or tourist park is located so that residents and guests have convenient access to: <ul style="list-style-type: none"> <li>(a) tourist attractions;</li> <li>(b) everyday commercial, community and recreation facilities; and</li> <li>(c) public transport services.</li> </ul>	<b>AO1.1</b>	The relocatable home park or tourist park is located: <ul style="list-style-type: none"> <li>(a) on a site within 1km of an centre zone; or</li> <li>(b) on a site within 400m walking distance of a public transport stop.</li> </ul>
<b>PO2</b>	The relocatable home park or tourist park is located on a site of	<b>AO2.1</b>	The site is able to sufficiently accommodate all the facilities

Performance Outcomes		Acceptable Outcomes	
	an appropriate size and has suitable levels of accessibility.		prescribed in this code.
		<b>AO2.2</b>	Roads to which the site has access: (a) have a minimum reserve width of 20m; (b) in an urban area, are fully constructed with bitumen paving for the full frontage of the site; (c) in a non-urban area are constructed to an acceptable all weather standard; and (d) are capable of accommodating any projected increase in traffic generated by the development.
<b>PO3</b>	The relocatable home park or tourist park is located and designed so that residents and users are not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance.	<b>AO3.1</b>	The site is not within: (a) 250m of land included in the Medium impact industry zone; or (b) 500m of land included in the High impact industry or Special industry zone.
		<b>AO3.2</b>	The relocatable home park or tourist park is not located on land where: (a) soils are contaminated by pollutants which may represent a health or safety risk to residents; or (b) where maximum concentrations of air pollutants exceed those recommended by the National health and medical research council.
<b>Residential amenity and landscaping</b>			
<b>PO4</b>	The relocatable home park or tourist park does not impact on the amenity of adjoining or nearby residential zones.	<b>AO4.1</b>	A 2m high solid screen fence is provided for the full length of any property boundary adjoining an existing Accommodation activity or land included in a residential zone.
		<b>AO4.2</b>	Pools and other potentially noisy activities or mechanical plant are not located where they adjoin an existing Accommodation activity.
<b>Rural amenity and landscaping</b>			
<b>PO5</b>	The relocatable home park or tourist park is designed to integrate into the surrounding rural landscapes and does not conflict with the operations of adjoining rural activities.	<b>AO5.1</b>	Fencing, landscaping is complementary of the surrounding rural landscape to promote its integration.
		<b>AO5.2</b>	Living and activity areas within relocatable home park or tourist parks are adequately buffered by vegetation and space from adjacent intensive agricultural

Performance Outcomes		Acceptable Outcomes	
			uses in accordance with Table 9.3.11.3.2 Siting and setback requirements for intensive Rural activities.
<b>Recreational open space</b>			
<b>PO6</b>	The relocatable home park or tourist park provides communal open space that is: (a) provided to meet the needs of all residents; and (b) designed to promote resident safety through casual surveillance.	<b>AO6.1</b>	A minimum of 20% of the total site area, exclusive of landscape buffer strips, is provided as communal open space.
		<b>AO6.2</b>	50% of the required open space is provided in one area.
		<b>AO6.3</b>	Communal open space: (a) has a minimum dimension (length or width) of 80m; (b) contains one area at least 150m <sup>2</sup> in size; (c) is located not more than 80m from any caravan or cabin site or 150m from any relocatable home park site; (d) includes a fenced children's playground; and (e) has adequate lighting for the safety of staff, visitors and/or residents.
		<b>AO6.4</b>	A communal recreation building is provided for the use of residents.
<b>Site access and parking</b>			
<b>PO7</b>	The design and management of access and entry parking arrangements facilitates the safe and convenient use of the relocatable home park or tourist park by residents and visitors.	<b>AO7.1</b>	Vehicle access is limited to 1 major entry/exit point on 1 road frontage.
		<b>AO7.2</b>	On-site visitor parking is located with direct access from the entry driveway and is located and sign-posted to encourage visitor use.
		<b>AO7.3</b>	No caravan or relocatable home site has direct access to any public road.
<b>Internal access and circulation</b>			
<b>PO8</b>	The design and management of internal vehicle and pedestrian access, parking and vehicle movement on the site facilitates the safe and convenient use of the relocatable home park or tourist park.	<b>AO8.1</b>	The design of internal access ways and footpaths and the location of visitor parking areas complies with the following: (a) vehicular access to each site is via shared internal access ways which are designed to provide safe, convenient and efficient movement of vehicles and pedestrians; (b) access ways are designed to discourage vehicle speeds in excess of 15km/hr; (c) the access way and footpath system together provide adequate access for service and emergency vehicles to

Performance Outcomes		Acceptable Outcomes	
			<p>each site and connect sites with amenities, recreational open space and external roads; and</p> <p>(d) internal access ways comply with the following:</p> <ul style="list-style-type: none"> <li>(i) carriageway width is not less than 6m for two way traffic and not less than 4m for one way traffic;</li> <li>(ii) the verge width on both sides is not less than 1.5m;</li> <li>(iii) cul-de-sac have turning bays at the end capable of allowing conventional service trucks to reverse direction with maximum of two movements;</li> <li>(iv) all internal access ways are sealed to the carriageway widths stated above;</li> <li>(v) internal footpaths are a minimum width of 1.2m (internal footpaths may be accommodated within the carriageway of internal access ways serving 10 sites or less); and</li> <li>(vi) are adequately lit and provide direct routes to recreation and amenity facilities.</li> </ul>
<b>Services and utilities</b>			
<b>PO9</b>	The relocatable home park or tourist park is provided with: <ul style="list-style-type: none"> <li>(a) a safe and reliable water supply; and</li> <li>(b) a sewerage disposal system which maintains acceptable public health and environmental standards.</li> </ul>	<b>AO9.1</b>	<ul style="list-style-type: none"> <li>(a) each relocatable home, caravan or cabin site is connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks; or</li> <li>(b) the site has access to: <ul style="list-style-type: none"> <li>(i) a potable water supply of adequate quantity and quality, capable of generating at least 800 litres per person per day at 100% occupancy, of which at least 250 litres per person per day is potable; and</li> <li>(ii) an effective on-site effluent disposal system capable of accommodating</li> </ul> </li> </ul>

Performance Outcomes		Acceptable Outcomes	
			anticipated maximum demand at 100% occupancy.
		<b>AO9.2</b>	Each relocatable home, caravan or cabin site is connected to underground electricity.
<b>PO10</b>	Caravan, tent and cabin sites are provided with adequate access to amenities for day-to-day living.	<b>AO10.1</b>	Except where private facilities are provided to each site, toilet, shower and laundry amenities are located: (a) within 100m of every caravan, tent or cabin site; and (b) not closer than 6m to any caravan, tent or cabin site.
		<b>AO10.2</b>	Laundry and clothes drying facilities are provided for guests.
<b>PO11</b>	The relocatable home park or tourist park provides on-site facilities for the storage and collection of refuse, with such facilities: (a) located in convenient and unobtrusive positions; and (b) capable of being serviced by the Council's cleansing contractor.	<b>AO11.1</b>	Development: (a) where a tourist park, provides a central waste collection area for every 50 caravan sites; or (b) where a relocatable home park provides refuse collection to every relocatable home park site.
<b>Relocatable homes in tourist parks</b>			
<b>PO12</b>	A proportion of a tourist park may be used as a relocatable home park where: (a) the relocatable home park portion is subservient to that used as a tourist park; and (b) the tourist park is not primarily used for tourist purposes.	<b>AO12.1</b>	Not more than 40% of the total area of a tourist park is used to accommodate relocatable homes.
<b>Provisions specific to relocatable home parks</b>			
<b>Density</b>			
<b>PO13</b>	The relocatable home park has a density that is compatible with the preferred character of the local area in which it is located.	<b>AO13.1</b>	The maximum site density for the relocatable home park does not exceed 30 relocatable homes per hectare.
<b>Privacy and separation</b>			
<b>PO14</b>	A reasonable level of privacy and separation is available to all residents within the relocatable home park.	<b>AO14.1</b>	Individual relocatable home sites: (a) are at least 200m <sup>2</sup> in area; (b) are setback at least 6m from any external road frontage and 5m from any other property boundary; (c) are setback 3 metres from any existing or proposed building on the subject land; (d) have a minimum frontage to any internal access way of 10m; (e) have a private open space

Performance Outcomes		Acceptable Outcomes	
			area of 16m <sup>2</sup> ; and (f) are clearly delineated and separated from adjoining sites by trees or shrubs.
		<b>AO14.2</b>	Relocatable homes are not sited within 1.5m of the side and rear boundaries or within 3m of the front boundary of the individual relocatable home site.
<b>Services and utilities</b>			
<b>PO15</b>	Relocatable home sites are provided with adequate private amenities.	<b>AO15.1</b>	Relocatable homes are provided with private kitchen and ablution facilities.
<b>Provisions specific to tourist parks</b>			
<b>Density</b>			
<b>PO16</b>	The tourist park has a density that is compatible with the preferred character of the local area in which it is located.	<b>AO16.1</b>	The maximum site density for the tourist park does not exceed 60 sites per hectare.
<b>Privacy and separation</b>			
<b>PO17</b>	A reasonable level of privacy and separation is available to all residents within the tourist park.	<b>AO17.1</b>	Individual sites: (a) are set back at least 12m from any external road frontage and 5m from any other property boundary; (b) are sited such that no part of any caravan is within 3m of any other caravan, tent, cabin or building; (c) have a frontage of at least 10m to any internal access way; (d) are clearly delineated and separated from adjoining sites by trees or shrubs; (e) contain a clear area of at least 2.5m by 2.5m for outdoor space; and (f) ensure that no part of any caravan or cabin is within 2m of any internal access way.
<b>Site access and parking</b>			
<b>PO18</b>	The design and management of entry parking arrangements facilitates the safe and convenient use of the tourist park by residents and visitors.	<b>AO18.1</b>	A short term standing area, with a minimum of 2 bays (with the dimension of 4m by 20m) are provided either as a separate bays or as part of a one-way entrance road.

## 9.3.12 Residential care facility and retirement facility code

### 9.3.12.1 Application

This code applies to assessable development:

- (a) being a material change of use for a residential care facility or retirement facility; and
- (b) identified as requiring assessment against the Residential care facility and retirement facility code by the tables of assessment in Part 5 (Tables of assessment).

### 9.3.12.2 Purpose and overall outcomes

- (1) The purpose of the Residential care facility and retirement facility code is to ensure residential care facilities and retirement facilities:
  - (a) are appropriately located to meet the particular needs of residents;
  - (b) are designed in a manner which meets the needs of and provides a comfortable and safe environment for residents; and
  - (c) protect the amenity of, and integrate with, surrounding premises.
- (2) The purpose of the Residential care facility and retirement facility code will be achieved through the following overall outcomes:
  - (a) a residential care facility or retirement facility is located where residents can have easy and direct access to public transport and community services and facilities;
  - (b) a residential care facility or retirement facility provides a home-like, non-institutional environment that promotes individuality, sense of belonging and independence;
  - (c) a residential care facility or retirement facility achieves a balance between providing specialised housing for residents whilst providing the opportunity for residents to participate in the wider community;
  - (d) a residential care facility or retirement facility is designed to be integrated with surrounding development;
  - (e) a residential care facility or retirement facility is sited such that there is ease of movement, safety and legibility for residents and visitors; and
  - (f) a residential care facility or retirement facility is designed such that the comfort, safety, security, individuality, privacy and wellbeing of residents are promoted.

### 9.3.12.3 Assessment benchmarks

**Table 9.3.12.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
<b>PO1</b>	The residential care facility or retirement facility is located so that residents have convenient	<b>AO1.1</b>	The residential care facility or retirement facility is located: <ul style="list-style-type: none"> <li>(a) on a site within 1km of a</li> </ul>

Performance Outcomes		Acceptable Outcomes	
	<p>access to:</p> <p>(a) everyday commercial facilities;</p> <p>(b) community facilities and social services; and</p> <p>(c) regular public transport or facility specific transport that provides a comparable or better level of service.</p>		<p>centre zone; or</p> <p>(b) on a site within 400m walking distance of a public transport stop; or</p> <p>(c) where the residential care facility or retirement facility is not located close to an activity centre or public transport stop, a regular, convenient and affordable transport service is provided for residents of the residential care facility or retirement facility by the facility operator to the nearest activity centre or public transport connection.</p>
<b>PO2</b>	<p>The residential care facility or retirement facility is on a site which:</p> <p>(a) is not exposed to unacceptable levels of noise, unhealthy air emissions or other nuisance; and</p> <p>(b) is not constrained by steep slopes or other physical limitations that may represent an impediment for residents and staff in using the facility.</p>	<b>AO2.1</b>	<p>The site is not within:</p> <p>(a) 250m of land included in the Medium impact industry zone; or</p> <p>(b) 500m of land included in the High impact industry zone.</p>
		<b>AO2.2</b>	<p>The residential care facility or retirement facility is not located on land where:</p> <p>(a) soils are contaminated by pollutants which may represent a health or safety risk to residents; or</p> <p>(b) maximum concentrations of air pollutants exceed those recommended by the National Health and Medical Research Council.</p>
		<b>AO2.3</b>	<p>The residential care facility or retirement facility is located on land:</p> <p>(a) with a slope not exceeding 10%; or</p> <p>(b) where located on land with a slope exceeding 10%, the facility is designed such that any areas to be accessed by residents of the facility are not steeper than 5%.</p>
<b>Site area and dimensions</b>			
<b>PO3</b>	<p>The residential care facility or retirement facility is located on a site which has an area and dimensions suitable to enable the development of a well-designed and integrated facility.</p>	<b>AO3.1</b>	<p>The design of the residential care facility or retirement facility needs to incorporate and take into account:</p> <p>(a) accommodation and support facilities;</p> <p>(b) vehicles access, parking and manoeuvring;</p> <p>(c) stormwater treatment areas;</p> <p>(d) open space areas and landscaping; and</p> <p>(e) any necessary buffering to</p>



Performance Outcomes		Acceptable Outcomes	
			adjoining uses or other elements.
<b>Integration of large sites with neighbourhoods and street networks</b>			
<b>PO4</b>	The residential care facility or retirement facility is integrated with the neighbourhood and local transport network.	<b>AO4.1</b>	The residential care facility or retirement facility: (a) is connected to and forms part of the surrounding neighbourhood rather than establishing as a separate private enclave; (b) is integrated with and extends the existing or proposed local transport network; (c) provides for legible and direct pedestrian, bicycle and vehicular access for all residents to nearby activity centres, community facilities and public open space; and (d) clearly defines the boundaries of public, communal and private open space.
<b>Building scale and bulk</b>			
<b>PO5</b>	The residential care facility or retirement facility is sited and designed in a manner which: (a) results in a building scale that is compatible with surrounding development; (b) does not represent an appearance of excessive bulk to adjacent premises, the streetscape or other areas external to the site; (c) allows sufficient area at ground level of private and communal open space, site facilities, resident and visitor parking, landscaping and maintenance of a residential streetscape; and (d) facilitates onsite stormwater management and vehicle access.	<b>AO5.1</b>	Site cover does not exceed 50%.
		<b>AO5.2</b>	Building bulk is reduced by incorporating a combination of the following elements in building design: (a) verandahs; (b) recesses; (c) variation in materials, colours, and/or textures including between levels; and (d) variation in building form.
		<b>AO5.3</b>	The length of any unarticulated elevation of a building, fence or other structure visible from the street does not exceed 15m.
		<b>AO5.4</b>	Any building does not exceed 40m in length, with separation between buildings, for the purposes of cross ventilation, articulation and light, of at least 6m.
<b>Building design and streetscape appearance</b>			
<b>PO6</b>	The residential care facility or retirement facility is designed to: (a) create an attractive and functional living environment for residents; (b) take account of its setting and site context; and (c) make a positive contribution to the character of the street and local area.	<b>AO6.1</b>	The residential care facility or retirement facility incorporates a high standard of facility design that is responsive to the specific needs of its residents.
		<b>AO6.2</b>	Buildings are oriented to the street and provide casual surveillance of the street.
		<b>AO6.3</b>	Buildings and structures are setback a minimum of:

Performance Outcomes		Acceptable Outcomes	
			(a) 6m from the front boundary; and (b) 4.5m from the side and rear boundaries.
		<b>AO6.4</b>	Screening of balconies is limited to the side and rear boundaries and the sides of balconies where needed to prevent noise and overlooking of other rooming units or dwellings and recreation areas.
		<b>AO6.5</b>	Services structures and mechanical plants are screened or designed as part of the building.
<b>PO7</b>	The site layout and design of buildings forming part of the residential care facility or retirement facility promote a domestic scale, individuality and sense of belonging.	<b>AO7.1</b>	Rooming units and dwellings are configured in clusters with each cluster having a clearly addressing the street and each rooming unit and dwelling having clearly defined private open space and a prominent front door.
		<b>AO7.2</b>	Clusters of rooming units and dwellings are supported by unique design features that help identify and individualise them.
		<b>AO7.3</b>	Rooming units and dwellings have clear addresses within a conventional address system of streets and dwellings.
		<b>AO7.4</b>	Logical, direct and separated pedestrian and vehicle routes are provided between rooming units and dwellings, communal buildings and other on-site facilities and facilities in the neighbourhood.
<b>PO8</b>	The residential care facility or retirement facility ensures that dwellings, rooming units, private open spaces and adjoining Accommodation activities are provided with a reasonable level of privacy.	<b>AO8.1</b>	Non-habitable room windows of one dwelling or rooming unit are not located opposite the non-habitable room windows of another dwelling or rooming unit unless views are controlled by screening devices, distance, landscaping or design of the opening.
		<b>AO8.2</b>	Where habitable room windows look directly at habitable room windows in an adjacent dwelling or rooming unit within 2m at the ground storey or 9m at levels above the ground storey, privacy is protected by: (a) window sill heights being a minimum of 1.5m above floor level; or (b) fixed opaque glazing being

Performance Outcomes		Acceptable Outcomes	
			<p>applied to any part of a window below 1.5m above floor level; or</p> <p>(c) fixed external screens; or</p> <p>(d) if at ground level, screen fencing to a minimum height of 2m.</p>
		<b>AO8.3</b>	For development up to and including 3 storeys in height, the outlook from windows, balconies, stairs, landings, terraces and decks or other private, communal or public areas is screened where direct view is available into private open space of an existing dwelling.
<b>Open space</b>			
<b>PO9</b>	The residential care facility or retirement facility incorporates communal and private open space areas that provide: <ul style="list-style-type: none"> <li>(a) sufficient spaces for residents to engage in and enjoy outdoor activities;</li> <li>(b) high levels of residential amenity; and</li> <li>(c) boundary fences and walls that do not visually dominate and promote casual surveillance and integration with the street.</li> </ul>	<b>AO9.1</b>	At least 30% of the area of the site is provided as communal open space.
		<b>AO9.2</b>	Each ground floor rooming unit is provided with a courtyard, verandah or similar private open space area not less than 10m <sup>2</sup> with a minimum dimension of 2.5m directly accessible from the living area.
		<b>AO9.3</b>	Each rooming unit above ground floor level has a balcony or similar private open space area not less than 4.5m <sup>2</sup> with a minimum dimension of 1.7m directly accessible from the living area.
		<b>AO9.4</b>	A 2m high solid screen fence is provided along the full length of all side and rear boundaries of the site.
		<b>AO9.5</b>	Unless required to ameliorate traffic noise or headlight glare, high solid fences or walls are avoided along street frontages.
<b>Management, residential care and social facilities</b>			
<b>PO10</b>	The residential care facility or retirement facility provides appropriate management, social and care facilities on site.	<b>AO10.1</b>	The residential care facility or retirement facility provides management facilities, supervised care facilities and social facilities in communal buildings.
		<b>AO10.2</b>	Communal buildings are easily accessible and centrally located, and residents are able to easily navigate the site on foot or with the assistance of mobility aids.
<b>Accessibility</b>			
<b>PO11</b>	The residential care facility or retirement facility incorporates easy and safe pedestrian access	<b>AO11.1</b>	No dwelling or rooming unit is more than 250m walking distance from a site entry or exit

Performance Outcomes		Acceptable Outcomes	
	and movement.		point.
		<b>AO11.2</b>	All pathways and land used for outdoor recreation have grades of 5% or less, with paths having hard, slip resistant surfaces.
		<b>AO11.3</b>	Internal paths, ramps and hallways are capable of accommodating two wheelchairs (side by side) at any one time.
		<b>AO11.4</b>	Development complies with AS1428 (Design for access and mobility).
		<b>AO11.5</b>	Buildings exceeding one storey in height incorporate lifts to each level and ramped access.
<b>Safety and security</b>			
<b>PO12</b>	The residential care facility or retirement facility provides a safe and secure living environment.	<b>AO12.1</b>	Buildings adjacent to public or communal streets or open space have at least one habitable room window with an outlook to that area.
		<b>AO12.2</b>	Entrances and exits to the site are clearly marked and well lit.
		<b>AO12.3</b>	Bollard or overhead lighting (which achieves lighting levels of at least category 2 as specified in AS1158 (Lighting roads and public spaces)) is provided along all footways and roads, and in all car parking areas.
<b>Services and utilities</b>			
<b>PO13</b>	The residential care and retirement facility is provided with: (a) a safe and reliable water supply; and (b) a sewage disposal system which maintains acceptable public health and environmental standards.	<b>AO13.1</b>	The site and the development are connected to the reticulated water supply, sewerage and stormwater drainage infrastructure networks.

### 9.3.13 Rural activities code

#### 9.3.13.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Rural activities code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.13.2 Purpose and overall outcomes

- (1) The purpose of the Rural activities code is to facilitate rural uses and ensure Rural activities are developed in a sustainable manner which conserves the productive characteristics of rural land and protects environmental and landscape values and the amenity of surrounding premises.
- (2) The purpose of the Rural activities code will be achieved through the following overall outcomes:
  - (a) Rural activities are undertaken on a sustainable basis;
  - (b) agricultural land is conserved and not alienated or encroached upon by incompatible land uses;
  - (c) uses that support rural production are established on suitable sites where environmental and amenity impacts can be effectively managed; and
  - (d) adverse impacts on the surrounding or downstream environments or natural environmental processes are avoided.

#### 9.3.13.3 Assessment benchmarks

**Table 9.3.13.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>General requirements</b>			
<b>PO1</b>	The Rural activity is conducted on a lot that is of sufficient size to reasonably accommodate the use and mitigate potential nuisance arising from noise, dust, odour and other emissions or contaminants generated by the use.	<b>AO1.1</b>	The lot is of an adequate size to sufficiently support the intended Rural activity.
<b>PO2</b>	Buildings and structures associated with the Rural activity are sited and designed to avoid or minimise adverse visual impacts on the rural landscape.	<b>AO2.1</b>	Buildings and structures (other than a dwelling house) associated with the Rural activity are set back at least 10m from all site boundaries.
<b>Requirements for permanent plantation</b>			
<b>PO3</b>	The plantation forest is located such that it conserves the productive characteristics of Agricultural land.	<b>AO3.1</b>	The plantation forest is not located on agricultural land identified on the Overlay map – AL - 01:29 (Agriculture land overlay).
<b>Requirements for roadside stall</b>			
<b>PO4</b>	The roadside stall is limited in scale and appropriate to a rural area.	<b>AO4.1</b>	Produce sold at the roadside stall is limited to that which is grown or produced on the site.
		<b>AO4.2</b>	The roadside stall does not involve the sale of manufactured

Performance Outcomes		Acceptable Outcomes	
			goods other than where manufactured on the site.
		<b>AO4.3</b>	Buildings and structures associated with the roadside stall: (a) are constructed along the property boundary; (b) occupy not more than 10m <sup>2</sup> GFA; and (c) are constructed of materials that can easily be dismantled following the cessation of the use.
		<b>AO4.4</b>	The roadside stall is ancillary to a Rural activity occurring on the same site.
<b>PO5</b>	The roadside stall does not have an adverse impact on the safety and functioning of the road network.	<b>AO5.1</b>	The roadside stall is located on a site adjoining a road other than a State controlled road.
		<b>AO5.2</b>	The location of the road side stall provides sufficient area for parking and for the safe entry and exit of vehicles from the site.
<b>PO6</b>	Signage associated with the roadside stall is small, unobtrusive and appropriate to a rural location.	<b>AO6.1</b>	Not more than 1 sign is erected on the premises and the sign: (a) has a maximum sign face area of 0.5m <sup>2</sup> per side; and (b) is not illuminated or in motion.

**Table 9.3.13.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Requirements for intensive Rural activities (Animal keeping, Aquaculture, Intensive animal industry, Intensive horticulture and Rural industry)</b>			
<b>PO1</b>	The intensive Rural activity is sited and designed on a lot of sufficient area to: (a) accommodate the use (including buildings, pens, ponds, other structures and waste disposal areas involved in the use); (b) provide for adequate setbacks to: (i) road frontages; (ii) site boundaries; (iii) sensitive uses on surrounding land; and (iv) waterways or wetlands; and (c) avoid or minimise adverse visual impacts on the rural landscape.	<b>AO1.1</b>	The intensive Rural activity is located on a site which has a minimum area and setbacks complying with Table 9.3.13.3.3 (Siting and setback requirements for intensive Rural activities) unless for a: (a) Caretakers accommodation; or (b) Rural workers accommodation.
<b>PO2</b>	The intensive Rural activity is located on a site which is sufficiently separated from any existing or planned residential or	<b>AO2.1</b>	The intensive Rural activity is located on a site which is not less than: (a) 1km from land included in a

Performance Outcomes		Acceptable Outcomes	
	rural residential area or other sensitive activity to avoid any adverse impacts with regard to noise, dust, odour, visual impact, traffic generation, lighting, radiation or other emissions or contaminants.		residential zone; (b) 1km from land included in the Rural residential zone; and (c) 1km from any Community activity where people gather (e.g. educational establishment or child care centre); or (d) if the intensive Rural activity is a rural industry, the use is located on a site which is not less than 500m from a sensitive use.
<b>PO3</b>	The intensive Rural activity is located such that it conserves the productive characteristics of agricultural land.	<b>AO3.1</b>	The intensive Rural activity: (a) is not located on agricultural land identified on the Overlay map – AL - 01:29 (Agriculture land overlay); or (b) where located on agricultural land identified on the Overlay map – AL - 01:29 (Agriculture land overlay) the use and associated activities conserves the productive characteristics of the agricultural land.
<b>Environmental and amenity impacts</b>			
<b>PO4</b>	The intensive Rural activity provides from the appropriate disposal of waste and contaminants.	<b>AO4.1</b>	The intensive Rural activity incorporates waste disposal systems and practice which: (a) ensure that off-site release of contaminants does not occur; (b) ensure no significant adverse impacts on surface or ground water resources; and (c) comply with relevant Government or industry guidelines, codes and standards applicable to a specific use or on-site waste disposal.

**Table 9.3.13.3.3 Siting and setback requirements for intensive Rural activities.**

Rural activity	Min. site area (ha)	Min. boundary setbacks (m)	Min. distance from a sensitive use on a surrounding land (m)
Animal keeping	4ha	50m from any road frontage. 15m from any side or rear boundary.	300m
Aquaculture	5ha	50m from any road frontage. 15m from any side or rear boundary.	100m
Intensive animal industry (piggery or	20ha	200m from any road frontage.	250m

<b>Rural activity</b>	<b>Min. site area (ha)</b>	<b>Min. boundary setbacks (m)</b>	<b>Min. distance from a sensitive use on a surrounding land (m)</b>
feedlot)		15m from any side or rear boundary.	
Intensive animal industry (poultry farm)	50ha	100m from any road frontage. 100m from any side or rear boundary.	400m
Intensive animal industry (emu or ostrich hatching and brooding facility)	4ha	60m from any road frontage. 15m from any side or rear boundary.	400m
Intensive animal industry (Where not previously specified)	20ha	200m from any road frontage. 15m from any side or rear boundary.	250m
Intensive horticulture	10ha	50m from any road frontage 15m from any side or rear boundary.	100m
Rural industry	1ha	50m from any road frontage. 10m from any side or rear boundary	100m



### 9.3.14 Sales office code

#### 9.3.14.1 Application

This code applies to accepted and assessable development:

- (a) being a material change of use for a sales office; and
- (b) identified as requiring assessment against the Sales office code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.14.2 Purpose and overall outcomes

- (1) The purpose of the Sales office code is to ensure sales offices are temporary in nature and are developed in a manner which protects the amenity of surrounding premises.
- (2) The purpose of the Sales office code will be achieved through the following overall outcomes:
  - (a) the siting, layout, design and operation of a sales office is commensurate to, does not adversely impact upon the character and amenity of the surrounding area; and
  - (b) a sales office is operated for a temporary duration only.

#### 9.3.14.3 Assessment benchmarks

**Table 9.3.14.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Operational Characteristics			
<b>PO1</b>	The duration of the use of premises for a sales office: (a) in the case of a display dwelling, display village (i.e. comprising 3 or more display dwellings) or estate sales office does not extend beyond a reasonable period required to construct and complete sales within the development or the applicable stage of the development; or (b) in the case of dwelling offered as a prize, does not extend beyond a reasonable period of time to allow for promotion of the prize.	<b>AO1.1</b>	A sales office where: (a) a display dwelling, display village or estate sales office, operates for a maximum period of 2 years; or (b) a dwelling offered as a prize, operates for a maximum period of 6 months.
		<b>AO1.2</b>	Any temporary building or structure associated with the operation of the sales office is removed from the site within 14 days of the end of the period of operation and the site is left in a clean and tidy condition.
<b>PO2</b>	Where the temporary use of a sales office is contained within a structure intended to become a bona fide residential dwelling, it is constructed in accordance with the relevant requirements for the ultimate use.	<b>AO2.1</b>	Where a sales office is located in a Class 1 building (Dwelling house) this dwelling must comply with Part 9.3.5 (Dwelling house code).
<b>PO3</b>	The location, hours of operation and activities of the sales office	<b>AO3.1</b>	A sales office: (a) is located at the major entry

Performance Outcomes		Acceptable Outcomes	
	does not adversely affect the amenity of nearby existing and potential future residential premises.		to the development site; (b) only operates between 8.00am and 6.00pm; and (c) conducts sales and promotional activities so as not to create a nuisance to adjoining residents or residents in the immediate locality.
<b>PO4</b>	The number of employees engaged in the operation of the sales office does not adversely affect the amenity of nearby residential premises.	<b>AO4.1</b>	A sales office where a: (a) display dwelling, dwelling offered as a prize or estate sales office, a maximum of 2 employees are engaged in the operation of the sales office at any one time; or (b) display village, a maximum of 2 employees per display home are engaged in the operation of the sales office at any one time.
<b>Public convenience facilities</b>			
<b>PO5</b>	The sales office provides appropriate public convenience facilities for users of the sales office.	<b>AO5.1</b>	Public toilet facilities are provided for a display village comprising 4 or more display dwellings.
<b>On-site car parking</b>			
<b>PO6</b>	Sufficient car parking is provided to satisfy the projected needs of the sales office and is appropriately designed to facilitate ease of use.	<b>AO6.1</b>	A sales office ensures: (a) a minimum of 2 on-site parking spaces are provided where on-street parking is not available; or (b) a minimum of 2 on-street car parking spaces are available within 50m of the sales office.

### 9.3.15 Service station code

#### 9.3.15.1 Application

This code applies to assessable development:

- (a) being a material change of use for a service station; and
- (b) identified as requiring assessment against the Service station code by the tables of assessment in Part 5 (Tables of assessment).

#### 9.3.15.2 Purpose and overall outcomes

- (1) The purpose of the Service station code is to ensure service stations are developed in appropriate locations and in a manner which meets the needs of users, provides safe access and protects the environment and amenity of surrounding premises.
- (2) The purpose of the Service station code will be achieved through the following overall outcomes:
  - (a) a service station is established at a suitable location and on a site that is capable of accommodating all necessary and associated activities;
  - (b) a service station does not adversely impact upon the amenity of the surrounding local area;
  - (c) a service station incorporates a high standard of built form and landscaping;
  - (d) a service station is provided with safe and convenient access to the road network;
  - (e) a service station incorporates appropriate environmental management measures; and
  - (f) minimises the risk of land, ground and surface water contamination.

#### 9.3.15.3 Assessment benchmarks

**Table 9.3.15.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
<b>PO1</b>	The service station is located on a site having sufficient area and dimensions to accommodate required buildings and structures, vehicle access and manoeuvring areas and site landscaping and buffer areas.	<b>AO1.1</b>	The service station site is located on a site that: <ul style="list-style-type: none"> <li>(a) is at least 1,500m<sup>2</sup> in area; and</li> <li>(b) has a street frontage of at least:               <ul style="list-style-type: none"> <li>(i) 35m where the site is a corner site; or</li> <li>(ii) 40m otherwise.</li> </ul> </li> </ul>
<b>PO2</b>	The service station is located so that it does not adversely impact upon the amenity of existing or future planned residential areas.	<b>AO2.1</b>	The service station is located: <ul style="list-style-type: none"> <li>(a) on land included in a centre or industry zone; or</li> <li>(b) in the Rural zone on a major road and at least 15km from any existing or approved service station.</li> </ul>

Performance Outcomes		Acceptable Outcomes	
<b>Siting of building and structures</b>			
<b>PO3</b>	Buildings and structures associated with the service station are sited so as to: (a) ensure the safe and efficient use of the site and operation of the facility; (b) protect streetscape character; and (c) provide adequate separation to adjoining land uses.	<b>AO3.1</b>	Buildings and structures are setback a minimum of: (a) 9m to the primary street frontage; (b) 3m to any secondary street frontage; and (c) 5m from any side or rear boundary where adjoining a sensitive use or land in a residential zone or the Community facilities zone; or (d) where not adjoining a sensitive use or land in a residential zone or the Community facilities zone, no minimum side or rear boundary setback applies.
		<b>AO3.2</b>	For front boundary setbacks fuel pumps and canopies are setback a minimum of 7.5m from the property boundary.
		<b>AO3.3</b>	On site storage of refuse is located so that it is not visible from the street.
<b>PO4</b>	Development maintains and contributes to the visual amenity of the locality.	<b>AO4.1</b>	Development ensures a 4m wide landscaping strip containing ground cover and small shrubs is maintained along: (a) a minimum 50% of the primary frontage; or (b) a minimum 75% of the total frontage where a secondary frontage exists.
<b>Location of fuel pumps and bulk fuel storage</b>			
<b>PO5</b>	Fuels pumps and bulk fuel storage tanks are located: (a) wholly within the site; (b) such that vehicles while fuelling and refuelling are standing wholly within the site and are parked away from entrances and circulation driveways; and (c) a safe distance from all site boundaries.	<b>AO5.1</b>	Fuel pumps are located in accordance with AS1940 (The storage and handling of flammable and combustible liquids).
		<b>AO5.2</b>	Inlets to bulk fuel storage tanks are located to ensure that tankers, while discharging fuel, are standing wholly within the site and are on level ground.
<b>Access and parking</b>			
<b>PO6</b>	The service station: (a) does not impair traffic flow or road safety; and (b) facilitates, through the design and arrangement of vehicular crossovers and on-site circulation, safe and convenient movement to, from and within the site.	<b>AO6.1</b>	Separate entrances and exits are provided, and these are clearly marked for their intended use.
		<b>AO6.2</b>	Vehicle crossovers are at least 8m wide.
		<b>AO6.3</b>	No part of a vehicle crossover is closer than: (a) 14m from any other vehicle crossover on the same site; (b) 12m from an intersection;

Performance Outcomes		Acceptable Outcomes	
			and (c) 3m from any property boundary.
		<b>AO6.4</b>	Adequate queuing areas are provided for refuelling, washing and related facilities.
		<b>AO6.5</b>	Bulk delivery area is located so that the site access and traffic flow is not restricted during delivery.
<b>Environmental performance</b>			
<b>PO7</b>	The service station is designed and constructed so as to ensure that on-site operations: (a) do not cause any environmental nuisance or harm; (b) do not result in the release of contaminants or untreated pollutants; (c) achieve acceptable levels of stormwater run-off quality and quantity; and (d) where practical minimise wastage through recycling of liquid and solid waste.	<b>AO7.1</b>	Sealed impervious surfaces are provided in areas where potential spills of contaminants may occur.
		<b>AO7.2</b>	Grease and oil arrestors or other infrastructure is provided to prevent the movement of contaminants from the site.
		<b>AO7.3</b>	Storm water is diverted away from the forecourt area or areas of potential contamination.
		<b>AO7.4</b>	The collection, treatment and disposal of solid and liquid wastes ensures that: (a) off-site releases of contaminants do not occur; and (b) measures to minimise waste generation and to maximise recycling are implemented.
		<b>AO7.5</b>	Ancillary automatic mechanical carwash facilities (where provided) are designed to collect, treat and recycle waste water for reuse.
<b>Protection of residential amenity</b>			
<b>PO8</b>	The service station ensures the amenity of existing or planned residential areas is protected and noise, light or odour nuisance is avoided.	<b>AO8.1</b>	Where the service station adjoins an Accommodation activity or land included in a residential zone: (a) a 2m high solid screen fence is provided along all common property boundaries of the site; and (b) the hours of operation of the service station are limited to between 7.00am to 10.00pm.
		<b>AO8.2</b>	The layout and design of the service station provides for the storage and collection of refuse and waste and is screened from public view.
		<b>AO8.3</b>	The service station limits the generation of noise such that: (a) nuisance is not caused to a sensitive land use; (b) desired ambient noise levels

Performance Outcomes		Acceptable Outcomes	
			for residential areas are not exceeded; and (c) applicable legislative requirements are met.
		<b>AO8.4</b>	The service station prevents or minimises any emissions of odour, dust and air pollutants such that: (a) nuisance is not caused beyond the site boundaries; and (b) air quality conducive to the health and wellbeing of people is maintained.
<b>PO9</b>	External lighting is designed, located and operated to avoid any adverse impacts on the amenity of neighbouring premises.	<b>AO9.1</b>	External lighting is provided in accordance with AS4282 (Control of obtrusive effects of outdoor lighting).
<b>Ancillary on-site amenities</b>			
<b>PO10</b>	Customer air and water facilities, and any ancillary automatic mechanical car washing facilities are provided in a way that protects the amenity of nearby Accommodation activities.	<b>AO10.1</b>	Ancillary facilities are located such that: (a) vehicles using, or waiting to use such facilities are standing wholly within the site; and (b) an adequate buffer is provided to any adjoining Accommodation activities.
<b>Extent of retail sale of goods</b>			
<b>PO11</b>	The associated sale of goods, including food stuffs, is ancillary to the provision of fuel and automotive repairs and service.	<b>AO11.1</b>	The gross floor area used for the associated retail sale of goods is limited to 150m <sup>2</sup> .
		<b>AO11.2</b>	Liquid contaminants are stored: (a) in a bunded area capable of containing 125% of the largest package; or (b) are located so that a spill can be contained within an existing contaminated area (i.e. the forecourt).

## 9.3.16 Telecommunications facility code

### 9.3.16.1 Application

This code applies to accepted and assessable development:

- (a) being a material change of use for a telecommunications facility; and
- (b) identified as requiring assessment against the Telecommunications facility code by the tables of assessment in Part 5 (Tables of assessment).

Editor's note—this code primarily deals with telecommunications facilities involving the erection of a telecommunications tower.

### 9.3.16.2 Purpose and overall outcomes

- (1) The purpose of the Telecommunications facility code is to ensure telecommunication facilities are developed in a manner which protects public health, the environment and the amenity of surrounding premises.
- (2) The purpose of the Telecommunication facility code will be achieved through the following overall outcomes:
  - (a) a telecommunications facility is located with compatible uses and facilities;
  - (b) a telecommunications facility does not adversely impact upon community wellbeing;
  - (c) a telecommunications facility does not adversely affect the amenity of surrounding premises;
  - (d) a telecommunications facility is visually integrated with its natural, rural or townscape setting; and
  - (e) a telecommunications facility is sited and constructed so as to minimise detrimental environmental impacts.

### 9.3.16.3 Assessment benchmarks

**Table 9.3.16.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Location and site suitability			
<b>PO1</b>	The telecommunications facility is located so as to minimise any adverse impacts on the amenity of a local area and protect community wellbeing.	<b>AO1.1</b>	The telecommunications facility is located at least: <ul style="list-style-type: none"> <li>(a) 400m from any residential activity;</li> <li>(b) 500m from any childcare centre, community care centre, educational establishment or park;</li> <li>(c) 20m from any public pathway; and</li> <li>(d) 1km from any other existing or approved telecommunications facility, except where a co-located telecommunications tower using a single structure.</li> </ul>

Performance Outcomes		Acceptable Outcomes	
<b>Protection of visual amenity and landscape character</b>			
<b>PO2</b>	Development is visually integrated with its landscape or townscape setting so as not to be visually dominant or unduly obtrusive.	<b>AO2.1</b>	The telecommunications facility is unobtrusive when viewed from scenic corridors and routes.
<b>Access, safety and security</b>			
<b>PO3</b>	The telecommunications facility is accessible and secure, public safety is protected and potential damage from vandalism is minimised.	<b>AO3.1</b>	The telecommunications facility is provided with adequate access to allow periodic servicing and maintenance of the facility.
		<b>AO3.2</b>	Warning information signs and security fencing are provided around the perimeter of the telecommunications facility site to prevent unauthorised entry.



## 9.4 Other development codes

### 9.4.1 Advertising devices code

#### 9.4.1.1 Application


This code applies to accepted and assessable development identified as requiring assessment against the Advertising devices code by the tables of assessment in Part 5 (Tables of assessment).


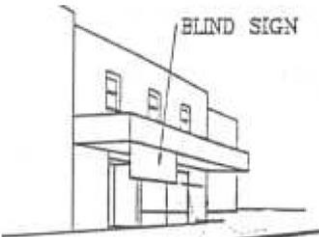
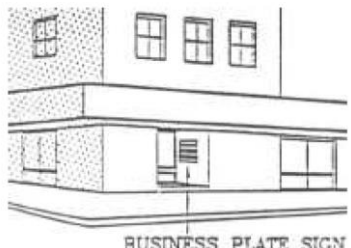


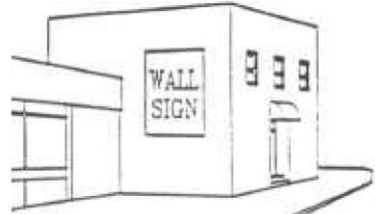
#### 9.4.1.2 Purpose and overall outcomes

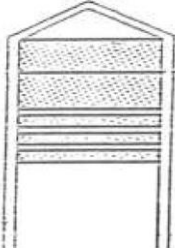


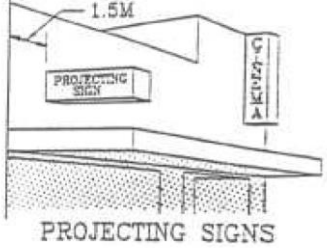

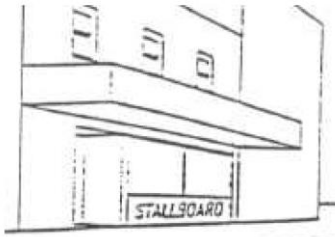
- (1) The purpose of the Advertising devices code is to ensure that advertising devices are established in a manner which is consistent with the desired character and amenity of the Whitsunday region.
- (2) The purpose of the Advertising devices code will be achieved through the following overall outcomes:
  - (a) an advertising device complements and does not detract from the desirable characteristics of the natural and built environment in which the advertising device is exhibited;
  - (b) an advertising device is designed and integrated into the built form so as to minimise visual clutter;
  - (c) an advertising device does not adversely impact on the visual amenity of a heritage or neighbourhood character area or public open space;
  - (d) an advertising device does not adversely impact on the amenity of rural, rural residential or residential areas;
  - (e) an advertising device does not pose a hazard for pedestrians, cyclists or drivers of motor vehicles; and
  - (f) an advertising device accommodates the legitimate need to provide directions and business identification in a manner that is consistent with achieving overall outcomes (a) to (e) above.

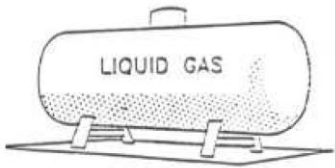
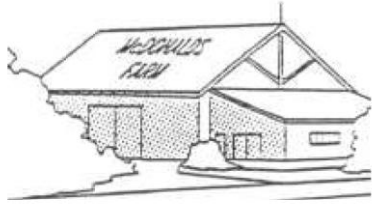
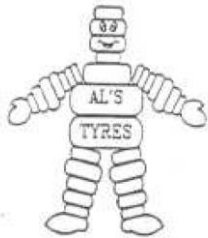


#### 9.4.1.3 Description of advertising devices

Table 9.4.1.3.1 Description of advertising device types

Advertising device type	Written description	Pictorial description
Above awning sign	An advertising device located on top of and attached to an awning or verandah.	

Advertising device type	Written description	Pictorial description
Awning fascia or return fascia sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Blind sign	An advertising device painted or otherwise affixed to a solid or flexible material suspended from an awning, verandah or wall.	
Business name plate	An advertising device displaying the name, occupation and contact details for the business occupant and which may also include the hours of operation of the business.	
Canopy sign	An advertising device painted on a canopy structure.	
Created awning sign	An advertising device positioned on the face, or aligned with the face of an awning where the shape interrupts the natural line of the awning.	
Flush wall sign	An advertising device painted or otherwise affixed upon and confined within the limits of a wall.	

Advertising device type	Written description	Pictorial description
Freestanding sign	An advertising device that is independent of a building and is supported by one or more columns, poles or pylons. The term includes a billboard on which the advertising may not directly relate to the business, activity or occupation carried on, in or upon the site on which the structure is located.	
Ground sign	An advertising device that is independent of a building and that is normally erected at a driveway entrance to identify the business or points of entry.	
Hamper sign	An advertising device painted or otherwise affixed above the door head or its equivalent height and below the awning level or verandah of a building.	
Projecting sign	An advertising device attached and mounted at a right angle to the façade of a building.	
Sky sign	An advertising device placed at or near the top of a building and projecting above the building.	
Stallboard sign	An advertising device located below the ground storey window of a building.	

Advertising device type	Written description	Pictorial description
Structure sign	An advertising device painted or otherwise affixed to any structure which is not a building.	
Sign written roof sign	An advertising device painted or otherwise affixed to the roof cladding of a building.	
Three dimensional replica object or shape sign	An advertising device that replicates a real world object or shape. The replica may be enlarged, miniaturised or equal in scale and be freestanding or form part of another advertising device.	
Under awning sign	An advertising device attached or suspended under an awning or verandah.	
Window sign	An advertising device painted or otherwise affixed to the exterior or on the inner surface of a glazed area of any window. It includes any devices that are suspended from the window frame. The term does not include product displays or showcases for viewing by pedestrians.	

#### 9.4.1.4 Assessment benchmarks

**Table 9.4.1.4.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Requirements for all advertising device types			
General			
<b>PO1</b>	All advertising devices are: (a) compatible with the existing and future planned character of the locality in which they are erected; (b) compatible with the scale, proportion, bulk and other characteristics of buildings, structures, landscaping and other advertising devices on the site; (c) of a scale, proportion and form that is appropriate to the streetscape or other setting in which they are located; (d) sited and designed to: (i) be compatible with the nature and extent of development and advertising devices on adjoining sites and do not interfere with the reasonable enjoyment of those sites or unreasonably obstruct lawfully established advertising devices; (ii) not unduly dominate the visual landscape; (iii) maintain views or vistas of public value; and (iv) protect the visual amenity of scenic routes and lookouts; (e) designed to achieve high standards of architectural and urban design or least not detract from the architectural or urban design standards of a locality (including any streetscape improvement programs implemented by the Council); and (f) designed, sited and integrated so as not to contribute to the proliferation of visual clutter.	<b>AO1.1</b>	The advertising device complies with the specific requirements of Table 9.4.1.4.2 (Requirements of particular advertising devices).
		<b>AO1.2</b>	A three dimensional replica object or shape sign complies with the acceptable outcomes relating to wall or façade signs, awning signs, roof signs and freestanding signs as applicable depending on the proposed location of the three dimensional replica object or shape sign on the site.
Movement and illumination			
<b>PO2</b>	An advertising device: (a) does not incorporate elements that move; and (b) incorporates illumination and	<b>AO2.1</b>	The advertising device does not flash, revolve, move or contain mechanisms that give the impression of movement.

Performance Outcomes		Acceptable Outcomes	
	lighting only where required and in a manner that does not create nuisance or detract from the amenity of the area.	<b>AO2.2</b>	Moving or variable message advertising devices are not located: (a) within 50 metres of land developed or intended for residential purposes; and (b) adjacent to any road which has a traffic speed of more than 60km/hr.
<b>Maximum site based sign face area</b>			
<b>PO3</b>	The maximum sign face area of an advertising device does not unduly detract from a building or location where the device is positioned, including: (a) visually dominating the appearance of a building; or (b) being visually intrusive in the streetscape or natural landscape setting.	<b>AO3.1</b>	The total sign face area of all advertising devices on a site does not exceed 0.75m <sup>2</sup> of sign face area per linear metre of the street front boundary length.
<b>Construction standards</b>			
<b>PO4</b>	An advertising device is constructed to an appropriate and safe standard.	<b>AO4.1</b>	No support, fixing or other system required for the proper installation of an advertising device is exposed or protrudes in a manner that would create a potential safety hazard.
		<b>AO4.2</b>	The advertising devices are to be constructed from non-reflective materials that incorporate colours and finishes that complement and blend with the surrounding natural and built environment.
<b>Traffic and safety hazards</b>			
<b>PO5</b>	An advertising device does not cause a traffic or safety hazard.	<b>AO5.1</b>	The advertising device is not located in a position: (a) so as to present a physical danger to pedestrians; or (b) that disrupts pedestrian movement along the footpath or from the road to the footpath; or (c) that distracts the attention of motorists or obscures the view of drivers and road users.
		<b>AO5.2</b>	An advertising device adjacent to a state controlled road complies with the Department of Transport and Main Roads "Guidelines to management of roadside advertising" and must not: (a) give instructions to traffic; or (b) imitate a traffic control device.
<b>Requirements for particular advertising device types</b>			
<b>Freestanding signs</b>			

Performance Outcomes		Acceptable Outcomes	
<b>PO6</b>	A Freestanding sign is designed and sited to comply with the general amenity outcomes sought by PO1 of this code.	<b>AO6.1</b>	The total number of all freestanding signs on a site does not exceed: (a) one sign where the street front boundary length of the site is 30m or less; or (b) two signs where the total street front boundary length of the site is more than 30m.

**Table 9.4.1.4.2 Requirements for particular advertising devices.**

<b>Advertising device type</b>	<b>Permitted zone</b>	<b>Orientation</b>	<b>Design Characteristics</b>	<b>Maximum surface area</b>	<b>Minimum clearance</b>
<b>Above awning sign</b>	Not specified.	(a) orientated at right angles to the building frontage; and (b) centrally located along the frontage of each shop or tenancy.	(a) do not extend past the width of the awning or verandah to which it is attached; (b) do not exceed a maximum height of 600mm and a maximum depth of 300mm; and (c) rigidly fixed and not constructed from materials that are potentially dangerous (e.g. Glass).	(a) maximum sign face area of 1.4m <sup>2</sup> .	Not specified.
<b>Awning fascia or return fascia signs</b>	Not specified.	Not specified.	(a) do not exceed a depth of 100mm; (b) do not project above or below the awning line by more than 20% of the vertical depth of the awning face; and (c) do not project out from either face of the awning.	Not specified.	(a) minimum clearance of 2.4m between the footway pavement and the lowest part of the sign.
<b>Blind signs</b>	Not specified.	Not specified.	(a) not illuminated.	(a) maximum sign face area does not exceed 50% of the blind.	(a) minimum clearance of 2.1m between the footpath pavement and any flexible part of the blind; and (b) 2.4m between the footpath pavement and rigid part of the blind.



<b>Advertising device type</b>	<b>Permitted zone</b>	<b>Orientation</b>	<b>Design Characteristics</b>	<b>Maximum surface area</b>	<b>Minimum clearance</b>
<b>Business name plates</b>	Not specified.	(a) limited to one sign per business entry point.	Not specified.	(a) maximum sign face area of 1.0m <sup>2</sup> .	Not specified
<b>Canopy signs</b>	Not specified.	Not specified.	(a) do not exceed a height of 600mm; (b) do not project out from the surface of the canopy; (c) do not project above or below the canopy on which it is displayed; and (d) not illuminated.	Not specified.	(a) minimum clearance of 2.1m between the footpath pavement and any flexible part of the canopy; and (b) 2.4m between the footway pavement and rigid part of the canopy.
<b>Created awning signs</b>	Not specified.	Not specified.	(a) do not project out from either face of the awning; and (b) do not extend more than 600mm above the fascia to which it is attached.	(a) 'created' sign face area not exceeding 25% of the existing awning face area.	(a) minimum clearance of 2.1m between the footway pavement and the lowest flexible part of the sign.
<b>Flush wall signs</b>	Not specified.	(a) do not obscure any window or architectural feature of the building on which it is located.	(a) do not project more than 300mm from the wall on which it is affixed; and (b) do not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	(a) maximum display area the lesser of: (i) 30m <sup>2</sup> ; or (ii) 20% of the area of the wall.	Not specified.
<b>Freestanding signs - In the form of a billboard</b>	(a) the Rural zone only where adjacent to a State controlled road.	(a) minimum spacing between any freestanding sign on a site is: (i) 3km if erected on	(a) do not project beyond the front alignment of the site; (b) mounted as a freestanding structure in	(a) maximum sign face area of 18m <sup>2</sup> per side for a maximum of two sides.	Not specified.

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	Minimum clearance
		land in the Rural zone; and (ii) situated at least 3m from any adjoining site boundary.	(c) designed and treated in such a way that the supporting framework, supports and back of the sign face area blend with the surrounding streetscape or field of view; and (d) has a maximum height of 9m.		
<b>Freestanding signs – Not in the form of a billboard</b>	(a) a centre zone; (b) an industry zone; (c) the Recreation and open space zone; (d) the Community facilities zone; and (e) the Mixed use zone.	(a) minimum spacing between any freestanding sign on a site is: (i) 3km if erected on land in the Rural zone; or (ii) not less than the combined height of all freestanding signs on the site multiplied by 4 if erected on land in another zone; and (iii) situated at least 3m from any adjoining site boundary.	(a) do not project beyond the front alignment of the site; (b) mounted as a freestanding structure in a landscape environment; (c) designed and treated in such a way that the supporting framework, supports and back of the sign face area blend with the surrounding streetscape or field of view; and (d) has a maximum height of 9m.	(b) maximum sign face area of 4.5m <sup>2</sup> per side for a maximum of two sides.	Not specified.
<b>Ground signs</b>	Not specified.	(a) displayed within a landscaped environment; and (b) separated from another	(a) maximum height of 1.5m.	(a) maximum sign face area of 4m <sup>2</sup> per side for a maximum of two sides.	Not specified.

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	Minimum clearance
		ground sign by a minimum of 100m of street front boundary length.			
<b>Hamper signs</b>	Not specified.	Not specified.	(a) project no more than 300mm from the wall to which it is attached; (b) do not extend below the door head of the main entrance; and (c) do not extend beyond the length of the building wall above the door head.	(a) maximum sign face area limited to that area between the door head and the underside of the verandah or awning roof.	Not specified.
<b>Projecting signs</b>	Not specified.	(a) situated at least 2.0m from any site boundary; and (b) not more than one projecting sign is erected for the premises.	(a) do not project higher than the gutter line of the building on which it is erected.	(a) if a vertical projecting sign, maximum sign face area of 2m <sup>2</sup> ; or (b) if a horizontal projecting sign, maximum sign face area of 1m <sup>2</sup> .	(a) minimum of clearance of 2.4m between the footpath pavement and the lowest part of the sign.
<b>Sign written roof sign</b>	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
<b>Sky sign</b>	Is not erected within the Planning Scheme area.	Not applicable.	Not applicable.	Not applicable.	Not applicable.
<b>Stallboard signs</b>	Not specified.	(a) are designed such that the sign face is recessed inside the Stallboard facing.	(a) do not project beyond the property boundary, except as an authorised encroachment onto a road reserve.	(a) maximum sign face area limited to the Stallboard area below a street front window.	Not specified.
<b>Structure signs</b>	(a) a centre zone; (b) an industry zone; and	Not specified.	(a) does not project beyond the surface of the	(a) maximum sign face area of 4m <sup>2</sup> .	Not specified.

Advertising device type	Permitted zone	Orientation	Design Characteristics	Maximum surface area	Minimum clearance
	(c) the Mixed use zone.		structure; and (b) must be on a structure ancillary to the use of the premises.		
<b>Three dimensional replica object or shape sign</b>	(a) a centre zone; (b) an industry zone; and (c) the Mixed use zone.	Not specified.	Not specified.	(a) maximum sign face area which is measured as having two sides.	Not specified.
<b>Under awning signs</b>	(a) a centre zone; (b) an industry zone; and (c) the Mixed use zone.	(a) oriented at right angles to the building frontage; and (b) centrally located along the frontage of each shop or tenancy, provided that one additional sign may also be erected at the entrance of an arcade.	(a) no longer than the width of the awning or veranda to which it is attached; (b) has a maximum height of 600mm and maximum depth of 300mm; and (c) rigidly fixed and not constructed from materials that are potentially dangerous (e.g. glass) to pedestrians.	(a) maximum sign face area of 2.5m <sup>2</sup> .	(a) minimum clearance of 2.4m from the footway pavement to any part of the sign.
<b>Window sign</b>	Not specified.	(a) only located on the premises the advertisement relates to; and (b) located on ground storey windows only.	(a) do not contain running lights (giving the illusion of movement) if illuminated.	Not specified.	Not specified.

## 9.4.2 Construction management code

### 9.4.2.1 Application

This code applies to assessable development identified as requiring assessment against the Construction management code by the tables of assessment in Part 5 (Tables of assessment).

### 9.4.2.2 Purpose and overall outcomes

- (1) The purpose of the Construction management code is to ensure that development works meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.
- (2) The purpose of the Construction management code will be achieved through the following overall outcomes:
  - (a) works are undertaken such that environmental harm and nuisance resulting from construction activities is avoided or minimised and the environmental values of water are protected;
  - (b) development is designed and constructed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and
  - (c) development does not compromise or interfere with the integrity or function of existing utilities, road or infrastructure.

### 9.4.2.3 Assessment benchmarks

**Table 9.4.2.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Construction management			
<b>PO1</b>	Air emissions, noise or lighting arising from construction activities and works do not adversely impact on surrounding areas.	<b>AO1.1</b>	Dust emissions do not cause environmental nuisance beyond the boundary of the site.
		<b>AO1.2</b>	Air emissions, including odours, are not detectable at the boundary of the site.
		<b>AO1.3</b>	Noise generating equipment is enclosed, shielded or acoustically treated in a manner which ensures the equipment achieves the environmental values for the acoustic environment and acoustic quality objectives for sensitive receiving environments set out in the Environmental Protection (Noise) Policy.
		<b>AO1.4</b>	Outdoor lighting complies with AS4282 (Control of the obtrusive effects of outdoor lighting).
<b>PO2</b>	Construction activities and works are managed such that all reasonable and practicable measures are taken to protect the environmental values of	<b>AO2.1</b>	Development is located, designed and constructed in accordance with an Erosion and sediment control plan prepared in accordance with the

Performance Outcomes		Acceptable Outcomes	
	water and the functionality of stormwater infrastructure from the impacts of erosion, turbidity and sedimentation, both on and downstream of the development site.		requirements specified in AP1: Application procedures, CP1: Construction procedures and D5: Stormwater quality of PSP SC6.8 (WRC development manual).
PO3	Construction activities and works are undertaken such that existing utilities and road and drainage infrastructure: <ul style="list-style-type: none"> <li>(a) continue to function efficiently; and</li> <li>(b) can be accessed by the relevant authority for maintenance purposes.</li> </ul>	AO3.1	Existing utilities and road and drainage infrastructure are protected or relocated in accordance with the standards specified in PSP SC6.8 (WRC development manual).
		AO3.2	The costs of any alterations or repairs to utilities and road and drainage infrastructure are met by the developer.
PO4	Traffic and parking generated during construction activities are well planned and managed.	AO4.1	Any traffic or parking generated as a result of construction activities are managed to minimise potential impacts on the amenity of the surrounding area.
PO5	Construction activities and works provide appropriate opportunities for waste minimisation and recycling where possible.	AO5.1	Construction activities and works provide for: <ul style="list-style-type: none"> <li>(a) separation of recyclable material;</li> <li>(b) storage of waste and recyclable material; and</li> <li>(c) collection of waste and recyclable material in a manner that minimises adverse impacts on the amenity and safety of surrounding areas.</li> </ul>
<b>Vegetation Clearing</b>			
PO6	Vegetation is protected to ensure that: <ul style="list-style-type: none"> <li>(a) ecological processes, biodiversity and the habitat values of native flora and fauna are protected and enhanced;</li> <li>(b) ecosystems are protected from weed invasion and edge effects;</li> <li>(c) the functioning and connectivity of biodiversity corridors and fauna movement networks is maintained;</li> <li>(d) the ecological health and integrity of riparian corridors, waterways and wetlands are maintained;</li> <li>(e) soil resources are protected against the loss of chemical and physical fertility through processes such as erosion, mass movement, salinity and</li> </ul>	AO6.1	Vegetation clearing, other than exempt vegetation clearing: <ul style="list-style-type: none"> <li>(a) does not occur; or</li> <li>(b) where any permanent, irreversible loss of identified ecological values occurs due to vegetation clearing, other than exempt vegetation clearing, rehabilitation is undertaken in accordance with D2: Site regrading and D9: Landscaping of PSP SC6.8 (WRC development manual).</li> </ul> <p>Note— The assessment and deciding of vegetation clearing issues will include but not necessarily be limited to:</p> <ul style="list-style-type: none"> <li>(a) any current development approval attached to the land which may include conditions or measures relating to vegetation retention or protection;</li> <li>(b) whether the vegetation is specifically protected by a vegetation protection order, registrable covenant,</li> </ul>

Performance Outcomes		Acceptable Outcomes	
	<p>water logging; and</p> <p>(f) vegetation of historical, cultural or visual significance is retained.</p>		<p>easement or similar legally binding mechanism that seeks to protect the values and functions of recognised significant vegetation;</p> <p>(c) whether the vegetation is identified or referred to in State or Federal legislation;</p> <p>(d) whether the vegetation is located on a prominent hillside, slope or ridgeline;</p> <p>(e) whether vegetation clearing may cause or contribute to erosion or slippage;</p> <p>(f) whether the vegetation is or forms part of a riparian area or other habitat network and is valuable to the functioning of that network;</p> <p>(g) whether the vegetation is or is capable of forming or contributing to a buffer between different land uses;</p> <p>(h) whether the vegetation is or is capable of forming or contributing to a visual buffer, agricultural buffer or a buffer against pollution, light spillage or noise;</p> <p>(i) whether the vegetation contributes to visual amenity, landscape quality or cultural heritage significance; and</p> <p>(j) the likely effectiveness of any proposed rehabilitation measures.</p>
<b>PO7</b>	Vegetation clearing on slopes is minimised to maintain slope stability and prevent erosion and slippage so as to maintain slope.	<b>AO7.1</b>	<p>Vegetation clearing on slopes 15% or greater is avoided or where unavoidable, minimised.</p> <p>Note – This may be demonstrated by undertaking a Vegetation management plan in accordance with PSP SC6.2 (Environmental features).</p>
<b>PO8</b>	<p>Construction activities and works provide for:</p> <p>(a) the protection of the aesthetic and ecological values of retained vegetation; and</p> <p>(b) impacts on fauna to be minimised.</p>	<b>AO8.1</b>	<p>The health and stability of retained vegetation is maintained or enhanced during construction activities by:</p> <p>(a) clearly marking vegetation to be retained with temporary fencing and flagging tape;</p> <p>(b) installing secure barrier fencing around the outer drip line and critical root zone of the vegetation;</p> <p>(c) preventing any filling, excavation, stockpiling, storage of chemicals, fuel or machinery within the fenced protection area;</p> <p>(d) using low impact construction techniques in the vicinity of vegetation to minimise interference with the vegetation; and</p> <p>(e) removing all declared noxious weeds and environmental weeds from the site.</p> <p>Note – This may be demonstrated by</p>

Performance Outcomes		Acceptable Outcomes	
			undertaking a Vegetation management plan in accordance with PSP SC6.2 (Environmental features).
		<b>AO8.2</b>	All works carried out in the vicinity of retained vegetation comply with D9: Landscaping of PSP SC6.8 (WRC development manual) and AS4970 (Protection of trees on development sites) and AS4687 (Temporary fencing and hoarding).
<b>PO9</b>	Vegetation clearing activities do not directly, indirectly or cumulatively interfere with or have a worsening effect on natural stormwater flows within the site.	<b>AO9.1</b>	Following any vegetation clearing, natural stormwater flows within the site are identified, captured and diverted to a lawful point of discharge.



## 9.4.3 Excavation and filing code

### 9.4.3.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Excavation and filling code by the tables of assessment in Part 5 (Tables of assessment).

### 9.4.3.2 Purpose and overall outcomes

- (1) The purpose of the Excavation and filling code is to ensure that development works meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.
- (2) The purpose of the Excavation and filling code will be achieved through the following overall outcomes:
  - (a) excavation and filling is completed to a standard that meets community expectations, maintains public health and safety, prevents unacceptable off-site impacts and minimises whole of life cycle costs; and
  - (b) excavation and filling does not adversely or unreasonably impact on the natural environment, drainage conditions or adjacent properties.

### 9.4.3.3 Assessment benchmarks

**Table 9.4.3.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>PO1</b>	Filling or excavation does not prevent or create difficult access to the property.	<b>AO1.1</b>	Driveways are able to be constructed and maintained in accordance with the requirements of the D2: Site regrading and S1: Earthworks of PSP SC6.8 (WRC development manual).
<b>PO2</b>	Excavation and filling: <ol style="list-style-type: none"> <li>(a) does not cause environmental harm;</li> <li>(b) does not impact adversely on visual amenity or privacy;</li> <li>(c) maintain natural landforms as far as possible; and</li> <li>(d) is stable in both the short and long term.</li> </ol>	<b>AO2.1</b>	Development provides that: <ol style="list-style-type: none"> <li>(a) on sites of:               <ol style="list-style-type: none"> <li>(i) 15% or more, the extent of excavation (cut) and fill does not involve a total change of more than 1.5m relative to the natural ground level at any point; or</li> <li>(ii) in other areas, the extent of excavation (cut) and fill does not involve a total change of more than 1.0m relative to the natural ground level at any point;</li> </ol> </li> <li>(b) no part of any cut or fill batter is within 1.5m of any property boundary except cut and fill involving a change in ground level of less than 200mm that does not necessitate the</li> </ol>

Performance Outcomes		Acceptable Outcomes	
			<p>removal of any vegetation;</p> <p>(c) retaining walls are no greater than 1.0m high;</p> <p>(d) retaining walls are constructed a minimum 150mm from property boundaries;</p> <p>(e) all stored material is:</p> <ul style="list-style-type: none"> <li>(i) contained wholly within the site;</li> <li>(ii) located in a single manageable area that does not exceed 50m<sup>2</sup>;</li> <li>(iii) located at least 10m from any property boundary; and</li> </ul> <p>(f) any batter or retaining wall is structurally adequate.</p>
<b>PO3</b>	Filling or excavation does not interfere with natural stormwater flows.	<b>AO3.1</b>	Any filling or excavation does not restrict or interfere with overland flow.
<b>PO4</b>	Filling or excavation does not directly, indirectly or cumulatively change flood characteristics which may cause adverse impacts external to the development site.	<b>AO4.1</b>	Development does not result in a reduction in flood storage capacity.
		<b>AO4.2</b>	Development does not change flood flows, velocities or levels external to the development site.
<b>PO5</b>	Filling or excavation does not result in any contamination of land or water, or pose a health or safety risk to users and neighbours of the site.	<b>AO5.1</b>	<p>Development provides that:</p> <p>(a) no contaminated material is used as fill;</p> <p>(b) for excavation, no contaminated material is excavated or contaminant disturbed; and</p> <p>(c) waste materials are not used as fill, including:</p> <ul style="list-style-type: none"> <li>(i) commercial waste;</li> <li>(ii) construction/demolition waste;</li> <li>(iii) domestic waste;</li> <li>(iv) garden/vegetation waste; and</li> <li>(v) industrial waste.</li> </ul>

## 9.4.4 Infrastructure code

### 9.4.4.1 Application

This code applies to assessable development identified as requiring assessment against the Infrastructure code by the tables of assessment in Part 5 (Tables of assessment).

### 9.4.4.2 Purpose and overall outcomes

- (1) The purpose of the Infrastructure code is to ensure that development works and the provision of infrastructure and services meets the needs of the development, and is undertaken in a sustainable manner in accordance with best practice.
- (2) The purpose of the Infrastructure code will be achieved through the following overall outcomes:
  - (a) physical and human infrastructure networks that provide basic and essential services and facilities to local communities are able to meet the planned increase in demand resulting from a planned increase in development density;
  - (b) development is provided with an appropriate level of water, wastewater treatment and disposal, drainage, energy and communications infrastructure and other services;
  - (c) infrastructure is designed, constructed and provided in a manner which maximises resource efficiency and achieves acceptable maintenance, renewal and adaptation costs;
  - (d) infrastructure is integrated with surrounding networks; and
  - (e) development over or near infrastructure does not compromise or interfere with the integrity of the infrastructure.

### 9.4.4.3 Assessment benchmarks

**Table 9.4.4.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Infrastructure, services and utilities			
PO1	Development is provided with infrastructure, services and utilities appropriate to its location and setting and commensurate with its needs.	AO1.1	Where available, development is provided with appropriate connection to reticulated sewerage, water supply, stormwater drainage, electricity, gas (where available in the street) and telecommunications services at no cost to the Council, including provision by way of dedicated road, public reserve or as a minimum by way of easements to ensure continued access is available to these services.
		AO1.2	In an urban area, electricity infrastructure is provided underground where: <ol style="list-style-type: none"> <li>(a) five or more new lots are created; or</li> </ol>

Performance Outcomes		Acceptable Outcomes	
			(b) a new road is created; or (c) there is existing underground power in the vicinity of the development site.
		<b>AO1.3</b>	Where reticulated sewerage is not available, an on-site treatment and disposal system is provided that complies with the requirements of the <i>Plumbing and Drainage Act 2003</i> .
		<b>AO1.4</b>	Where reticulated water supply is not available, development is provided with adequate on-site rainwater collection.
<b>PO2</b>	Development provides for infrastructure, services and utilities that are planned, designed and constructed in a manner which: (a) ensures appropriate capacity to meet the current and planned future needs of the development; (b) is integrated with and efficiently extends existing networks; (c) minimises risk to life and property; (d) avoids ecologically important areas; (e) minimises risk of environmental harm; (f) achieves acceptable maintenance, renewal and adaptation costs; (g) can be easily and efficiently maintained; (h) minimises potable water demand and wastewater production; (i) ensures the ongoing construction or operation of the development is not disrupted; (j) where development is staged, each stage is fully serviced before a new stage is released; (k) ensures adequate clearance zones are maintained between utilities and dwellings to protect residential amenity and health; and (l) minimises visual and amenity impacts.	<b>AO2.1</b>	Infrastructure is planned, and appropriate contributions made, in accordance with the LGIP or any other applicable infrastructure charging instrument.
		<b>AO2.2</b>	Infrastructure is planned, designed and constructed in accordance the LGIP and with PSP SC6.8 (WRC development manual) for development works, or where applicable, the requirements of the service provider.
		<b>AO2.3</b>	Development occurs in a logical sequence and facilitates the efficient and timely provision of infrastructure and services taking into account the capacity of existing and future infrastructure.
		<b>AO2.4</b>	Compatible public utility services are co-located in common trenching in order to minimise the land required and the costs for underground services.
		<b>AO2.5</b>	Infrastructure, services and utilities are located and aligned so as to: (a) avoid disturbance of ecologically important areas; (b) minimise earthworks; and (c) avoid crossing waterways or wetlands.
		<b>AO2.6</b>	Where the crossing of a waterway or wetland cannot be avoided tunnel boring techniques are used to minimise disturbance and disturbed areas are reinstated and revegetated on completion of works.
		<b>AO2.7</b>	The selection of materials used in the construction of infrastructure is suitable, durable, easy to maintain and

Performance Outcomes		Acceptable Outcomes	
			cost effective, taking into account the whole of life cycle cost, and achieves best practice environmental management and energy savings.
		<b>AO2.8</b>	Access easements for maintenance purposes are provided over Council infrastructure within privately owned land.
<b>Stormwater management infrastructure</b>			
<b>PO3</b>	Development provides for the effective drainage of lots and roads in a manner that: (a) maintains pre-existing or natural flow regime; (b) effectively manages stormwater quality and quantity; and (c) ensures no adverse impacts on receiving waters, adjacent properties on surrounding land.	<b>AO3.1</b>	The development of stormwater management infrastructure is designed in accordance with D4: Stormwater drainage, D5: Stormwater quality and S4: Stormwater drainage of PSP SC6.8 (WRC development manual).
<b>Works over or near sewerage, water and stormwater drainage infrastructure</b>			
<b>PO4</b>	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure: (a) protects the infrastructure from physical damage; and (b) allows ongoing necessary access for maintenance purposes.	<b>AO4.1</b>	Building or operational work near or over the Council's stormwater infrastructure and/or sewerage and water infrastructure complies with the PSP SC6.8 (WRC development manual).
<b>Plan to avoid/minimise new impacts on water quality</b>			
<b>PO5</b>	The development is planned and designed considering the land use constraints of the site for achieving stormwater design objectives.	<b>AO5.1</b>	A site stormwater quality management plan (SQMP) is prepared, and: (a) is consistent with any local area stormwater management planning, and (b) provides for achievable stormwater quality treatment measures meeting design objectives listed below in Table 9.4.4.3.2 (construction phase) and Table 9.4.4.3.3 (post construction phase), or current best practice environmental managements, reflecting land use constraints, such as: <ul style="list-style-type: none"> <li>• erosive, dispersive, sodic and/or saline soil types;</li> <li>• landscape features (including landform);</li> <li>• acid sulfate soil and management of nutrients of</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			<p>concern;</p> <ul style="list-style-type: none"> <li>rainfall erosivity.</li> </ul> <p>Editor's note: Local area stormwater management planning may include Urban Stormwater Quality Management Plans, or Catchment or waterway management plans, Healthy Waters Management Plans, Water Quality Improvement Plans, Natural Resource Management Plans.</p>
<b>PO6</b>	Development does not discharge wastewater to a waterway or off site unless demonstrated to be best practice environmental management for that site.	<b>AO6.1</b>	<p>A wastewater management plan (WWMP) is prepared by a suitably qualified person and addresses:</p> <ul style="list-style-type: none"> <li>(a) wastewater type, and</li> <li>(b) climatic conditions, and</li> <li>(c) water quality objectives (WQOs), and</li> <li>(d) best-practice environmental management, and</li> </ul>
		<b>AO6.2</b>	<p>The WWMP provides that wastewater is managed in accordance with a waste management hierarchy that:</p> <ul style="list-style-type: none"> <li>(a) avoids wastewater discharges to waterways, or</li> <li>(b) if wastewater discharge to waterways cannot practicably be avoided, minimises wastewater discharge to waterways by re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.</li> </ul>
<b>PO7</b>	Any non-tidal artificial waterway is located in a way that is compatible with the land use constraints of the site for protecting water environmental values in existing natural waterways.	<b>AO7.1</b>	<p>If the proposed development involves a non-tidal artificial waterway:</p> <ul style="list-style-type: none"> <li>(a) environmental values in downstream waterways are protected, and</li> <li>(b) any groundwater recharge areas are not affected, and</li> <li>(c) the location of the waterway incorporates low lying areas of a catchment connected to an existing waterway, and</li> <li>(d) existing areas of ponded water are included, and</li> </ul>
		<b>AO7.2</b>	<p>Non-tidal artificial waterways are located:</p> <ul style="list-style-type: none"> <li>(a) outside natural wetlands and any associated buffer areas, and</li> <li>(b) to minimise disturbing soils or sediments, and</li> <li>(c) to avoid altering the natural hydrologic regime in acid sulfate soil and nutrient</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			hazardous areas.
<b>PO8</b>	Any non-tidal artificial waterway is located in a way that is compatible with existing tidal waterways.	<b>AO8.1</b>	Where a non-tidal artificial waterway is located adjacent to, or is connected to, a tidal waterway by means of a weir, lock, pumping system or similar: <ul style="list-style-type: none"> <li>(a) there is sufficient flushing or a tidal range of &gt;0.3 m, or</li> <li>(b) any tidal flow alteration does not adversely impact on the tidal waterway, or</li> <li>(c) there is no introduction of salt water into freshwater environments.</li> </ul>
<b>Design to avoid/minimise new impacts on water quality</b>			
<b>PO9</b>	Stormwater does not discharge directly to a non-tidal artificial waterway without treatment to manage stormwater quality management.	<b>AO9.1</b>	Any non-tidal artificial waterway is designed and managed for any of the following end-use purposes: <ul style="list-style-type: none"> <li>(a) amenity including aesthetics, landscaping and recreation, or</li> <li>(b) flood management, or</li> <li>(c) stormwater harvesting as part of an integrated water cycle management plan, or</li> <li>(d) aquatic habitat, and</li> </ul>
		<b>AO9.2</b>	The end-use purpose of any non-tidal artificial waterway is designed and operated in a way that protects water environmental values.
<b>Construct to avoid/minimise new impacts on water quality</b>			
<b>PO10</b>	Construction activities for the development avoid or minimise adverse impacts on stormwater quality.	<b>AO10.1</b>	An erosion and sediment control plan (ESCP) demonstrates that release of sediment-laden stormwater is avoided for the nominated design storm, and minimised when the nominated design storm is exceeded, by addressing design objectives listed below in Table 9.4.4.3.4 (construction phase) or local equivalent, for: <ul style="list-style-type: none"> <li>(a) drainage control, and</li> <li>(b) erosion control, and</li> <li>(c) sediment control, and</li> <li>(d) water quality outcomes, and</li> </ul>
		<b>AO10.2</b>	Erosion and sediment control practices (including any proprietary erosion and sediment control products) are designed, installed, constructed, operated, monitored and maintained, and any other erosion and sediment control practices are carried out in accordance with local conditions and appropriate

Performance Outcomes		Acceptable Outcomes	
			recommendations from a suitably qualified person.
<b>Operate to avoid/minimise new impacts on water quality</b>			
<b>PO11</b>	Operational activities for the development avoid or minimises changes to waterway hydrology from adverse impacts of altered stormwater quality and flow.	<b>AO11.1</b>	Development incorporates stormwater flow control measure to achieve the design objectives set out below in Table 9.4.4.3.5 (post construction phase). The operational phases for the development comply with design objectives in Table 9.4.4.3.6 (post construction phase), or current best practice environmental management, including management of frequent flows, and peak flows.
<b>PO12</b>	Any treatment and disposal of waste water to a waterway accounts for: <ul style="list-style-type: none"> <li>the applicable water quality objectives for the receiving waters, and</li> <li>adverse impact on ecosystem health or receiving waters, and</li> <li>in waters mapped as being of high ecological value, the adverse impacts of such releases and their offset.</li> </ul>	<b>AO12.1</b>	Implement the WWMP prepared in accordance with AO5.1.
<b>PO13</b>	Wastewater discharge to a waterway is managed in a way that maintains ecological processes, riparian vegetation, waterway integrity, and downstream ecosystem health.	<b>AO13.1</b>	Wastewater discharge waterways is managed to avoid or minimize the release of nutrients of concern so as to minimize the occurrence, frequency and intensity of coastal algal blooms, and
		<b>AO13.2</b>	Development in coastal catchments avoids or minimises and appropriately manages soil disturbance or altering natural hydrology, and
		<b>AO13.3</b>	Development in coastal catchments: <ul style="list-style-type: none"> <li>(a) avoids lowering groundwater levels where potential or actual acid sulfate soils are present, and</li> <li>(b) manages wastewaters so that: <ul style="list-style-type: none"> <li>i. the pH of any wastewater discharged is maintained between 6.5 and 8.5 to avoid mobilisation of acid, iron, aluminium, and metals, and</li> <li>ii. holding times of neutralised wastewaters</li> </ul> </li> </ul>



Performance Outcomes		Acceptable Outcomes	
			<p>ensures the flocculation and removal of any dissolved iron prior to release, and</p> <p>iii. visible iron floc is not present in any discharge, and</p> <p>iv. precipitated iron floc is contained and disposed of, and</p> <p>v. wastewater and precipitates that cannot be contained and treated for discharge on site are removed and disposed of through trade waste or another lawful method.</p>
<b>PO14</b>	Any non-tidal artificial waterway is managed and operated by suitably qualified persons to achieve water quality objectives in natural waterways.	<b>AO14.1</b>	Any non-tidal artificial waterway is designed, constructed and managed under the responsibility of a suitably qualified registered professional engineer, Queensland (RPEQ) with specific experience in establishing and managing artificial waterways, and
		<b>AO14.2</b>	Monitoring and maintenance programs adaptively manage water quality in any non-tidal artificial waterway to achieve relevant water-quality objectives downstream of the waterway, and
		<b>AO14.3</b>	Aquatic weeds are managed in any non-tidal artificial waterway to achieve a low percentage of coverage of the water surface area (less than 10%). Pests and vectors (such as mosquitoes) are managed through avoiding stagnant water areas, providing for native fish predators, and any other best practices for monitoring and treating pests, and
		<b>AO14.4</b>	Any non-tidal artificial waterway is managed and operated by a responsible entity under agreement for the life of the waterway. The responsible entity is to implement a deed of agreement for the management and operation of the waterway that: <ul style="list-style-type: none"> <li>(a) identifies the waterway, and</li> <li>(b) states a period of responsibility for the entity, and</li> <li>(c) states a process for any</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			<p>transfer of responsibility for the waterway, and</p> <p>(d) states required actions under the agreement for monitoring the water quality of the waterway and receiving waters, and</p> <p>(e) states required actions under the agreement for maintaining the waterway to achieve the outcomes of this code and any relevant conditions of a development approval, and</p> <p>(f) identifies funding sources for the above, including bonds, infrastructure charges or levies.</p>
<b>Fire services in developments accessed by common private title</b>			
<b>PO15</b>	Hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	<b>AO15.1</b>	Residential streets and common access ways within a common private title should have hydrants placed at intervals of no more than 120 metres and at each intersection. Hydrants may have a single outlet and should be situated above or below ground.
		<b>AO15.2</b>	Commercial and industrial streets and access ways within streets serving commercial properties such as factories, warehouses and offices should be provided with above or below ground fire hydrants at not more than 90 metre intervals and at each street intersection. Above ground fire hydrants should have dual valved outlets.
<b>PO16</b>	Road widths and construction within the development are adequate for fire emergency vehicles to gain access to a safe working area close to dwellings and near water supplies whether or not on-street parking spaces are occupied.	<b>AO16.1</b>	Road access minimum clearances of 3.5 metres wide and 4.8 metres high are provided for safe passage of emergency vehicles.
<b>PO17</b>	Hydrants are suitably identified so that fire services can locate them at all hours.	<b>AO17.1</b>	<p>Hydrants are identified as specified in the 'Traffic and Road Use Management Manual, Volume 1: Guide to traffic management, Part 10: Traffic Control and Communication Devices, section 6.7.2-1 Fire hydrant indication system.</p> <p>Editor's Note - Document available on the Department of Transport and Main Roads Website.  <a href="http://www.tmr.qld.gov.au/business-industry/Technical-">www.tmr.qld.gov.au/business-industry/Technical-</a></p>

Performance Outcomes		Acceptable Outcomes	
			<a href="http://standardspublications/Traffic-and-Road-Use-Management-manual/Volume-1.aspx">standardspublications/Traffic-and-Road-Use-Management-manual/Volume-1.aspx</a>

**Table 9.4.4.3.7 Stormwater management design objectives – Construction phase (Ref: SPP Appendix 3)**

Issue		Design Objectives
Drainage control	Temporary drainage works	<ol style="list-style-type: none"> <li>(1) Design life and design storm for temporary drainage works:               <ol style="list-style-type: none"> <li>(a) disturbed area open for &lt;12 months—1 in 2-year ARI event;</li> <li>(b) disturbed area open for 12–24 months—1 in 5-year ARI event;</li> <li>(c) disturbed area open for &gt; 24 months—1 in 10-year ARI event.</li> </ol> </li> <li>(2) Design capacity excludes minimum 150 mm freeboard.</li> <li>(3) Temporary culvert crossing—minimum 1 in 1-year ARI hydraulic capacity.</li> </ol>
Erosion control	Erosion control measures	<ol style="list-style-type: none"> <li>(1) Minimise exposure of disturbed soils at any time.</li> <li>(2) Divert water run-off from undisturbed areas around disturbed areas.</li> <li>(3) Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods.</li> <li>(4) Implement erosion control methods corresponding to identified erosion risk rating.</li> </ol>
Sediment control	Sediment control measures  Design storm for sediment control basins  Sediment basin dewatering	<ol style="list-style-type: none"> <li>(1) Determine appropriate sediment control measures using:               <ol style="list-style-type: none"> <li>(a) potential soil loss rate; or</li> <li>(b) monthly erosivity; or</li> <li>(c) average monthly rainfall.</li> </ol> </li> <li>(2) Collect and drain stormwater from disturbed soils to sediment basin for design storm event:               <ol style="list-style-type: none"> <li>(a) design storm for sediment basin sizing is 80th% five-day event or similar.</li> </ol> </li> <li>(3) Site discharge during sediment basin dewatering:               <ol style="list-style-type: none"> <li>(a) TSS &lt; 50 mg/L TSS;</li> <li>(b) turbidity not &gt;10% receiving waters turbidity; and</li> <li>(c) pH 6.5–8.5.</li> </ol> </li> </ol>
Water quality	Litter and other waste, hydrocarbons and other contaminants	<ol style="list-style-type: none"> <li>(1) Avoid wind-blown litter; remove gross pollutants.</li> <li>(2) Ensure there is no visible oil or grease sheen on released waters.</li> <li>(3) Dispose of waste containing contaminants at authorised facilities.</li> </ol>
Waterway stability and flood flow management	Changes to the natural waterway hydraulics and hydrology	<ol style="list-style-type: none"> <li>(1) For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the site.</li> </ol>

**Table 9.4.4.3.8 Stormwater Management Design Objectives - Post construction phase (Ref: SPP Appendix 3)**

Climatic region	Design Objectives Minimum reductions in mean and annual load from unmitigated development (%)				Application
	Total suspended solids	Total phosphorus	Total Nitrogen	Gross pollutants >5mm	
Central Queensland (North)	75	60	40	90	Development for urban purposes within population centres greater than 3,000 persons.
All	N/A	N/A	N/A	N/A	Excludes development that is less than 25% impervious.  In lieu of modelling, the default bio-retention treatment area to comply with load reduction targets for all Queensland regions is 1.5% of the contributing catchment area.
	Waterway stability management  Limit the peak 1-year ARI event discharge within the receiving waterway to the pre-development peak 1-year ARI event discharge.				Catchments contributing to un-lined receiving waterway may not require compliance if the waterway is degraded.  For peak flow the 1-year ARI event, use co-located storages to attenuate site discharge rate of stormwater.

## 9.4.5 Landscaping code

### 9.4.5.1 Application

This code applies to assessable development identified as requiring assessment against the Landscaping code by the tables of assessment in Part 5 (Tables of assessment).

### 9.4.5.2 Purpose and overall outcomes

- (1) The purpose of the Landscaping code is to ensure that landscaping is provided in a manner which is consistent with the desired character and amenity of the Whitsunday region.
- (2) The purpose of the Landscaping code will be achieved through the following overall outcomes:
  - (a) development provides landscaping that retains, as far as practicable, existing vegetation and topographic features for their biodiversity, ecological, wildlife habitat, recreational, aesthetic and cultural values;
  - (b) development provides landscaping that creates new landscape environments that co-ordinate and complement the natural elements of climate, vegetation, drainage, aspect, landform and soils;
  - (c) development provides landscaping that successfully integrates the built form with the local landscape character, enhances the tropical qualities of the Whitsunday region and mitigates the impact of increased urbanisation;
  - (d) development provides landscaping that minimises the consumption of energy and water, and encourages the use of local native plant species and landscape materials;
  - (e) public landscaping works are provided in a manner consistent with Council's relevant requirements and standards;
  - (f) development provides landscaping that enhances personal safety, security and universal access;
  - (g) development provides landscaping that is functional and durable; and
  - (h) development provides landscaping that is practical and economic to maintain with ongoing management considered as an integral part of the overall landscape design.

### 9.4.5.3 Assessment benchmarks

**Table 9.4.5.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Landscape design generally			
<b>PO1</b>	Development provides for landscaping that contributes to and creates a high quality landscape character for the site, street, local area and the Whitsunday region, by: (a) promoting the character of the Whitsunday region as a tropical environment;	<b>AO1.1</b>	Landscaping is established on site to maintain the amenity enjoyed by people using the premises and the adjoining premises.  Note – This may be demonstrated by preparing a site specific Landscaping plan in accordance with PSP SC6.4 (Landscaping).

Performance Outcomes		Acceptable Outcomes	
	<ul style="list-style-type: none"> <li>(b) being sensitive to site conditions, natural landforms and landscape characteristics;</li> <li>(c) protecting and enhancing native vegetation, wildlife habitat and ecological values;</li> <li>(d) protecting and framing significant views, vistas and areas of high scenic quality; and</li> <li>(e) being of an appropriate scale to integrate successfully with development.</li> </ul>		
<b>Retention of vegetation and topographic features in layout and design of landscaping</b>			
<b>PO2</b>	Development provides landscaping that, as far as practicable, retains, protects and enhances existing trees, vegetation and topographic features of ecological, recreational, aesthetic and cultural value.	<b>AO2.1</b>	Existing remnant vegetation and native non-remnant vegetation is retained and integrated within the landscaping concept of new development.
		<b>AO2.2</b>	Where established vegetation is removed or damaged to make way for new development, it is replaced with vegetation of the same or similar species within the development site.
<b>Character and amenity</b>			
<b>PO3</b>	Development provides for landscaping that protects and enhances the character and amenity of the site, streetscape and surrounding locality.	<b>AO3.1</b>	Built form is softened and integrated with the broader landscape by structured landscape planting.
		<b>AO3.2</b>	Unless otherwise specified car parks and driveways are screened by: <ul style="list-style-type: none"> <li>(a) a planting bed of at least 1.5m wide where adjacent to an Accommodation activity;</li> <li>or</li> <li>(b) a planting bed of at least 3m wide where adjacent to a street frontage or public open space.</li> </ul>
		<b>AO3.3</b>	Car parking areas are provided with a minimum of 1 shade tree for every 4 car parking spaces. All trees are to be planted within a deep natural ground/structured soil garden bed, protected by raised kerbs, wheel stops or bollards as required.
		<b>AO3.4</b>	Front boundary fences and walls are articulated by recesses that: <ul style="list-style-type: none"> <li>(a) to allow for dense vegetative screening; and</li> <li>(b) have a minimum depth of 1m to the full height of the fence</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			or wall and for at least 50% of the length.
		<b>AO3.5</b>	Storage and utility areas are completely screened by vegetation or built screens, except for access ways to these areas.
<b>Streetscape landscaping</b>			
<b>PO4</b>	Development provides for a streetscape landscaping that contributes to the character and amenity of surrounding development and assists in fostering social interaction.	<b>AO4.1</b>	Streetscape landscaping: (a) incorporates shade trees; (b) contributes to the continuity and character of existing and proposed streetscapes; (c) in established urban areas, incorporates landscape design (including planting, pavements, furniture, structures, etc.) that reflect and enhance the character of the streetscape; (d) in new or establishing urban areas, incorporates landscape design (including planting, pavements, furniture, structures, etc.) that is consistent with and complementary to the natural landscape character of the local area; and (e) incorporates garden planting in conjunction with street tree planting at major junctions only.
<b>Species selection</b>			
<b>PO5</b>	Development provides for landscaping which incorporates plant species that are: (a) fit for the intended purpose; (b) suited to local environmental conditions; (c) non-toxic; and (d) not declared environmental weeds.	<b>AO5.1</b>	Landscaping planting utilises locally endemic and/or other native species in accordance with the PSP SC6.4 (Landscaping).
		<b>AO5.2</b>	Species that have the potential to become an environmental weed or are known to be toxic to people or animals are not used in any landscaping works.
<b>Safety, security and accessibility</b>			
<b>PO6</b>	Development provides for landscaping that: (a) clearly defines public and private spaces; (b) promotes passive surveillance of public and semi-public spaces; (c) enhances personal safety and security; and (d) provides universal and equitable access.	<b>AO6.1</b>	Development provides landscaping which: (a) defines territory and ownership of public, common, semi-private and private space and does not create ambiguous spaces that encourage loitering; (b) allows passive surveillance into, and visibility within, communal recreational spaces, children's play areas/playgrounds, pathways

Performance Outcomes		Acceptable Outcomes	
			<p>and car parks;</p> <p>(c) incorporates trees with a minimum of 1.8m clear trunk and understorey planting that is a maximum of 0.3m in height where located immediately adjacent to pathways, entries, parking areas, street corners, street lighting and driveways;</p> <p>(d) minimises the use of dense shrubby vegetation over 1.5m in height along street frontages and adjacent to open space areas;</p> <p>(e) incorporates pedestrian surfaces that are slip-resistant, stable and trafficable in all weather conditions;</p> <p>(f) provides security and pathway level lighting to site entries, driveways, parking areas, building entries and pedestrian pathways; and</p> <p>(g) provides universal access in accordance with AS1428 (Design for access and mobility).</p>
		<b>AO6.2</b>	Fences and screens to street frontages are visually permeable for 50% of their face area to provide opportunities for passive surveillance.
<b>Climate control and energy efficiency</b>			
<b>PO7</b>	Development provides landscaping that assists in passive solar access, the provision of shade, microclimate management and energy conservation.	<b>AO7.1</b>	Landscaping elements are positioned to shade walls, windows and outdoor areas from summer sun.
		<b>AO7.2</b>	Landscaping allows winter sun access to living areas, north facing windows and public spaces.
		<b>AO7.3</b>	Landscaping, fences and walls allow exposure of living and public areas to prevailing summer breezes and protection against winter winds.
<b>Water sensitive urban design</b>			
<b>PO8</b>	Development provides for landscaping that promotes the efficient and sensitive use of water through appropriate plant selection and layout and by maximising opportunities for water infiltration.	<b>AO8.1</b>	<p>Landscaping maximises the infiltration and conservation of water by:</p> <p>(a) selecting locally endemic and/or other native plant species and appropriate turf species that require minimal irrigation after establishment;</p> <p>(b) grouping plants and street</p>



Performance Outcomes		Acceptable Outcomes	
			<p>trees (where appropriate) in mulched beds;</p> <p>(c) minimising impervious surfaces;</p> <p>(d) incorporating semi-porous pavement surfaces as an alternative to impervious surfaces; and</p> <p>(e) draining hard surface areas to landscaped areas and water sensitive urban design devices.</p>
<b>Landscaped separation buffers and environmental management</b>			
<b>PO9</b>	<p>Development provides for landscaped separation buffers that:</p> <p>(a) effectively protect matters of environmental significance or the edges of existing native vegetation; and</p> <p>(b) provide separation between incompatible land uses or between major infrastructure elements (such as State-controlled roads) and land uses.</p>	<b>AO9.1</b>	<p>The ecological values of a site or adjoining land is protected and enhanced by landscaping and landscape buffers.</p> <p>Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).</p>
		<b>AO9.2</b>	<p>Where a landscaped separation buffer is required, it is designed, constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements.</p> <p>Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).</p>
<b>Traffic safety and infrastructure</b>			
<b>PO10</b>	<p>Development ensures that landscaping does not impede traffic visibility at access points, speed control devices and intersections.</p>	<b>AO10.1</b>	<p>Landscaping does not:</p> <p>(a) unreasonably restrict sightlines for vehicles, pedestrians or cyclists;</p> <p>(b) obscure warning signs, information signs or road signs;</p> <p>(c) compromise building foundations, roads and paths; and</p> <p>(d) compromise services such as pipelines, underground cabling and overhead powerlines.</p>
		<b>AO10.2</b>	<p>Where restrictions occur, suitable alternative landscaping is provided.</p>
<b>PO11</b>	<p>Development ensures that landscaping does not adversely impact upon the provision, operation and maintenance of infrastructure.</p>	<b>AO11.1</b>	<p>Planting and landscape structures are located to enable tradespersons to access, view and inspect switchboards, substations, service meters and the like.</p>
		<b>AO11.2</b>	<p>Root barriers are installed around tree root balls to minimise the risk of damage to</p>

Performance Outcomes		Acceptable Outcomes	
			infrastructure, services or utilities.
		<b>AO11.3</b>	Trees and large shrubs are located clear of underground services and utilities and in accordance with D9.07 of PSP SC6.8 (WRC development manual).
		<b>AO11.4</b>	Planting in landscaping areas adjacent to electricity substations or high voltage transmission line easements complies with the PSP SC6.8 (WRC development manual) in addition to: (a) for Ergon Energy's assets, the Ergon Energy Vegetation management standard; and (b) for Powerlink's assets, Powerlink's Easement co-use guideline and Screening your home from powerlines guideline.
		<b>AO11.5</b>	Where restrictions occur, suitable alternative landscaping is provided.
<b>Requirements for Accommodation activities (Dual occupancy, Multi-unit uses, Residential care facility and retirement facility)</b>			
<b>PO12</b>	Development provides for landscaping that contributes to and creates a high quality landscape for the site and streetscape.	<b>AO12.1</b>	A landscaped buffer strip at least 3m wide is provided within the boundaries of the site, adjacent to the full street frontage of the site.
<b>Requirements for Business activities (Business, Child care centre, Relocatable home park and tourist park and Sales office)</b>			
<b>PO13</b>	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	<b>AO13.1</b>	Streets are provided with turfed verges and constructed footpaths.
		<b>AO13.2</b>	Where provided, street trees are located between footpaths and the street or parking lanes.
		<b>AO13.3</b>	Shade trees are provided throughout public and semi-public spaces and provide shade to footpaths, activity areas and open car parking areas.
		<b>AO13.4</b>	Street furniture including seats, bollards, grates, grilles, screens and fences, bicycle racks, flag poles, banners, litter bins, telephone booths and drinking fountains are co-ordinated with other elements of the streetscape.
<b>PO14</b>	The Business activity provides for the premises to be attractively landscaped in a manner that is consistent with the function, location and setting	<b>AO14.1</b>	A minimum of 10% of the site is provided as landscaped area.
		<b>AO14.2</b>	Landscaping is provided on site in accordance with the following: (a) shade trees, low planting and

Performance Outcomes		Acceptable Outcomes	
	of the premises.		<p>hard landscaping are provided along street frontages not occupied by buildings or driveways;</p> <p>(b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities which:</p> <ul style="list-style-type: none"> <li>(i) has a minimum width of 3m;</li> <li>(ii) is planted with a variety of screening trees and shrubs;</li> <li>(iii) incorporates a minimum 2m high solid screen fence along the full length of the common boundary; and</li> </ul> <p>(c) planting is provided on top of podium levels and on the roof or roof level of car parking structures.</p> <p>Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 (Landscaping).</p>
Requirements for Industry activities (Extractive industry, Industry and Service station)			
<b>PO15</b>	The development provides streetscape landscaping that creates a high level of comfort, safety and visual attractiveness for users.	<b>AO15.1</b>	Streets are provided with turfed verges and constructed footpaths.
<b>PO16</b>	The industrial use incorporates landscaping that: (a) makes a positive contribution to the streetscape; and (b) buffers the development from adjoining sensitive uses.	<b>AO16.1</b>	A minimum of 10% of the site is provided as landscaped area.
		<b>AO16.2</b>	Landscaping is provided on site in accordance with the following: (a) a 3m landscaping buffer is provided along street frontages not occupied by buildings or driveways; (b) a landscaped buffer strip is provided between the use and any adjacent Accommodation activities which: <ul style="list-style-type: none"> <li>(i) has a minimum width of 3m;</li> <li>(ii) is planted with a variety of screening trees and shrubs;</li> <li>(iii) incorporates a minimum 2m high solid screen fence along the full length of the common boundary; and</li> </ul> (c) any security fencing is set within or located behind the

Performance Outcomes		Acceptable Outcomes	
			<p>landscaping strip rather than adjacent to the major road.</p> <p>Note – A Landscaping plan may be prepared in accordance with the PSP SC6.4 (Landscaping).</p>

## **9.4.6 Reconfiguring a lot code**

### **9.4.6.1 Application**

This code applies to assessable development:

- (a) being reconfiguring a lot; and
- (b) identified as requiring assessment against the Reconfiguring a lot code by the tables of assessment in Part 5 (Tables of assessment).

### **9.4.6.2 Purpose and overall outcomes**

- (1) The purpose of the Reconfiguring a lot code is to ensure that new lots are configured in a manner which:
  - (a) is appropriate for their intended use;
  - (b) is responsive to site constraints;
  - (c) provides appropriate access; and
  - (d) supports high quality urban design outcomes.
- (2) The purpose of the Reconfiguring a lot code will be achieved through the following overall outcomes:
  - (a) development provides for lots that are of a size and have dimensions that:
    - (i) are appropriate for their intended use;
    - (ii) promote a range of housing types in the case of residential development;
    - (iii) are compatible with the prevailing character and density of surrounding development; and
    - (iv) sensitively respond to site constraints;
  - (b) development provides for lots that have a suitable and safe means of access to a public road;
  - (c) development provides for reconfiguration that result in the creation of safe and healthy communities by:
    - (i) incorporating a well-designed and efficient lot layout that promotes and the use of public transport;
    - (ii) incorporating a road and transport network with a grid or modified grid street pattern that is responsive to and integrated with the natural topography of the site, is integrated with existing or planned adjoining development and supports the circulation of public transport with no or only minimal route redundancy;
    - (iii) avoiding adverse impacts on economic or natural resource areas;
    - (iv) avoiding adverse impacts on native vegetation, waterways, wetlands and other ecologically important areas present on, or adjoining the site;

- (v) avoiding, or if avoidance is not practicable, mitigating the risk to people and property of natural hazards, including hazards posed by bushfire, flooding, coastal erosion/inundation, landslide and steep slopes; and
- (vi) providing timely, efficient and appropriate infrastructure including reticulated water and sewerage where available, sealed roads, pedestrian and bicycle paths, open space and community facilities in urban areas.

### 9.4.6.3 Assessment benchmarks

**Table 9.4.6.3.1 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
Size and dimensions of lots			
<b>PO1</b>	Development provides for the size, dimensions and orientation of lots to: <ul style="list-style-type: none"> <li>(a) be appropriate for their intended use;</li> <li>(b) be compatible with the preferred character for the zone and local area in which the land is located;</li> <li>(c) where within the Rural zone; maintain the productive use and amenity of rural lands,</li> <li>(d) provide suitable building envelopes and safe pedestrian, bicycle and vehicular access without the need for major earthworks and retaining walls; and</li> <li>(e) take account of and respond sensitively to site constraints.</li> </ul>	<b>AO1.1</b>	Unless otherwise specified in this code or a Local plan code, a lot complies with the minimum lot size specified in Table 9.4.6.3.2 (Minimum lot size and dimensions).
		<b>AO1.2</b>	Lots are designed to contain the minimum width and depth requirements specified in Table 9.4.6.3.2 (Minimum lot size and dimensions).
		<b>AO1.3</b>	A lot located on land identified on an overlay map contains a development envelope marked on a plan of development that demonstrates that there is an area sufficient to accommodate the intended purpose of the lot that is not subject to the constraint or valuable resource or that appropriately responds to the constraint or valuable resource.
		<b>AO1.4</b>	Vehicular and active transport corridors are sensitively designed with the landscape to minimise the need for major earthworks and retaining walls.
		<b>AO1.5</b>	A lot has a development envelope of land with a slope no greater than 15%.
		<b>AO1.6</b>	No additional lots are created on land included in an Extractive resource or Transport route separation area identified on the Overlay map - ER - 01:29 (Extractive resources overlay).
		<b>AO1.7</b>	Lot boundaries are aligned to avoid traversing matters of environmental significance.
<b>Small residential lots (Lots less than 600m<sup>2</sup>)</b>			
<b>PO2</b>	To facilitate and encourage urban consolidation and housing	<b>AO2.1</b>	The small residential lots are located on land:

Performance Outcomes		Acceptable Outcomes	
	diversity, development may provide for small residential lots to be created where: (a) they are within easy walking distance of an activity centre or public transport stop; (b) the development will be consistent with the preferred character for the zone and local area in which the land is located; and (c) the land is fit for purpose and not subject to significant topographic constraints.		(a) included in the Low-medium density residential zone, where the parent lot has a minimum area of 2,000m <sup>2</sup> .
		<b>AO2.2</b>	The land does not have a slope of greater than 10%.
<b>PO3</b>	Small residential lots are dispersed across a development in a configuration that: (a) promotes variety in streetscape character; and (b) avoids an area being dominated by a particular lot type.	<b>AO3.1</b>	Not more than four lots of a particular type (i.e. small lot) are located in a row.
		<b>AO3.2</b>	A maximum of 50% of all lots within any neighbourhood block are of a particular type (i.e. small lot).
<b>Irregular shaped lots</b>			
<b>PO4</b>	Development provides for irregular shaped lots to be created only where: (a) the creation of regular lots is impractical such as at a curve in the road; (b) safe access to and from the site can be provided while not adversely impacting on the functionality of the surrounding road network; and (c) the irregular lot is suitable for its intended purpose.	<b>AO4.1</b>	Irregular lots are designed to incorporate a building envelope that contains the minimum width and depth requirements specified in Table 9.4.6.3.2 (Minimum lot sizes and dimensions).
<b>Rearrangement of lot boundaries</b>			
<b>PO5</b>	Development provides that the rearrangement of lot boundaries: (a) does not result in the creation, or in the potential creation of, additional lots; and (b) is an improvement on the existing situation.	<b>AO5.1</b>	The rearrangement of lot boundaries results in an improvement to the existing situation whereby the size and dimensions of proposed lots comply more fully with Table 9.4.6.3.2 (Minimum lot size and dimensions), and at least one of the following is achieved: (a) the rearrangement of lots remedies an existing boundary encroachment by a building, structure or other use areas; (b) the rearranged lots will be made more regular in shape; and (c) access is provided to a lot that previously had no access or an unsuitable access.

Performance Outcomes		Acceptable Outcomes	
<b>Lot layout and site responsive design</b>			
<b>PO6</b>	Development provides for a lot layout and configuration of roads and other transport corridors that sensitively respond to surrounding environmental values and development.	<b>AO6.1</b>	Development layout and configuration responds appropriately to: <ul style="list-style-type: none"> <li>(a) any areas of environmental significance or natural hazards present on, or adjoining the site;</li> <li>(b) the location and management of natural stormwater flows present on, or adjoining the site;</li> <li>(c) any places of cultural heritage significance or character areas present on, or adjoining the site;</li> <li>(d) any important landmarks, views, vistas or other areas of high scenic value present on, or able to be viewed from the site;</li> <li>(e) creates legible and interconnected movement and open space networks;</li> <li>(f) provides for a grid or modified movement network which avoids or minimises the use of cul-de-sac; and provides defined edges to public open space and avoids or minimises direct interface between public open space and freehold lots.</li> </ul>
<b>Lot layout and neighbourhood / estate design</b>			
<b>PO7</b>	Development is appropriately planned, encompassing best practice lot layout and neighbourhood and estate design whilst providing efficient land use pattern and effectively connecting the site with existing or planned development.	<b>AO7.1</b>	Development provides for a lot layout and infrastructure configuration that: <ul style="list-style-type: none"> <li>(a) provides for the efficient movement of pedestrians, cyclists, public transport and private motor vehicles in that order of priority;</li> <li>(b) avoids narrow pathways and/or drainage reserves between lots;</li> <li>(c) provides for the creation of a diverse range of lot sizes capable of accommodating a mix of housing types and other uses required to support the community as appropriate to the zone and, where applicable, local plan area;</li> <li>(d) promotes a sense of community identity and belonging;</li> <li>(e) provides for a high level of</li> </ul>



Performance Outcomes		Acceptable Outcomes	
			<p>amenity having regard to potential noise, dust, odour and lighting nuisance sources;</p> <p>(f) accommodates and provides for the efficient and timely delivery of infrastructure appropriate to the site's context and setting; and</p> <p>(g) avoids the sporadic or out of sequence creation of lots.</p>
<b>Landscaped separation buffers to sensitive land, incompatible uses and infrastructure</b>			
<b>PO8</b>	<p>Development provides for lots to be created in locations that:</p> <p>(a) are adequately buffered to prevent potential adverse impacts on future users of the lots;</p> <p>(b) separate the lots from incompatible uses and infrastructure; and</p> <p>(c) do not create "reverse amenity" situations where the continued operation of existing uses is compromised by the proposed development.</p>	<b>AO8.1</b>	<p>Where any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone is adjacent to a Rural or Industry zone or existing Rural or industry activity the following landscaped separation buffers are provided:</p> <p>(a) 40m from a:</p> <ul style="list-style-type: none"> <li>(i) Rural zone; or</li> <li>(ii) Low impact industry zone; or</li> <li>(iii) Medium impact industry zone; or</li> <li>(iv) Rural activities; or</li> <li>(v) Low impact industry use; or</li> <li>(vi) Medium impact industry use; or</li> <li>(vii) Research or technology industry; or</li> <li>(viii) Service industry use; or</li> <li>(ix) Warehouse use;</li> </ul> <p>(b) 50m from a:</p> <ul style="list-style-type: none"> <li>(i) High impact industry zone; or</li> <li>(ii) high impact industry use;</li> </ul> <p>(c) 60m from a:</p> <ul style="list-style-type: none"> <li>(i) Special industry zone; or</li> <li>(ii) Special industry use; and</li> </ul> <p>(d) 40m from a:</p> <ul style="list-style-type: none"> <li>(i) Waterfront and marine industry zone; or</li> <li>(ii) Marine industry use.</li> </ul> <p>Note – This may be demonstrated by preparing a site specific Landscaped separation buffer in accordance with PSP SC6.4 (Landscaping).</p>
		<b>AO8.2</b>	Where a landscaped separation buffer is required, it is designed,

Performance Outcomes		Acceptable Outcomes	
			<p>constructed and maintained to achieve visual screening and acoustic attenuation of major infrastructure elements.</p> <p>Note – This may be demonstrated by preparing a site specific Landscaped separation buffer plan in accordance with PSP SC6.4 (Landscaping).</p>
<b>Public parks and open space infrastructure</b>			
<b>PO9</b>	Development provides for public parks and open space for the enjoyment of residents and visitors that add to the character and amenity of future and existing surround development.	<b>AO9.1</b>	<p>Development provides a variety of public parks and open space infrastructure that:</p> <ul style="list-style-type: none"> <li>(a) provides for a range of passive and active recreation settings and can accommodate adequate facilities to meet the needs of the community;</li> <li>(b) is well distributed and contributes to the legibility, accessibility and character of the locality;</li> <li>(c) creates attractive settings and focal points for the community;</li> <li>(d) benefits the amenity of adjoining land uses;</li> <li>(e) incorporates appropriate measures for stormwater and flood management;</li> <li>(f) facilitates the retention of native vegetation, waterways, wetlands and other ecologically important areas and natural and cultural features;</li> <li>(g) facilitates the retention or enhancement of ecological corridors and connections to surrounding areas of open space;</li> <li>(h) is cost effective to maintain; and</li> <li>(i) is dedicated as public land in the early stages of the subdivision.</li> </ul> <p>Note—Section 9.4.5 (Landscaping code) and PSP SC6.8 (WRC development manual) includes requirements for the design and construction of landscape elements in public parks and open space infrastructure. Compliance must also be demonstrated with the LGIP of the council.</p>

**Table 9.4.6.3.2 Minimum lot sizes and dimensions**

Zone	Minimum lot sizes	Minimum width (Road frontage)	Minimum depth
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Major centre	400m <sup>2</sup>	Not specified	Not specified
District centre	400m <sup>2</sup>	Not specified	4:1 (depth: width)
Local centre	400m <sup>2</sup>	Not specified	4:1 (depth: width)
Neighbourhood centre	400m <sup>2</sup>	Not specified	4:1 (depth: width)
Mixed use	800m <sup>2</sup>	20m	40m
Low density residential	600m <sup>2</sup>	18m	20m
Low-medium density residential	450m <sup>2</sup>	15m	20m
Tourist accommodation	800m <sup>2</sup>	20m	40m
Rural residential	4000m <sup>2</sup>	40m	50m
Low impact industry	1000m <sup>2</sup>	20m	50m
Medium impact industry	2000m <sup>2</sup>	30m	50m
High impact industry	2000m <sup>2</sup>	30m	50m
Special industry	2000m <sup>2</sup>	30m	50m
Waterfront and marine industry	4000m <sup>2</sup>	40m	100m
Environmental conservation and management	Not specified	Not specified	Not specified
Recreation and open space	Not specified	Not specified	Not specified
Community facilities	Not specified	Not specified	Not specified
Rural	100ha	200m	800m
Emerging communities	10ha	100m	400m
Industry investigation	10ha	100m	400m

## 9.4.7 Transport and parking code

### 9.4.7.1 Application

This code applies to accepted and assessable development identified as requiring assessment against the Transport and parking code by the tables of assessment in Part 5 (Tables of assessment).

### 9.4.7.2 Purpose and overall outcomes

- (1) The purpose of the Transport and parking code is to ensure that transport infrastructure including pathways, public transport infrastructure, roads, parking and service areas, are provided in a manner which meets the needs of the development, whilst promoting active and public transport use and preserving the character and amenity of the Whitsunday region.
- (2) The purpose of the Transport and parking code will be achieved through the following overall outcomes:
  - (a) development is consistent with the objectives of the strategic transport network, which are to:
    - (i) provide for a highly permeable and integrated movement network;
    - (ii) improve coordination between land use and transport so as to maximise the potential for walking, cycling and public transport use and reduce reliance on private motor vehicle travel;
    - (iii) achieve acceptable levels of access, convenience, efficiency and legibility for all transport users;
    - (iv) limit road construction to the minimum necessary to meet the endorsed levels of service for ultimate development of the Whitsunday region; and
    - (v) provide for staging of Council's limited trunk road construction program to maximise sustainability;
  - (b) transport infrastructure is designed and constructed to acceptable standards and operates in a safe and efficient manner that meets community expectations, prevents unacceptable off-site impacts and reduces whole of life cycle costs, including reduced ongoing maintenance costs; and
  - (c) development provides for on-site parking, access, circulation and servicing areas that are safe, convenient and meet the reasonable requirements of the development.

### 9.4.7.3 Assessment benchmarks

**Table 9.4.7.3.1 Benchmarks for accepted and assessable development**

Performance Outcomes		Acceptable Outcomes	
Layout and design of on-site parking and access			
<b>PO1</b>	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas is safe, convenient and legible for	<b>AO1.1</b>	Development provides access driveways, internal circulation and manoeuvring areas, service areas and parking areas that complies with D1: Road

Performance Outcomes		Acceptable Outcomes	
	all users including people with disabilities, pedestrians, cyclists and public transport services, where relevant.		<p>geometry of PSP SC6.8 (WRC development manual) and AS2890 (Parking facilities) ensuring:</p> <p>(a) the number and type of vehicles planned for the development can be accommodated on the site;</p> <p>(b) on-site vehicle parking and manoeuvring areas provide for vehicles to enter and leave the site in a forward motion; and</p> <p>(c) a progressive reduction in vehicle speed between the external transport corridor and internal parking spaces such that lower speeds occur near areas of high pedestrian activity.</p>
<b>Site access</b>			
<b>PO2</b>	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the transport network.	<b>AO2.1</b>	The location and design of any new site access complies with D1: Road geometry of PSP SC6.8 (WRC development manual), AS2890.1 (Parking facilities: Off-street car parking), AS2890.2 (Parking facilities: Off-street commercial vehicle facilities) and where applicable in accordance with the Department of Transport and Main Roads requirements where state roads are affected.
<b>On-site car parking</b>			
<b>PO3</b>	Development provides on-site car parking for the demand anticipated to be generated by the development and existing conditions.	<b>AO3.1</b>	<p>Development provides on-site car parking spaces at the minimum rates outlined in Table 9.4.7.3.3 (Minimum on-site parking requirements).</p> <p>Note—where the calculated number of spaces is not a whole number, the required number of parking spaces is the nearest whole number.</p>
		<b>AO3.2</b>	Where development is proposed for existing Business or Entertainment activities within Airlie Beach Precinct D and Precinct E, car parking is only provided for additional GFA at the rates provided in Table 9.4.7.3.3 (Minimum on-site parking requirements).
<b>PO4</b>	Development provides for a reasonable portion of the total number of on-site car parking spaces to be wheelchair accessible spaces and to be identified and reserved for such	<b>AO4.1</b>	Development provides the number of parking spaces for people with disabilities, required by the Building code of Australia and in any case provides a minimum of one space.

Performance Outcomes		Acceptable Outcomes	
	purposes.	<b>AO4.2</b>	Parking spaces for people with disabilities and access to them complies with AS1428 (General requirements for access: Buildings) and AS2890.6 (Parking facilities: Off-street parking for people with disabilities).
<b>Service vehicle requirements</b>			
<b>PO5</b>	Development provides sufficient parking and access for service vehicles to meet the needs of the development.	<b>AO5.1</b>	Development provides on-site service vehicle parking bays at the minimum rates outlined in Table 9.4.7.3.3 (Minimum onsite parking requirements).
		<b>AO5.2</b>	Service vehicle access, manoeuvring and parking is designed to in accordance with AS2890.2 (Parking facilities: Off-street commercial vehicle facilities).
<b>PO6</b>	Development provides for driveways, internal circulation areas and service areas to be designed to: (a) ensure that proposed loading, unloading, waste collection and fuel delivery facilities (if required) can satisfactorily accommodate the number and type of service vehicles expected on-site; and (b) the movement of service vehicles on-site and loading and unloading operations do not interfere with onsite amenity and the safe and convenient movement of other vehicles and pedestrians on the site.	<b>AO6.1</b>	Driveways, internal circulation areas, and service areas are provided to accommodate the nominated design vehicles for each development type.
		<b>AO6.2</b>	Driveways, internal circulation areas, manoeuvring areas, loading and unloading areas and refuse collection facilities are designed and constructed in accordance with D1: Road geometry of PSP SC6.8 (WRC development manual) and AS2890 (Parking facilities).
<b>Access and parking site access</b>			
<b>PO7</b>	Development is designed such that turning traffic minimises the impact of the development on external traffic systems.	<b>AO7.1</b>	Turns to and from the development are designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 (WRC development manual).
<b>PO8</b>	Development provides for sight distances to and from driveways sufficient to ensure safe operation.	<b>AO8.1</b>	Available sight distances from driveways comply with the standards specified in D1: Road geometry of PSP SC6.8 (WRC development manual).
<b>PO9</b>	Development provides appropriate and sufficient signage to ensure safe and convenient usage of site access systems	<b>AO9.1</b>	Appropriate direction, regulatory, warning and information signage and line marking is provided in accordance with the requirements of PSP SC6.8 (WRC development manual) and

Performance Outcomes		Acceptable Outcomes	
			the Manual of uniform traffic control devices.

**Table 9.4.7.3.2 Benchmarks for assessable development**

Performance Outcomes		Acceptable Outcomes	
<b>Layout and design of on-site parking and access</b>			
<b>PO1</b>	Development ensures that the layout and design of vehicle access, on-site circulation systems and parking areas is safe, convenient and legible for all users including people with disabilities, pedestrians, cyclists and public transport services, where relevant.	<b>AO1.1</b>	Development provides clearly defined pedestrian paths within and around on-site vehicle parking areas that: <ul style="list-style-type: none"> <li>(a) are located in areas where people will choose to walk; and</li> <li>(b) ensure pedestrian movement through vehicle parking areas is along aisles rather than across them.</li> </ul>
<b>PO2</b>	Development provides for shared or multiple use of car parking areas.	<b>AO2.1</b>	Development provides for the shared or multiple use of car parking, particularly large car parking areas: <ul style="list-style-type: none"> <li>(a) at times when car parking areas would otherwise not be occupied (e.g. weekends);</li> <li>(b) when car parking spaces service two or more land uses with varying peak usage times (e.g. food and drink outlets and Entertainment activities which generate peak parking demands in periods when retail or office uses are relatively inactive); and</li> <li>(c) to reduce the amount and size of the car parking area.</li> </ul>
<b>PO3</b>	Development ensures that car parking areas, service areas and access driveways do not impede on the useability of the network or amenity of surrounding uses.	<b>AO3.1</b>	Parking areas and service areas and access driveways are located where: <ul style="list-style-type: none"> <li>(a) they will not dominate the streetscape; and</li> <li>(b) will not unduly intrude upon pedestrian use of footpaths, through: <ul style="list-style-type: none"> <li>(i) the use of rear access lanes; or</li> <li>(ii) car parking areas and service areas situated at the rear of the premises or below ground level; or</li> <li>(iii) shared driveways.</li> </ul> </li> </ul>
<b>Site access</b>			
<b>PO4</b>	Development ensures that the location and design of any new site access does not interfere with the planned function, safety, capacity and operation of the	<b>AO4.1</b>	The number of site access driveways is minimised (usually one), with access to the lowest order transport corridor to which the site has frontage, consistent

Performance Outcomes		Acceptable Outcomes	
	transport network.		with amenity impact constraints.
<b>PO5</b>	An acceptable level of flood immune access is provided.	<b>AO5.1</b>	Roads providing access to lots have the same flood immunity as the road network they adjoin, specified in accordance with D4: Stormwater drainage of PSP SC6.8 (WRC development manual).
<b>Road and transport network</b>			
<b>PO6</b>	Development, particularly where involving the creation of new roads and other transport corridors is appropriately planned, designed and managed taking into account existing and future networks and surrounding development.	<b>AO6.1</b>	<p>Development of roads and transport corridors ensures that the road network:</p> <ul style="list-style-type: none"> <li>(a) accords with the Queensland streets and DP1: Development principles (DP1 – DP1.07) and D1: Road geometry of PSP SC6.8 (WRC development manual);</li> <li>(b) provides visible distinction of roads, based on function and design features;</li> <li>(c) provides convenient, safe and efficient movement for all modes of transport between land use activities with priority given to pedestrian movement and bicycle use over vehicle movements;</li> <li>(d) allows for unimpeded and practical access to the development site and each proposed lot;</li> <li>(e) accommodates or facilitates access to cycle and pedestrian pathways;</li> <li>(f) facilitates a high standard of urban design which reflects a grid pattern to assist in connectivity and permeability, particularly for pedestrians and cyclists;</li> <li>(g) connects to and integrates with existing roads and other relevant facilities within and external to the land to be developed or subdivided;</li> <li>(h) provides for the dedication and construction of roads where required to allow access to, and proper development of, adjoining vacant land that is intended for development;</li> <li>(i) provides for the construction and adequate drainage of all proposed roads, pathways, laneways and bikeways within and adjoining the land</li> </ul>



Performance Outcomes		Acceptable Outcomes	
			<p>to be developed;</p> <p>(j) does not unreasonably adversely impact on existing vehicular traffic, active transport users or the amenity of the surrounding environment; and</p> <p>(k) does not adversely impact on wildlife movement corridors.</p> <p>Note – D1: Road geometry of PSP SC6.8 (WRC development manual) specifies standards and provides guidance for the design and construction of roads and transport corridors.</p>
<b>PO7</b>	Development involving high trip generating land uses minimises any adverse impacts on surrounding land uses and the external transport network.	<b>AO7.1</b>	<p>Development of high trip generating land uses appropriately allows for the provision of infrastructure and services to increase the use of public and active transport.</p> <p>Note – A Traffic impact assessment report prepared in accordance with PSP SC6.7 (Growth management) may assist in demonstrating compliance with the performance outcome.</p>
<b>PO8</b>	Development facilitates orderly provision of the transport network.	<b>AO8.1</b>	Development provides for upgrades or contributes to the construction of transport network improvements.
		<b>AO8.2</b>	Required upgrading of the transport network is provided in accordance with the hierarchy characteristics and requirements outlined in DP1: Development principles of PSP SC6.8 (WRC development manual).
<b>Pedestrian and bicycle network and facilities</b>			
<b>PO9</b>	Development in the Major centre, District centre, Local centre, Mixed use, Low-medium density residential and Tourist accommodation zones provide on-site parking facilities for bicycles to encourage use of this mode of transport and support the demand anticipated to be generated by the development.	<b>AO9.1</b>	<p>Development provides on-site bicycle spaces that meet the needs of all users of the development including but not limited to employees, customers, students and visitors.</p> <p>Note – The minimum on-site bicycle parking rates specified in PSP SC6.8 (WRC development manual).</p>
<b>PO10</b>	Development provides for the establishment of a safe and convenient network of pedestrian and bicycle paths.	<b>AO10.1</b>	<p>Development allows for the provision of pedestrian and bicycle networks that:</p> <p>(a) provide a high level of permeability and connectivity;</p> <p>(b) provide for joint usage where appropriate;</p> <p>(c) maximise opportunities to link activity centres, employment areas, residential areas, community</p>

Performance Outcomes		Acceptable Outcomes	
			<p>facilities, open space and public transport stops located internally and externally to the site;</p> <p>(d) have an alignment that maximises visual interest, allows for the retention of trees and other significant features and does not compromise the operation of or access to other infrastructure;</p> <p>(e) incorporate safe street crossings with adequate sight distances, pavement markings, warning signs and safety rails; and</p> <p>(f) are well lit and located where there is casual surveillance from nearby premises.</p> <p>Note — D1: Road geometry PSP SC6.8 (WRC development manual) and Complete Streets specify standards and provides guidance for the design and construction of pedestrian and bicycle paths.</p>
PO11	Appropriate on-site end of trip facilities are provided to encourage walking and cycling as an alternative to private car travel.	AO11.1	<p>Development for a Business activity, Community activity, Recreation activity, or for a hostel, short term accommodation, resort complex, residential care facility, air services or marina provides residents, employees and visitors with shower cubicles and ancillary change rooms and lockers (including provision for both males and females) at the following rates:</p> <p>(a) 1 cubicle and 5 lockers for the first 5,500m<sup>2</sup> of gross floor area, provided that the development exceeds a minimum gross floor area of 1,500m<sup>2</sup>; plus</p> <p>(b) 1 additional cubicle and 5 additional lockers for that part of the development that exceeds 5,500m<sup>2</sup> gross floor area up to a maximum of 30,000m<sup>2</sup> gross floor area; plus</p> <p>(c) 2 additional cubicles and 10 additional lockers for that part of the development that exceeds 30,000m<sup>2</sup> gross floor area.</p>
		AO11.2	Development provides bicycle access, parking and storage

Performance Outcomes		Acceptable Outcomes	
			facilities that: <ul style="list-style-type: none"> <li>(a) are located close to the building's pedestrian entrance;</li> <li>(b) are obvious and easily and safely accessible from outside the site;</li> <li>(c) do not adversely impact on visual amenity; and</li> <li>(d) are designed in accordance with the Austroads: Guide to road design part 6A: Pedestrian and cyclist paths.</li> </ul>
<b>Public transport facilities</b>			
<b>PO12</b>	Development encourages the use of public transport through the appropriate provision of on-site or off-site public transport facilities, having regard to the specific nature and scale of development, and the number of people or lots involved.	<b>AO12.1</b>	Development is designed and arranged to provide safe, convenient and functional linkages to existing and proposed public transport facilities.
		<b>AO12.2</b>	On-site public transport facilities are provided in conjunction with the following development: <ul style="list-style-type: none"> <li>(a) shopping centre, where having a gross floor area of greater than 10,000m<sup>2</sup>;</li> <li>(b) tourist attraction, having a total use area of greater than 10,000m<sup>2</sup>;</li> <li>(c) educational establishment, where accommodating more than 500 students;</li> <li>(d) major sport, recreation and entertainment facility;</li> <li>(e) indoor sport and recreation, where having a gross floor area of more than 1,000m<sup>2</sup> or for spectator sports; and</li> <li>(f) outdoor sport and recreation where for spectator sports.</li> </ul>
		<b>AO12.3</b>	On-street public transport facilities are provided as part of the following development: <ul style="list-style-type: none"> <li>(a) shopping centre, where having a gross floor area of 10,000m<sup>2</sup> or less;</li> <li>(b) tourist attraction, where having a gross floor area of 10,000m<sup>2</sup> or less;</li> <li>(c) educational establishment, where accommodating 500 or less students; and</li> <li>(d) indoor sport and recreation where having a gross floor area of 500m<sup>2</sup> or less and not for spectator sports.</li> </ul>
		<b>AO12.4</b>	Where not otherwise specified above, on street public transport facilities are provided where

Performance Outcomes		Acceptable Outcomes	
			development is located on an existing or future public transport route. Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 (WRC development manual).
		<b>AO12.5</b>	Public transport facilities are located and designed in accordance with the standards specified in D1: Road geometry of PSP SC6.8 (WRC development manual).
<b>PO13</b>	Development involving the creation of new roads provides for and maintains connectivity to existing and future public transport routes.	<b>AO13.1</b>	Development ensures that a network of public transport routes is provided such that public transport can efficiently service the neighbourhood/estate with no or only minimal route redundancy.
		<b>AO13.2</b>	Development ensures that the design of streets and roads to be used as a public transport route allows for the efficient and unimpeded movement of buses without facilitating high traffic speeds.
<b>Amenity and environmental impacts of transport infrastructure</b>			
<b>PO14</b>	The environmental impacts of transport infrastructure are minimised by appropriate design and the use of low impact construction techniques.	<b>AO14.1</b>	Development ensures that the environmental impacts of transport infrastructure are minimised by the use of low impact construction techniques, including: <ul style="list-style-type: none"> <li>(a) co-location of transport corridors within an existing or planned infrastructure corridor; or</li> <li>(b) location of transport corridors within an area clear of or consisting of disturbed vegetation; or</li> <li>(c) avoidance of clearing of native vegetation and provision of fauna underpasses and associated fencing, where appropriate; or</li> <li>(d) minimisation of changes to the hydrological regime, including drainage patterns, run-off and water quality; or</li> <li>(e) avoidance of crossing waterways, drainage lines and wetlands. Where such crossings are unavoidable, disturbed areas are reinstated and revegetated</li> </ul>

Performance Outcomes		Acceptable Outcomes	
			on completion of works; or (f) minimisation of changes to the natural landform and extensive earthworks.
		<b>AO14.2</b>	Transport corridor design and construction is undertaken in accordance with DP1: Development principles of PSP SC6.8 (WRC development manual).
<b>PO15</b>	Development parking areas that incorporates appropriate landscaping and where possible minimises adverse impacts on people, properties or activities with regard to light, noise, emissions or stormwater run-off.	<b>AO15.1</b>	Development provides appropriate landscaping for onsite vehicle access and parking areas, so as to provide: (a) provide shade; (b) maximise infiltration of stormwater runoff; (c) define parking areas; and (d) soften views of hardstand areas.  Note – D9: Landscaping of PSP SC6.8 (WRC development manual) sets out requirements for landscaping.
Transport corridor widths, pavement, surfacing and verges			
<b>PO16</b>	Development provides external road works along the full extent of the site frontage appropriate to the function and amenity of the transport corridor, including where applicable: (a) paved roadway; (b) kerb and channel; (c) safe vehicular access; (d) safe footpaths and bikeways; (e) safe on-road cycle lanes or verges for cycling; (f) stormwater drainage; and (g) conduits to facilitate the provision of street lighting systems and traffic signals.	<b>AO16.1</b>	The design and construction of external road works is: (a) undertaken in accordance with the D1: Road geometry of PSP SC6.8 (WRC development manual); and (b) consistent with the characteristics intended for the particular type of transport corridor specified in the DP1: Development principles of PSP SC6.8 (WRC development manual).
<b>PO17</b>	Development provides for the reserve width, pavement, edging, street scaping and landscaping of a transport corridor to support the intended functions and amenity of the transport corridor.	<b>AO17.1</b>	Transport corridor design and construction is: (a) undertaken in accordance with the standards specified in the DP1: Development principles of PSP SC6.8 (WRC development manual) and (b) consistent with the characteristics intended for the particular type of transport corridor specified in DP1: Development principles of PSP SC6.8 (WRC development manual).
<b>PO18</b>	Development provides for road pavement and surfacing that: (a) is sufficiently durable to carry	<b>AO18.1</b>	Road pavement design and construction is undertaken in accordance with the standards

Performance Outcomes		Acceptable Outcomes	
	<ul style="list-style-type: none"> <li>wheel loads for design traffic;</li> <li>(b) provides adequate area for parked vehicles;</li> <li>(c) ensures the safe passage of vehicles, pedestrians and bicycles;</li> <li>(d) ensures appropriate management of stormwater and maintenance of all-weather access; and</li> <li>(e) allows for reasonable travel comfort.</li> </ul>		specified in the D3: Road pavements and S2: Road pavements of PSP SC6.8 (WRC development manual).
<b>PO19</b>	<p>Development provides pavement edging that controls:</p> <ul style="list-style-type: none"> <li>(a) vehicle movements by delineating the extent of the carriageway; and</li> <li>(b) stormwater runoff.</li> </ul>	<b>AO19.1</b>	Design and construction of pavement edging is undertaken in accordance with the standards specified in the D1: Road geometry and S2: Road pavements of PSP SC6.8 (WRC development manual)
<b>PO20</b>	<p>Development provides verges and footpaths that:</p> <ul style="list-style-type: none"> <li>(a) allow safe access for pedestrians clear of obstructions;</li> <li>(b) allow safe passage of wheel chairs and other mobility aids;</li> <li>(c) allow safe passage of cyclists;</li> <li>(d) allow access for vehicles onto properties;</li> <li>(e) include an area for public utility services;</li> <li>(f) allow signage and line marking; and</li> <li>(g) contribute to the amenity of transport corridors.</li> </ul>	<b>AO20.1</b>	<p>Verge and footpath design and construction is undertaken in accordance with the:</p> <ul style="list-style-type: none"> <li>(a) standards specified in the D1: Road geometry of PSP SC6.8 (WRC development manual) and</li> <li>(b) characteristics intended for the particular type of transport corridor specified in the DP1: Development principles of PSP SC6.8 (WRC development manual).</li> </ul>
<b>Intersections and traffic controls</b>			
<b>PO21</b>	<p>Development provides for traffic speeds and volumes to be catered for through the design and location of intersections and traffic controls so as to:</p> <ul style="list-style-type: none"> <li>(a) avoid stop-start conditions;</li> <li>(b) provide for appropriate sight distances;</li> <li>(c) avoid increased vehicle emissions;</li> <li>(d) minimise unacceptable traffic noise to adjoining land uses;</li> <li>(e) maintain convenience and safety levels for pedestrians, cyclists and public transport; and</li> <li>(f) integrate traffic controls with landscaping and streetscape design.</li> </ul>	<b>AO21.1</b>	Intersections and speed control devices are designed and constructed in accordance with the D1: Road geometry of PSP SC6.8 (WRC development manual) and Part 4 of AustRoads (Intersections and crossings).
<b>Development staging</b>			
<b>PO22</b>	Staged development is planned,	<b>AO22.1</b>	Development ensures:

Performance Outcomes		Acceptable Outcomes	
	designed and constructed to ensure uninterrupted transport service and connectivity.		(a) each stage of the development can be constructed without interruption to services and utilities provided to the previous stages; (b) transport infrastructure provided is capable of servicing the entire development; (c) early bus access and circulation is achieved through the connection of collector roads; and (d) materials used are consistent throughout the development.

**Table 9.4.7.3.3 Minimum on-site parking requirements**

Land use	Cars	Service vehicles
<b>Residential activities</b>		
Caretakers residence	1 space for exclusive use by the occupants of the caretaker's accommodation	Not specified
Community residence	2 plus 1 for a manager residence OR resident support worker	Not required
Dwelling house	2 spaces, 1 of which is covered (spaces may be in tandem).	Not required
Dual occupancy	1 bedroom: 1.0 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit	Not required
Home based business	As per dwelling house: plus 1 space customer parking; plus 1 space non-resident employee; plus 1 space per guest room, where a Bed and breakfast	1 SRV
Multiple dwelling	1 bedroom: 1.0 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Nature based tourism	1 space per cabin/site plus 1 manager space	Not required
Non-resident workforce accommodation	1 bedroom: 1.0 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Relocatable home park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites.	1 SRV where more than 10 relocatable home sites

Land use	Cars	Service vehicles
Residential care facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; 1 space for ambulance vehicle pickup and set downs; and visitor parking equal to 50% of the resident parking requirement.	1 MRV plus Ambulance
Resort complex	As per separately defined.	Not specified
Retirement facility	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; 1 space for ambulance vehicle pickup and set downs; and visitor parking equal to 50% of the resident parking requirement	1 MRV plus Ambulance
Rooming accommodation	1 space per 6 dormitory type bed; 1 space per 4 hostel type units; 1 space per self-contained unit; 1 space for ambulance vehicle pickup and set downs; and visitor parking equal to 50% of the resident parking requirement.	1 SRV
Short-term accommodation	1 bedroom: 1.0 space per unit 2 bedroom: 1.5 space per unit 3 or more bedroom: 2 spaces per unit Visitor spaces: 1 space per 5 units	1 SRV where more than 10 dwellings
Tourist park	1 space van/tent/cabin site (adjacent to site) plus 1 visitors space per 4 van/tent/cabin sites.	1 LRV
<b>Business activities</b>		
Adult store	As per shop	Not specified
Agricultural supplies store	1 space per 25m <sup>2</sup> of sales area plus 1 space per 200m <sup>2</sup> TUA.	Not specified
Food and drink outlet	1 space per 25m <sup>2</sup> TUA, except where footpath dining is located within the road reserve.	1 SRV
Garden Centre	1 space per 25m <sup>2</sup> of sales area plus 1 space per 200m <sup>2</sup> TUA.	1 SRV if less than 500m <sup>2</sup> GFA 1 SRV and 1 LRV if 500m <sup>2</sup> to 1,999m <sup>2</sup> GFA Not specified if 2,000m <sup>2</sup> GFA or above



Land use	Cars	Service vehicles
Hardware and trade supplies	1 space per 25m <sup>2</sup> of sales area plus 1 space per 200m <sup>2</sup> TUA.	1 SRV if less than 500m <sup>2</sup> GFA 1 SRV and 1 LRV if 500m <sup>2</sup> to 1,999m <sup>2</sup> GFA Not specified if 2,000m <sup>2</sup> GFA or above
Market	1 space per 25m <sup>2</sup> GFA or total use area	Not specified
Office	1 space per 40m <sup>2</sup> GFA	Not specified
Outdoor sales	1 space per 150m <sup>2</sup> TUA	1 AV
Service station	4 spaces per service bay plus parking requirements for ancillary uses as detailed herein (i.e. Shop), with a minimum of 8 spaces.	1 AV
Shop	1 space per 25m <sup>2</sup> TUA	1 SRV if less than 500m <sup>2</sup> GFA 1 SRV and 1 LRV if 500m <sup>2</sup> to 1,999m <sup>2</sup> GFA Not specified if 2,000m <sup>2</sup> GFA or above
Shopping centre	1 space per 25m <sup>2</sup> GFA	1 SRV if less than 500m <sup>2</sup> GFA 1 SRV and 1 LRV if 500m <sup>2</sup> to 1,999m <sup>2</sup> GFA Not specified if 2,000m <sup>2</sup> GFA or above
Showroom	1 space per 50m <sup>2</sup> TUA	1 AV
Veterinary services	1 space per 25m <sup>2</sup> TUA	1 SRV
<b>Entertainment activities</b>		
Bar	1 space per 10m <sup>2</sup> GFA	Not specified
Club	As per shop plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses.	Not specified
Function facility	1 space per 15m <sup>2</sup> GFA	1 SRV
Hotel	As per shop plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses.	1 MRV
Nightclub entertainment facility	As per shop plus sufficient room for queuing. Accommodation and food and drink outlet as per separate defined uses.	1 SRV
Theatre	1 space per 20m <sup>2</sup> of TUA;	Not specified
Tourist attraction	Not specified	Not specified
<b>Industrial activities</b>		
Bulk landscape supplies	A minimum of 6 car parks plus 1 space per 25m <sup>2</sup> of sales area plus 1 space per 200m <sup>2</sup> TUA.	1 LRV
Extractive industry	1 space per 100m <sup>2</sup> GFA	Not specified
Low impact industry	1 space per 50m <sup>2</sup> GFA	Not specified
High impact industry	1 space per 100m <sup>2</sup> GFA	Not specified
Marina	0.6 per wet berth 0.2 per dry storage berth 0.5 per marina employee 0.2 per swing mooring	Not specified

Land use	Cars	Service vehicles
	licensed to the marina.	
Medium impact industry	1 space per 100m <sup>2</sup> GFA	Not specified
Service industry	1 space per 50m <sup>2</sup> GFA	1 MRV
Special industry	1 space per 100m <sup>2</sup> GFA	Not specified
Warehouse	1 space per 150m <sup>2</sup> site area plus provisions to provide for the loading and unloading facilities instead of car parks in self-storage facilities.	Not specified
All other industrial activities	1 space per 50m <sup>2</sup> if less than 500m <sup>2</sup> GFA plus 1 space per 100m <sup>2</sup> GFA for that part exceeding 500m <sup>2</sup> GFA	1 AV
<b>Community activities</b>		
Cemetery	Not specified	Not specified
Child care centre	2 space for every 4 children in attendance plus 1 per employee	Not specified
Community care centre	1 space per 25m <sup>2</sup> plus parking for emergency service vehicles.	Not specified
Community use	1 space per 15m <sup>2</sup> of TUA	Not specified
Crematorium	Not specified	Not specified
Educational establishment	1 space per 10 seats plus drop off pick up.	Not specified
Emergency services	1 space per employee plus 1 visitor space per 4 employees.	Not specified
Funeral parlour	1 per 15m <sup>2</sup> GFA where memorials are conducted. 1 per 40m <sup>2</sup> GFA for all others.	1 SRV
Health care services	1 space per 25m <sup>2</sup> plus parking for emergency service vehicles.	1 SRV plus Ambulance
Hospital	1 space per 25m <sup>2</sup> plus parking for emergency vehicles.	Not specified
Place of worship	1 space per 15m <sup>2</sup> of TUA	SRV
<b>Recreation activities</b>		
Outdoor sport and recreation	6 spaces per court (tennis or court game); 30 spaces per pitch per field plus 1 per people able to be seated in stands (cricket or football); 30 spaces per green (Lawn bowls) 15 spaces, plus one space per 100m <sup>2</sup> of site area (swimming pool)	Not specified
Indoor sport and recreation	1 space per 20m <sup>2</sup> of TUA;	Not specified
All other recreational activities	Not specified	Not specified
<b>Rural activities</b>		
Rural industry	1 space per 50m <sup>2</sup> GFA	1 AV
Wholesale nursery	1 space per 25m <sup>2</sup> of sales area plus 1 space per 200m <sup>2</sup> TUA.	1 AV
All other Rural activities	Not specified	Not required

Land use	Cars	Service vehicles
<b>Other activities</b>		
All Other activities	Sufficient car parking is demonstrated by a Traffic assessment report prepared in accordance with PSP SC6.7 (Growth management).	Not specified



# **Contents of Part 10**

## **Part 10 Other plans**



## **Part 10 Other plans**

There are no other plans for the planning scheme.

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## Tables of Schedule 1

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Table SC 1.1.2	Use definitions
Table SC 1.1.1.1	Index of defined activity groups
Table SC 1.1.1.2	Defined activity groups
Table SC 1.1.2.1	Industry thresholds
Table SC 1.2.1	Index of administrative definitions
Table SC 1.2.2	Administrative definitions

# Schedule 1 Definitions

## SC1.1 Use definitions

- (1) Use definitions have a particular meaning for the purpose of the planning scheme.
- (2) Any use not listed in Table SC1.1.2 (Use definitions) column 1 is an undefined use.  
 Note—development comprising a combination of defined uses is not considered to be an undefined use.
- (3) A use listed in Table SC1.1.2 (Use definitions) column 1 has the meaning set out beside that term in column 2.
- (4) The use definitions listed here are the definitions used in this planning scheme.
- (5) Column 3 of Table SC1.1.2 (Use definitions) identifies examples of the types of activities that are consistent with the use identified in column 1.
- (6) Column 4 of Table SC1.1.2 (Use definitions) identifies examples of activities that are not consistent with the use identified in column 1.
- (7) Columns 3 and 4 of Table SC1.1.2 (Use definitions) are not exhaustive lists.
- (8) Uses listed in Table SC1.1.2 (Use definitions) columns 3 and 4 that are not listed in column 1; do not form part of the definition.

**Table SC 1.1.1 Index of use definitions**

Adult store	Health care services	Port services
Agricultural supplies store	High impact industry	Relocatable home park
Air service	Home based business	Renewable energy facility
Animal husbandry	Hospital	Research and technology industry
Animal keeping	Hotel	Residential care facility
Aquaculture	Indoor sport and recreation	Resort complex
Bar	Intensive animal industry	Retirement facility
Brothel	Intensive horticulture	Roadside stall
Bulk landscape supplies	Landing	Rooming accommodation
Caretaker's accommodation	Low impact industry	Rural industry
Car wash	Major electricity infrastructure	Rural workers' accommodation
Cemetery	Major sport, recreation and entertainment facility	Sales office
Child care centre	Marine industry	Service industry
Club	Market	Service station
Community care centre	Medium impact industry	Shop
Community residence	Motor sport facility	Shopping centre
Community use	Multiple dwelling	Short-term accommodation
Crematorium	Nature-based tourism	Showroom
Cropping	Nightclub entertainment facility	Special industry
Detention facility	Non-resident workforce	Substation
Dual occupancy		Telecommunications facility
Dwelling house		

Dwelling unit	accommodation	Theatre
Educational establishment	Office	Tourist attraction
Emergency services	Outdoor sales	Tourist park
Environment facility	Outdoor sport and recreation	Transport depot
Extractive industry	Outstation	Utility installation
Food and drink outlet	Park	Veterinary services
Function facility	Parking station	Warehouse
Funeral parlour	Permanent plantation	Wholesale nursery
Garden centre	Place of worship	Winery
Hardware and trade supplies		

**Table SC 1.1.2 Use definitions**

<b>Column 1 Use</b>	<b>Column 2 Definition</b>	<b>Column 3 Examples include</b>	<b>Column 4 Does not include the following examples</b>
Adult store	Premises used as a shop where the primary purpose is for the display or sale of sexually explicit materials, products and devices associated with or used in a sexual practice or activity.	Sex shop	Shop, newsagent, registered pharmacist or video hire, where the primary use of these are concerned with: <ul style="list-style-type: none"> <li>• the sale, display or hire of printed or recorded matter (not of a sexually explicit nature); or</li> <li>• the sale or display of underwear or lingerie; or</li> <li>• the sale or display of an article or thing primarily concerned with or used in association with a medically recognised purpose.</li> </ul>
Agricultural supplies store	Premises used for the sale of agricultural products and supplies including agricultural chemicals and fertilisers, seeds, bulk veterinary supplies, farm clothing, saddlery, animal feed and irrigation materials.		Bulk landscape supplies, garden centre, outdoor sales wholesale nursery
Air services	Premises used for any of the following: <ul style="list-style-type: none"> <li>• the arrival and</li> </ul>	Airport, airstrip, helipad, public or private airfield	



Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>departure of aircraft; or</p> <ul style="list-style-type: none"> <li>• the housing, servicing, refuelling, maintenance and repair of aircraft; or</li> <li>• the assembly and dispersal of passengers or goods on or from an aircraft; or</li> <li>• any ancillary activities directly serving the needs of passengers and visitors to the use; or</li> <li>• associated training and education facilities; or</li> <li>• aviation facilities.</li> </ul>		
Animal husbandry	<p>Premises used for production of animals or animal products on either native or improved pastures or vegetation.</p> <p>The use includes ancillary yards, stables and temporary holding facilities and the repair and servicing of machinery.</p>	Cattle studs, grazing of livestock, non-feedlot dairying	Animal keeping, intensive animal industry, aquaculture, feedlots, piggeries
Animal keeping	<p>Premises used for boarding, breeding or training of animals.</p> <p>The use may include ancillary temporary or permanent holding facilities on the same site and ancillary repair and servicing of machinery.</p>	Aviaries, catteries, kennels, stables, wildlife refuge	Aquaculture, cattle studs, domestic pets, feedlots, grazing of livestock, non-feedlot dairying, piggeries, poultry meat and egg production, animal husbandry
Aquaculture	Premises used for the cultivation of aquatic animals or plants in a confined area that may require the provision of food either mechanically or by hand.	Pond farms, tank systems, hatcheries, raceway system, rack and line systems, sea cages	Intensive animal industry
Bar	Premises used primarily to sell liquor for consumption on the premises and that provides for a maximum capacity to seat sixty persons at any one time.		Club, hotel, nightclub entertainment facility, tavern

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	The use may include ancillary sale of food for consumption on the premises and entertainment activities.		
Brothel	Premises made available for prostitution by two or more prostitutes at the premises.  Note—definition from the <i>Prostitution Act 1999</i> .		Adult store, club, nightclub entertainment facility, shop
Bulk landscape supplies	Premises used for bulk storage and sale of landscaping and gardening supplies, which may include soil, gravel, potting mix and mulch, where the majority of materials sold from the premises are not in pre-packaged form.		Garden centre, outdoor sales, wholesale nursery
Caretaker's accommodation	A dwelling provided for a caretaker of a non-residential use on the same premises.		Dwelling house
Car wash	Premises primarily used for commercially cleaning motor vehicles by an automatic or partly automatic process.		Service station
Cemetery	Premises used for interment of bodies or ashes after death.	Burial ground, crypt, columbarium, lawn cemetery, pet cemetery, mausoleum	Crematorium, funeral parlour
Child care centre	Premises used for minding, education and care, but not residence, of children.	Crèche, early childhood centre, kindergarten, outside hours school care	Educational establishment, home based child care, family day care
Club	Premises used by persons associated for social, literary, political, sporting, athletic or other similar purposes for social interaction or entertainment.  The use may include the ancillary preparation and	Club house, guide and scout clubs, surf lifesaving club, RSL, bowls club	Hotel, nightclub entertainment facility, place of worship, theatre

<b>Column 1 Use</b>	<b>Column 2 Definition</b>	<b>Column 3 Examples include</b>	<b>Column 4 Does not include the following examples</b>
	service of food and drink.		
Community care centre	Premises used to provide social support where no accommodation is provided. Medical care may be provided but is ancillary to the primary use.	Disability support services, drop in centre, respite centre, integrated Indigenous support centre	Child care centre, family day care, home based child care, health care services, residential care facility
Community residence	Any dwelling used for accommodation for a maximum of six persons who require assistance or support with daily living needs, share communal spaces and who may be unrelated.  The use may include a resident support worker engaged or employed in the management of the residence.	Hospice	Dwelling house, dwelling unit, residential care facility, rooming accommodation, short-term accommodation
Community use	Premises used for providing artistic, social or cultural facilities and community support services to the public and may include the ancillary preparation and provision of food and drink.	Art gallery, community centre, community hall, library, museum	Cinema, club, hotel, nightclub entertainment facility, place of worship
Crematorium	Premises used for the cremation or aquamation of bodies.		Cemetery
Cropping	Premises used for growing plants or plant material for commercial purposes where dependent on the cultivation of soil.  The use includes harvesting and the storage and packing of produce and plants grown on the site and the ancillary repair and servicing of machinery used on the site.	Fruit, nut, vegetable and grain production, forestry for wood production, fodder and pasture production, plant fibre production, sugar cane growing, vineyard	Permanent plantations, intensive horticulture, rural industry
Detention facility	Premises used for the confinement of persons committed by a process of law.	Prison, detention centre	

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
Dual occupancy	<p>Premises containing two dwellings, each for a separate household, and consisting of:</p> <ul style="list-style-type: none"> <li>• a single lot, where neither dwelling is a secondary dwelling or</li> <li>• two lots sharing common property where one dwelling is located on each lot</li> </ul>	Duplex, two dwellings on a single lot (whether or not attached), two dwellings within one single community title scheme under the <i>Body Corporate and Community Management Act 1997</i> , two dwellings within the one body corporate to which the <i>Building Units and Group Title Act 1980</i> continues to apply	Dwelling house, multiple dwelling
Dwelling house	<p>A residential use of premises for one household that contains a single dwelling.</p> <p>The use includes out-buildings and works normally associated with a dwelling and may include a secondary dwelling.</p>		Caretaker's accommodation, dual occupancy, rooming accommodation, short-term accommodation, student accommodation, multiple dwelling
Dwelling unit	A single dwelling within a premises containing non-residential use(s).	"Shop-top" apartment	Caretaker's accommodation, dwelling house
Educational establishment	<p>Premises used for training and instruction designed to impart knowledge and develop skills.</p> <p>The use may include outside hours school care for students or on-site student accommodation.</p>	Pre-preparatory, preparatory and primary school, secondary school, special education, college, university, technical institute, outdoor education centres	Child care centre, home based child care, family day care
Emergency services	Premises used by government bodies or community organisations to provide essential emergency services or disaster management services including management support facilities for the protection of persons, property and the environment.	State emergency service facility, ambulance station, rural fire brigade, auxiliary fire and rescue station, urban fire and rescue station, police station, emergency management	Community use, hospital, residential care facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
		support facility, evacuation centres	
Environment facility	Facilities used for the conservation, interpretation and appreciation of areas of environmental, cultural or heritage value.	Nature-based attractions, walking tracks, seating, shelters, boardwalks, observation decks, bird hides	
Extractive industry	Premises used for the extraction and processing of extractive resources and associated activities, including their transportation to market.  Note—definition from State Planning Policy 2/07.	Quarry	
Food and drink outlet	Premises used for preparation and sale of food and drink to the public for consumption on or off the site. The use may include the ancillary sale of liquor for consumption on site.	Bistro, café, coffee shop, drive-through facility, kiosk, milk bar, restaurant, snack bar, take-away, tea room	Bar, club, hotel, shop, theatre, nightclub entertainment facility
Function facility	Premises used for conducting receptions or functions that may include the preparation and provision of food and liquor for consumption on site.	Conference centre, reception centre	Community use, hotel
Funeral parlour	Premises used to arrange and conduct funerals, memorial services and the like, but do not include burial or cremation.  The use includes a mortuary and the storage and preparation of bodies for burial or cremation.		Cemetery, crematorium, place of worship
Garden centre	Premises used primarily for the sale of plants and may include sale of gardening and landscape products and supplies where these are sold mainly in pre-packaged	Retail plant nursery	Bulk landscape supplies, wholesale nursery, outdoor sales

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>form.</p> <p>The use may include an ancillary food and drink outlet.</p>		
Hardware and trade supplies	Premises used for the sale, display or hire of hardware and trade supplies including household fixtures, timber, tools, paint, wallpaper, plumbing supplies and the like.		Shop, showroom, outdoor sales and warehouse
Health care services	Premises for medical, paramedical, alternative therapies and general health care and treatment of persons that involves no overnight accommodation.	Dental clinics, medical centres, natural medicine practices, nursing services, physiotherapy clinic	Community care centre, hospital
High impact industry	<p>Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes:</p> <ul style="list-style-type: none"> <li>• potential for significant impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise; or</li> <li>• potential for significant offsite impacts in the event of fire, explosion or toxic release; or</li> <li>• generates high traffic flows in the context of the locality or the road network; or</li> <li>• generates a significant demand on the local infrastructure network; or</li> <li>• the use may involve night time and outdoor activities; or</li> </ul>	<p>Abattoirs, concrete batching plant, boiler making and engineering and metal foundry</p> <p>Note—additional examples may be shown in SC1.1.2.1 industry thresholds.</p>	Tanneries, rendering plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers, service industry, low impact industry, medium impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<ul style="list-style-type: none"> <li>onsite controls are required for emissions and dangerous goods risks.</li> </ul>		
Home based business	A dwelling used for a business activity where subordinate to the residential use.	Bed and breakfast, home office, home based child care	Hobby, office, shop, warehouse, transport depot
Hospital	<p>Premises used for medical or surgical care or treatment of patients whether or not involving overnight accommodation.</p> <p>The use may include ancillary accommodation for employees and ancillary activities directly serving the needs of patients and visitors.</p>		Health care services, residential care facility
Hotel	<p>Premises used primarily to sell liquor for consumption.</p> <p>The use may include short-term accommodation, dining and entertainment activities and facilities.</p>	Bar, pub, tavern	Nightclub entertainment facility
Indoor sport and recreation	Premises used for leisure, sport or recreation conducted wholly or mainly indoors.	Amusement parlour, bowling alley, gymnasium, squash courts, enclosed tennis courts	Cinema, hotel, nightclub entertainment facility, theatre
Intensive animal industry	<p>Premises used for the intensive production of animals or animal products in an enclosure that requires the provision of food and water either mechanically or by hand.</p> <p>The use includes the ancillary storage and packing of feed and produce.</p>	Feedlots, piggeries, poultry and egg production	Animal husbandry, aquaculture, drought feeding, milking sheds, shearing sheds, weaning pens
Intensive horticulture	Premises used for the intensive production of plants or plant material on imported media and	Greenhouse and shade house plant production, hydroponic farms,	Wholesale nursery

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>located within a building or structure or where outdoors, artificial lights or containers are used.</p> <p>The use includes the storage and packing of produce and plants grown on the subject site.</p>	mushroom farms	
Landing	A structure for mooring, launching, storage and retrieval of vessels where passengers embark and disembark.	Boat ramp, jetty, pontoon	Marina
Low impact industry	<p>Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes:</p> <ul style="list-style-type: none"> <li>• negligible impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise; or</li> <li>• minimal traffic generation and heavy-vehicle usage; or</li> <li>• demands imposed upon the local infrastructure network consistent with surrounding uses; or</li> <li>• the use generally operates during the day (e.g. 7am to 6pm); or</li> <li>• offsite impacts from storage of dangerous goods are negligible; or</li> <li>• the use is primarily undertaken indoors.</li> </ul>	<p>Repairing motor vehicles, fitting and turning workshop</p> <p>Note—additional examples may be shown in SC1.1.2.1 industry thresholds.</p>	<p>Panel beating, spray painting or surface coating, tyre recycling, drum re-conditioning, wooden and laminated product manufacturing, service industry, medium impact industry, high impact industry, special industry</p>
Major electricity infrastructure	All aspects of development for either the transmission grid or electricity supply networks as defined under the <i>Electricity Act</i>	Power lines greater than 66kV	Minor electricity infrastructure, substation



Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>1994.</p> <p>The use may include ancillary telecommunication facilities.</p>		
Major sport, recreation and entertainment facility	Premises with large scale built facilities designed to cater for large scale events including major sporting, recreation, conference and entertainment events.	Convention and exhibition centres, entertainment centres, sports stadiums, horse racing	Indoor sport and recreation, local sporting field, motor sport, park, outdoor sport and recreation
Marine industry	<p>Premises used for waterfront based marine industries involved in any activity relating to the manufacturing, storage, repair or servicing of vessels and maritime infrastructure.</p> <p>The use may include the provision of fuel and disposal of waste.</p>	Boat building, boat storage, dry dock	Marina
Market	<p>Premises used for the sale of goods to the public on a regular basis, where goods are primarily sold from temporary structures such as stalls, booths or trestle tables.</p> <p>The use may include entertainment provided for the enjoyment of customers.</p>	Flea market, farmers market, car boot sales	Shop, roadside stall
Medium impact industry	<p>Premises used for industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes:</p> <ul style="list-style-type: none"> <li>• potential for noticeable impacts on sensitive land uses due to offsite emissions including</li> </ul>	<p>Spray painting and surface coating, wooden and laminated product manufacturing (including cabinet making, joining, timber truss making or wood working)</p> <p>Note—additional examples may be shown in SC1.1.2.1 industry thresholds.</p>	Concrete batching, tyre manufacturing and retreading, metal recovery (involving a fragmentiser), textile manufacture, chemically treating timber and plastic product manufacture, service industry, low impact industry, high impact industry, special industry

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>aerosol, fume, particle, smoke, odour and noise; or</p> <ul style="list-style-type: none"> <li>• potential for noticeable offsite impacts in the event of fire, explosion or toxic release; or</li> <li>• generates high traffic flows in the context of the locality or the road network; or</li> <li>• generates an elevated demand on the local infrastructure network; or</li> <li>• onsite controls are required for emissions and dangerous goods risks; or</li> <li>• the use is primarily undertaken indoors; or</li> <li>• evening or night activities are undertaken indoors and not outdoors.</li> </ul>		
Motor sport facility	Premises used for organised or recreational motor sports whether on or off-road, which may include permanent, temporary or informal provision for spectators and other supporting uses.	Go-karting, lawn mower race tracks, trail bike parks, 4WD and all terrain parks, motocross tracks, off road motorcycle facility, motorcycle or car race tracks	Major sport, recreation and entertainment facility, outdoor sport and recreation
Multiple dwelling	Premises containing three or more dwellings for separate households.	Apartments, flats, units, townhouses, row housing, triplex	Rooming accommodation, dual occupancy, duplex, granny flat, residential care facility, retirement facility
Nature-based tourism	The use of land or premises for a tourism activity, including tourist and visitor short-term accommodation, that is intended for the conservation, interpretation and appreciation of areas of environmental, cultural or heritage value, local ecosystem and attributes	Environmentally responsible accommodation facilities including lodges, cabins, huts and tented camps	Environment facility

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>of the natural environment.</p> <p>Nature-based tourism activities typically:</p> <ul style="list-style-type: none"> <li>• maintain a nature based focus or product; or</li> <li>• promote environmental awareness, education and conservation; or</li> <li>• carry out sustainable practices.</li> </ul>		
Nightclub entertainment facility	<p>Premises used to provide entertainment, which may include cabaret, dancing and music.</p> <p>The use generally includes the sale of liquor and food for consumption on site.</p>		Club, hotel, tavern, pub, indoor sport and recreation, theatre, concert hall
Non-resident workforce accommodation	<p>Premises used to provide accommodation for non-resident workers.</p> <p>The use may include provision of recreational and entertainment facilities for the exclusive use of residents and their visitors.</p>	Contractor's camp, construction camp, single person's quarters, temporary workers' accommodation	Relocatable home park, short-term accommodation, tourist park
Office	<p>Premises used for an administrative, secretarial or management service or the practice of a profession, where no goods or materials are made, sold or hired and where the principal activity provides for the following:</p> <ul style="list-style-type: none"> <li>• business or professional advice; or</li> <li>• service of goods that are not physically on the premises; or</li> <li>• office based administrative functions of an organisation.</li> </ul>	Bank, real estate agent, administration building	Home based business, home office, shop, outdoor sales
Outdoor sales	Premises used for the display, sale, hire or lease of products where	Agricultural machinery sales yard, motor vehicles	Bulk landscape supplies, market

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	the use is conducted wholly or predominantly outdoors and may include construction, industrial or farm plant and equipment, vehicles, boats and caravans. The use may include ancillary repair or servicing activities and sale or fitting of accessories.	sales yard	
Outdoor sport and recreation	Premises used for a recreation or sport activity that is carried on outside a building and requires areas of open space and may include ancillary works necessary for safety and sustainability.  The use may include ancillary food and drink outlet(s) and the provision of ancillary facilities or amenities conducted indoors such as changing rooms and storage facilities.	Driving range, golf course, swimming pool, tennis courts, football ground, cricket oval	Major sport, recreation and entertainment facility, motor sport, park, community use
Outstation	Premises used for cultural and/or recreational activities undertaken by Aboriginal and Torres Strait Islander people.  The use provides for intermittent short stay and/or long term camping.  The use may involve permanent low scale built infrastructure.	Indigenous camp site	Dwelling house, hostel, multiple dwelling, relocatable home park, short term accommodation, tourist park
Park	Premises accessible to the public generally for free sport, recreation and leisure, and may be used for community events or other community activities.  Facilities may include	Urban common	Tourist attraction, outdoor sport and recreation

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	children's playground equipment, informal sports fields and ancillary vehicle parking and other public conveniences.		
Parking station	Premises used for parking vehicles where the parking is not ancillary to another use.	Car park, 'park and ride', bicycle parking	
Permanent plantation	Premises used for growing plants not intended to be harvested.	Permanent plantations for carbon sequestration, biodiversity or natural resource management	Forestry for wood production, biofuel production
Place of worship	Premises used by an organised group for worship and religious activities.  The use may include ancillary facilities for social, educational and associated charitable activities.	Church, chapel, mosque, synagogue, temple	Community use, child care centre, funeral parlour, crematorium
Port services	Premises used for the following: <ul style="list-style-type: none"> <li>• the arrival and departure of vessels; or</li> <li>• the movement of passengers or goods on or off vessels; or</li> <li>• any ancillary activities directly serving the needs of passengers and visitors or the housing, servicing, maintenance and repair of vessels.</li> </ul>	Marina, ferry terminal	Landing
Relocatable home park	Premises used for relocatable dwellings (whether they are permanently located or not) that provides long-term residential accommodation.  The use may include a manager's residence and office, ancillary food and drink outlet, kiosk,		Tourist park

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	amenity buildings and the provision of recreation facilities for the exclusive use of residents.		
Renewable energy facility	Premises used for the generation of electricity or energy from renewable (naturally reoccurring) sources.	Solar farm, wind farm, tidal power	Wind turbine or solar panels supplying energy to domestic or rural activities on the same site
Research and technology industry	Premises used for innovative and emerging technological industries involved in research design, manufacture, assembly, testing, maintenance and storage of machinery, equipment and components.  The use may include emerging industries such as energy, aerospace, and biotechnology.	Aeronautical engineering, computer component manufacturing, medical laboratories, computer server facility	
Residential care facility	A residential use of premises for supervised accommodation where the use includes medical and other support facilities for residents who cannot live independently and require regular nursing or personal care.	Convalescent home, nursing home	Community residence, dwelling house, dual occupancy, hospital, multiple dwelling, retirement facility
Resort complex	Premises used for tourist and visitor short-term accommodation that include integrated leisure facilities including: <ul style="list-style-type: none"> <li>• restaurants and bars; or</li> <li>• meeting and function facilities; or</li> <li>• sporting and fitness facilities; or</li> <li>• staff accommodation; or</li> <li>• transport facilities directly associated with the tourist facility such as a ferry terminal and air services.</li> </ul>	Island resort	
Retirement	A residential use of	Retirement village	Residential care

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
facility	<p>premises for an integrated community and specifically built and designed for older people.</p> <p>The use includes independent living units and may include serviced units where residents require some support with health care and daily living needs.</p> <p>The use may also include a manager's residence and office, food and drink outlet, amenity buildings, communal facilities and accommodation for staff.</p>		facility
Roadside stall	Premises used for the roadside display and sale of goods in rural areas.	Produce stall	Market
Rooming accommodation	<p>Premises used for the accommodation of more than one household where each resident:</p> <ul style="list-style-type: none"> <li>• has a right to occupy one or more rooms;</li> <li>• does not have a right to occupy the whole of the premises in which the rooms are situated;</li> <li>• does not occupy a self-contained unit; and</li> <li>• shares communal rooms, or communal facilities outside of the resident's room, with one or more of the other residents.</li> </ul> <p>It may include:</p> <ul style="list-style-type: none"> <li>• rooms not in the same building on site; or</li> <li>• provision of a food or other service; or</li> <li>• on site management or staff and associated accommodation.</li> </ul>	Boarding house, hostel, monastery, off-site student accommodation	Hospice, community residence, dwelling house, short-term accommodation, multiple dwelling
Rural industry	Premises used for storage, processing and packaging of products	Packing shed	Intensive animal husbandry, intensive horticulture,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>from a rural use.</p> <p>The use includes processing, packaging and sale of products produced as a result of a rural use where these activities are ancillary to a rural use on or adjacent to the site.</p>		<p>roadside stall, wholesale nursery, winery, abattoir, agricultural supply store</p>
Rural workers' accommodation	Any premises used as quarters for staff employed in the use of land for rural purposes, such as agriculture, intensive animal husbandry and forestry, conducted on a lot in the same ownership whether or not such quarters are self-contained.	Farm workers' accommodation	Short-term accommodation, caretaker's accommodation, dual occupancy, dwelling house, nature or rural based tourist accommodation, non-resident workforce accommodation, multiple dwellings
Sales office	<p>The temporary use of premises for displaying a land parcel or buildings that can be built for sale or can be won as a prize.</p> <p>The use may include a caravan or relocatable dwelling or structure.</p>	Display dwelling	Bank, office
Service industry	Premises used for industrial activities that have no external air, noise or odour emissions from the site and can be suitably located with other non-industrial uses.	Audio visual equipment repair, film processing, bicycle repairs, clock and watch repairs, computer repairs, dry cleaning, hand engraving, jewellery making, laundromat, locksmith, picture framing, shoe repairs, tailor	Small engine mechanical repair workshop, cabinet making, shop fitting, sign writing, tyre depot, low impact industry, medium impact, high impact industry, special industry
Service station	<p>Premises used for the sale of fuel including petrol, liquid petroleum gas, automotive distillate and alternative fuels.</p> <p>The use may include, where ancillary, a shop, food and drink outlet,</p>		Car wash



Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	maintenance, repair servicing and washing of vehicles, the hire of trailers, and supply of compressed air.		
Shop	Premises used for the display, sale or hire of goods or the provision of personal services or betting to the public.	Hairdresser, liquor store, department store, discount department store, discount variety stores, betting agencies, supermarket, corner store	Adult store, food and drink outlet, showroom, market
Shopping centre	Premises comprising two or more individual tenancies that is comprised primarily of shops, and that function as an integrated complex.		
Short-term accommodation	<p>Premises used to provide short-term accommodation for tourists or travellers for a temporary period of time (typically not exceeding three consecutive months) and may be self-contained.</p> <p>The use may include a manager's residence and office and the provision of recreation facilities for the exclusive use of visitors.</p>	Motel, backpackers accommodation, cabins, serviced apartments, hotel, farm stay	Hostel, rooming accommodation, tourist park
Showroom	<p>Premises used primarily for the sale of goods of a related product line that are of a size, shape or weight that requires:</p> <ul style="list-style-type: none"> <li>• a large area for handling, display or storage; and</li> <li>• direct vehicle access to the building by members of the public for loading and unloading items purchased or hired.</li> </ul>	Bulky goods sales, motor vehicles sales showroom, bulk stationary supplies	Food and drink outlet, shop, outdoor sales
Special industry	Premises used for	Tanneries, rendering	Low impact industry,

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>industrial activities that include the manufacturing, producing, processing, repairing, altering, recycling, storing, distributing, transferring or treating of products and have one or more of the following attributes:</p> <ul style="list-style-type: none"> <li>• potential for extreme impacts on sensitive land uses due to offsite emissions including aerosol, fume, particle, smoke, odour and noise; or</li> <li>• potential for extreme offsite impacts in the event of fire, explosion or toxic release; or</li> <li>• onsite controls are required for emissions and dangerous goods risks; or</li> <li>• the use generally involves night time and outdoor activities; or</li> <li>• the use may involve the storage and handling of large volumes of dangerous goods; or</li> <li>• requires significant separation from non-industrial uses.</li> </ul>	<p>plants, oil refineries, waste incineration, manufacturing or storing explosives, power plants, manufacturing fertilisers</p> <p>Note—additional examples may be shown in SC1.1.2.1 industry thresholds.</p>	<p>medium impact industry, high impact industry, service industry</p>
Substation	<p>Premises forming part of a transmission grid or supply network under the <i>Electricity Act 1994</i>, and used for:</p> <ul style="list-style-type: none"> <li>• converting or transforming electrical energy from one voltage to another; or</li> <li>• regulating voltage in an electrical circuit; or</li> <li>• controlling electrical circuits; or</li> <li>• switching electrical current between circuits; or</li> <li>• a switchyard; or</li> <li>• communication facilities for “operating</li> </ul>	Substations, switching yards	Major electricity infrastructure, minor electricity infrastructure

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	works” as defined under the <i>Electricity Act 1994</i> or for workforce operational and safety communications.		
Telecommunications facility	Premises used for systems that carry communications and signals by means of radio, including guided or unguided electromagnetic energy, whether such facility is manned or remotely controlled.	Telecommunication tower, broadcasting station, television station	Aviation facility, “low-impact telecommunications facility” as defined under the <i>Telecommunications Act 1997</i>
Theatre	<p>Premises used for providing film, live entertainment or music to the public and may include provision of food and liquor for consumption on the site.</p> <p>The use may include the production of film or music, including associated ancillary facilities, which are completely complimentary to the production, such as sound stages, wardrobe and laundry facilities, makeup facilities, set construction workshops, editing and post-production facilities.</p>	Cinema, movie house, concert hall, dance hall, film studio, music recording studio	Community hall, hotel, indoor sport and recreation facility, temporary film studio
Tourist attraction	<p>Premises used for providing on- site entertainment, recreation or similar facilities for the general public.</p> <p>The use may include provision of food and drink for consumption on site.</p>	Theme park, zoo	Hotel, major sport, recreation and entertainment facility, nightclub entertainment facility
Tourist park	Premises used to provide for accommodation in caravans, self-contained cabins, tents and similar structures for the public for short term holiday	Camping ground, caravan park, holiday cabins	Relocatable home park, tourist attraction, short-term accommodation, non-resident workforce

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	<p>purposes.</p> <p>The use may include, where ancillary, a manager's residence and office, kiosk, amenity buildings, food and drink outlet, or the provision of recreation facilities for the use of occupants of the tourist park and their visitors, and accommodation for staff.</p>		accommodation
Transport depot	Premises used for the storage, for commercial or public purposes, of more than one motor vehicle. The use includes premises for the storage of taxis, buses, trucks, heavy machinery and uses of a like nature. The term may include the ancillary servicing, repair and cleaning of vehicles stored on the premises.	Contractor's depot, bus depot, truck yard, heavy machinery yard	Home based business, warehouse, low impact industry, service industry
Utility installation	<p>Premises used to provide the public with the following services:</p> <ul style="list-style-type: none"> <li>• supply or treatment of water, hydraulic power or gas; or</li> <li>• sewerage, drainage or stormwater services; or</li> <li>• transport services including road, rail or water; or</li> <li>• waste management facilities; or</li> <li>• network infrastructure.</li> </ul> <p>The use includes maintenance and storage depots and other facilities for the operation of the use.</p>	Sewerage treatment plant, mail depot, pumping station, water treatment plant	Telecommunications tower, major electricity infrastructure, minor electricity infrastructure, substation, renewable energy facility, transport depot
Veterinary services	Premises used for veterinary care, surgery and treatment of animals that may include provision for the short-term accommodation of the animals on the		Animal keeping

Column 1 Use	Column 2 Definition	Column 3 Examples include	Column 4 Does not include the following examples
	premises.		
Warehouse	<p>Premises used for the storage and distribution of goods, whether or not in a building, including self-storage facilities or storage yards.</p> <p>The use may include sale of goods by wholesale where ancillary to storage.</p> <p>The use does not include retail sales from the premises or industrial uses.</p>	Self-storage sheds	Hardware and trade supplies, outdoor sales, showroom, shop
Wholesale nursery	<p>Premises used for the sale of plants, but not to the general public, where the plants are grown on or adjacent to the site.</p> <p>The use may include sale of gardening materials where these are ancillary to the primary use.</p>		Bulk landscape supplies, garden centre
Winery	Premises used for manufacturing of wine, which may include the sale of wine manufactured on site.		Rural industry

## SC1.1.1 Defined activity groups

- (1) Defined use terms listed in Table SC1.1.2 (Defined uses) are able to be clustered into activity groups.
- (2) An activity group listed in Table SC1.1.1.2 (Defined activity groups) column 1 clusters the defined use terms listed in column 2.
- (3) An activity group is able to be referenced in Part 5 (tables of assessment).
- (4) The activity groups listed here are the defined activity groups for the purpose of the planning scheme.

**Table SC 1.1.1.1 Index of defined activity groups**

Accommodation activities	Entertainment activities	Rural activities
Business activities	Industry activities	Other activities
Community activities	Recreation activities	

**Table SC 1.1.1.2 Defined activity groups**

Column 1 Activity group	Column 2 Use Terms
Accommodation activities	Caretaker's accommodation Community residence Dual occupancy Dwelling house Dwelling unit Home based business Multiple dwelling Nature-based tourism Non-resident workforce accommodation Relocatable home park Residential care facility Resort complex Retirement facility Rooming accommodation Rural workers' accommodation Short term accommodation Tourist park
Business activities	Adult store Agricultural supplies store Brothel Bulk landscape supplies Car wash Food and drink outlet Garden centre Hardware trade supplies Market Office Outdoor sales Sales office Service station Shop Shopping centre Showroom Veterinary services

<b>Column 1 Activity group</b>	<b>Column 2 Use Terms</b>
Community activities	Cemetery Child care centre Community care centre Community use Crematorium Educational; establishment Emergency services Funeral parlour Health care services Hospital Outstation Place of worship
Entertainment activities	Bar Club Function facility Hotel Nightclub entertainment facility Theatre Tourist attraction
Industry activities	Extractive industries High impact industry Low impact industry Marine industry Medium impact industry Research and technology industry Service industry Special industry Warehouse
Recreation activities	Environment facility Indoor sport and recreation Major sport, recreation and entertainment facility Motor sports facility Outdoor sport and recreation Park
Rural activities	Animal husbandry Animal keeping Aquaculture Cropping Intensive animal industry Intensive horticulture Permanent plantation Roadside stall Rural industry Wholesale nursery Winery
Other activities	Air services Detention facility Landing Major electrical infrastructure Parking station Port services Renewable energy facility Substation Telecommunications facility Transport depot Utility installation

## SC1.1.2 Industry thresholds

The industry thresholds listed below are to be used in conjunction with the defined uses listed in Table SC1.1.2 (Defined use terms) - low impact industry, medium impact industry, high impact industry and special industry.

**Table SC 1.1.2.1 Industry thresholds**

Column 1 Use Terms	Column 2 Additional examples include
High impact industry	<ol style="list-style-type: none"> <li>(1) Metal foundry producing 10 tonnes or greater of metal castings per annum;</li> <li>(2) Boiler making or engineering works producing 10 000 tonnes or greater of metal product per annum;</li> <li>(3) Major hazard facility for the storage and distribution of dangerous goods not involving manufacturing processes;</li> <li>(4) Scrap metal yard including a fragmentiser;</li> <li>(5) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, greater than 200 tonnes per annum;</li> <li>(6) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, greater than 200 tonnes per annum;</li> <li>(7) Vegetable oil or oilseed processing in works with a design production capacity of greater than 1000 tonnes per annum;</li> <li>(8) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum;</li> <li>(9) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, 250 tonnes or greater per annum;</li> <li>(10) Sawmilling, wood chipping and kiln drying timber and logs, producing greater than 500 tonnes per annum;</li> <li>(11) Manufacturing or processing plaster, producing greater than 5000 tonnes per annum;</li> <li>(12) Enamelling workshop using 15 000 litres or greater of enamel per annum;</li> <li>(13) Galvanising works using 100 tonnes or greater of zinc per annum;</li> <li>(14) Anodising or electroplating workshop where tank area is 400 square metres or greater;</li> <li>(15) Powder coating workshop using 500 tonnes or greater of coating per annum;</li> <li>(16) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using 20 000 litres or greater of paint per annum;</li> <li>(17) Concrete batching and producing concrete products;</li> <li>(18) Treating timber for preservation using chemicals including copper, chromium, arsenic, borax and creosote;</li> <li>(19) Manufacturing soil conditioners by receiving, blending, storing, processing, drying or composting organic material or organic waste, including animal manures, sewage, septic sludge and domestic waste;</li> <li>(20) Manufacturing fibreglass pools, tanks and boats;</li> <li>(21) Manufacturing, fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic</li> </ol>



Column 1 Use Terms	Column 2 Additional examples include
	<p>products, 5 tonnes or greater per annum (except fibreglass boats, tanks and swimming pools);</p> <p>(22) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, 10 000 tonnes or greater per annum;</p> <p>(23) Manufacturing tyres, asbestos products, asphalt, cement, glass or glass fibre, mineral wool or ceramic fibre;</p> <p>(24) Abattoir;</p> <p>(25) Recycling chemicals, oils or solvents;</p> <p>(26) Waste disposal facility (other than waste incinerator);</p> <p>(27) Recycling, storing or reprocessing regulated waste;</p> <p>(28) Manufacturing batteries;</p> <p>(29) Manufacturing wooden products including cabinet making, joinery, wood working, producing greater than 500 tonnes per annum;</p> <p>(30) Abrasive blasting facility using 10 tonnes or greater of abrasive material per annum;</p> <p>(31) Crematoria;</p> <p>(32) Glass fibre manufacture producing 200 tonnes or greater per annum; and</p> <p>(33) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.</p>
Low impact industry	<p>(1) Repairing and servicing motor vehicles, including mechanical components, radiators, electrical components, wheel alignments, exhausts, tyres, suspension or air conditioning, not including spray painting;</p> <p>(2) Repairing and servicing lawn mowers and outboard engines;</p> <p>(3) Fitting and turning workshop;</p> <p>(4) Assembling or fabricating products from sheet metal or welding steel, producing less than 10 tonnes a year and not including spray painting;</p> <p>(5) Assembling wood products not involving cutting, routing, sanding or spray painting; and</p> <p>(6) Dismantling automotive or mechanical equipment, not including debonding brake or clutch components.</p>
Medium impact industry	<p>(1) Metal foundry producing less than 10 tonnes of metal castings per annum;</p> <p>(2) Boiler making or engineering works producing less than 10 000 tonnes of metal product per annum;</p> <p>(3) Facility, goods yard or warehouse for the storage and distribution of dangerous goods not involving manufacturing processes and not a major hazard facility under the <i>Work Health and Safety Act 2011</i>;</p> <p>(4) Abrasive blasting facility using less than 10 tonnes of abrasive material per annum;</p> <p>(5) Enamelling workshop using less than 15 000 litres of enamel per annum;</p> <p>(6) Galvanising works using less than 100 tonnes of zinc per annum;</p> <p>(7) Anodising or electroplating workshop where tank area is less than 400 square metres;</p> <p>(8) Powder coating workshop using less than 500 tonnes of coating per annum;</p> <p>(9) Spray painting workshop (including spray painting vehicles, plant, equipment or boats) using less than 20</p>

Column 1 Use Terms	Column 2 Additional examples include
	<p>000 litres of paint per annum;</p> <p>(10) Scrap metal yard (not including a fragmentiser), dismantling automotive or mechanical equipment including debonding brake or clutch components;</p> <p>(11) Manufacturing clay or ceramic products including bricks, tiles, pipes and pottery goods, less than 200 tonnes per annum;</p> <p>(12) Processing, smoking, drying, curing, milling, bottling or canning food, beverages or pet food, less than 200 tonnes per annum;</p> <p>(13) Vegetable oil or oilseed processing in works with a design production capacity of less than 1000 tonnes per annum;</p> <p>(14) Manufacturing wooden products including cabinet making, joinery, wood working, producing less than 500 tonnes per annum;</p> <p>(15) Manufacturing medium density fibreboard, chipboard, particle board, plywood, laminated board or wood veneer products, less than 250 tonnes per annum;</p> <p>(16) Sawmilling, wood chipping and kiln drying timber and logs, producing less than 500 tonnes per annum;</p> <p>(17) Recycling and reprocessing batteries;</p> <p>(18) Repairing or maintaining boats;</p> <p>(19) Manufacturing substrate for mushroom growing;</p> <p>(20) Manufacturing or processing plaster, producing less than 5000 tonnes per annum;</p> <p>(21) Recycling or reprocessing tyres including retreading;</p> <p>(22) Printing advertising material, magazines, newspapers, packaging and stationery;</p> <p>(23) Transport depot, distribution centre, contractors depot and storage yard;</p> <p>(24) Manufacturing fibreglass, foam plastic, composite plastic or rigid fibre-reinforced plastic or plastic products, less than 5 tonnes per annum (except fibreglass boats, tanks and swimming pools);</p> <p>(25) Manufacturing PET, PETE, polypropylene and polystyrene plastic or plastic products, less than 10 000 tonnes per annum;</p> <p>(26) Reconditioning metal or plastic drums;</p> <p>(27) Glass fibre manufacture less than 200 tonnes per annum; and</p> <p>(28) Manufacturing glass or glass products, where not glass fibre, less than 250 tonnes per annum.</p>
Special industry	<p>(1) Oil refining or processing;</p> <p>(2) Producing, refining or processing gas or fuel gas;</p> <p>(3) Distilling alcohol in works producing greater than 2 500 litres per annum;</p> <p>(4) Power station;</p> <p>(5) Producing, quenching, cutting, crushing or grading coke;</p> <p>(6) Waste incinerator;</p> <p>(7) Sugar milling or refining;</p> <p>(8) Pulp or paper manufacturing;</p> <p>(9) Tobacco processing;</p> <p>(10) Tannery or works for curing animal skins, hides or finishing leather;</p> <p>(11) Textile manufacturing, including carpet manufacturing, wool scouring or carbonising, cotton milling, or textile</p>

Column 1 Use Terms	Column 2 Additional examples include
	bleaching, dyeing or finishing; (12) Rendering plant; (13) Manufacturing chemicals, poisons and explosives; (14) Manufacturing fertilisers involving ammonia; and (15) Manufacturing polyvinyl chloride plastic.

## SC1.2 Administrative terms

- (1) Administrative terms and definitions assist with the interpretation of the planning scheme but do not have a meaning in relation to a use.
- (2) An administrative term listed in Table SC1.2.2 (Administrative definitions) column 1 has the meaning set out beside that administrative term in column 2 under the heading.
- (3) The administrative terms and definitions listed here are the terms and definitions for the purpose of the planning scheme.

**Table SC 1.2.1 Index of administrative definitions**

Adjoining premises	Demand unit	Non-resident workers
Advertising device	Development footprint	Obstacle limitation surfaces
Affordable housing	Display home	Outermost projection
Agricultural land	Domestic outbuilding	Planning assumptions
Annual exceedance probability (AEP)	Dune crest height	Plot ratio
Area of environmental significance	Dwelling	Projection area(s)
Average width	Flood hazard area	Secondary dwelling
Base date	Gross floor area	Sensitive use
Basement	Gross leasable area	Service catchment
Boundary clearance	Ground level	Setback
Building height	Hazardous material	Significant attributes
Bushfire prone area	Heritage place	Site
Coastal dependant development	Household	Site cover
Coastal hazard area	Landslide hazard	Storey
Coastal environment work	Maritime development	Stream protection zone
Communal open space	Minor building work	Temporary development
Community infrastructure	Minor electricity infrastructure	Total use area
Corner Store	Minor marine development	Transit oriented development
Defined flood event (DFE)	Multi-unit uses	Ultimate development
Defined flood level (DFL)	Net developable area	Urban area
Defined storm tide event (DSTE)	Netserv plan	Urban purposes
		Urban services

**Table SC 1.2.2 Administrative definitions**

Column 1 Term	Column 2 Definition
Adjoining premises	Premises that share all or part of a measurable common boundary.
	(Source—Queensland Planning Provisions version 4.0)

Column 1 Term	Column 2 Definition
Advertising device	<p>Any permanent structure, device, sign or the like intended for advertising purposes. It includes any framework, supporting structure or building feature that is provided exclusively or mainly as part of the advertisement.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Affordable housing	<p>Housing that is appropriate to the needs of households with low to moderate incomes.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Agricultural land	<p>An area that is identified as agricultural land classification class A, agricultural land classification class B, state important agricultural land or locally important agricultural land on the Agricultural land overlay.</p>
Annual exceedance probability (AEP)	<p>The likelihood of occurrence of a flood of a given size or larger in any one year, usually expressed as a percentage.</p> <p>Editor's Note—for example, if a peak flood discharge of 500m<sup>3</sup>/second has an AEP of five percent; it means that there is a five percent risk, that is the probability of 0.05 or a likelihood of one in twenty, of a peak flood discharge of 500m<sup>3</sup>/second or larger occurring in any one year.</p> <p>Note—the AEP of a flood event gives no indication of when a flood of that size will occur next.</p> <p>(Source—State Planning Policy July 2014)</p>
Area of environmental significance	<p>An area that is:</p> <p>(a) identified as a Matter of local or state environmental significance on:</p> <p>(i) Overlay map - ES - 01:29 (Environmental significance overlay); or</p> <p>(ii) Overlay map - WW1 - 01:29 (Waterways and wetlands overlay); or</p> <p>(b) if not identified on map (i) or (ii) above, an area of land affected by a waterway stream protection zone buffer as detailed in Table 8.2.12.3.4 (Waterways and wetland overlay code).</p>
Average width	<p>In regard to a lot, the distance between the midpoints of the side boundaries of the lot.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Base date	<p>The date from which a local government has estimated its projected infrastructure demands and costs.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Basement	<p>A space that is situated between one floor level and the floor level next below where no part of the space projects more than one metre above ground level.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Boundary clearance	<p>The shortest distance from the outermost projection of a structural part of the building or structure to the property boundary, including:</p> <p>(a) if the projection is a roof and there is a fascia—the outside face of the fascia; or</p> <p>(b) if the projection is a roof and there is no fascia—the roof</p>

Column 1 Term	Column 2 Definition
	<p>structure. The term does not include rainwater fittings or ornamental or architectural attachments.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Building height	<p>If specified:</p> <p>(a) in meters, the vertical distance between the ground level and the highest point of the building roof (apex) or parapet at any point, but not including load-bearing antenna, aerial, chimney, flagpole or the like; or</p> <p>(b) in storeys, the number of storeys above ground level; or</p> <p>(c) in both metres and storeys, both (a) and (b) apply.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Bushfire prone area	<p>An area that is:</p> <p>(a) identified as medium, high or very high risk on Overlay map - BH - 01:29 (Bushfire hazard overlay); or</p> <p>(b) if not identified on the Bushfire hazard overlay map, an area of land with a medium, high or very high risk on the relevant State mapping.</p>
Coastal dependent development	<p>Development that requires land adjoining the foreshore and access to tidal water to function. The term does not include residential development, waste management facilities (landfills, sewerage treatment plants) or transport infrastructure (other than for access to the coast). Coastal-dependant development may include:</p> <p>(a) industrial and commercial facilities such as ports, harbours and navigation channels and facilities, aquaculture involving marine species, desalination plants, tidal generators, erosion control structures and beach nourishment ; or</p> <p>(b) tourism facilities for marine (boating) purposes or that are part of an integrated development proposal incorporating a marina.</p> <p>(Source—State Planning Policy July 2014)</p>
Coastal hazard area	<p>An area that is:</p> <p>(a) identified as medium or high hazard area on Overlay map - CP1 - 01:14 (Coastal environment overlay: Storm tide inundation); or</p> <p>(b) identified as coastal erosion subcategory or permanent inundation due to seal level rise at 2100 sub category on Overlay map - CP2 - 01:14 (Coastal environment overlay: Erosion prone areas and permanent inundation); or</p> <p>(c) if not identified on the Coastal environment overlay maps, an area of land affected by the Defined Storm Tide Event (DSTE).</p>
Coastal environment work	<p>Any permanent or periodic work undertaken primarily to manage the impacts of coastal hazards, including altering physical coastal processes such as sediment transport.</p> <p>(Source—State Planning Policy July 2014)</p>
Communal open space	<p>Common outdoor open space which is accessible to and shared by all residents of a development. This space can be used for recreation and/or relaxation purposes.</p>

Column 1 Term	Column 2 Definition
Community infrastructure	<p>Any one or more of the following:</p> <ul style="list-style-type: none"> <li>(a) Accommodation activities; or</li> <li>(b) Community activities; or</li> <li>(c) Industry activities; or</li> <li>(d) Other activities; or</li> <li>(e) Recreation activities.</li> </ul> <p>(Source—Sustainable Planning Regulation 2009 and Queensland Planning Provisions version 3.1)</p>
Corner store	A single small store, no larger than 150m <sup>2</sup> in an accessible location that sells a limited variety of daily necessities to local residents and visitors.
Defined flood event (DFE)	The defined flood event adopted by the Council. For the purposes of the planning scheme, the DFE is the 1 % Annual Exceedance Probability (AEP) event, equivalent to a 1 in 100 year average recurrence interval (ARI) event unless indicated otherwise.
Defined flood level (DFL)	A flood water level adopted by the Council that represents the defined flood event (DFE) at the development site. The DFL is also the adopted flood level for the purpose of section 13(1)(b) of the <i>Building Regulation 2006</i> and Queensland development code MP3.5 (Construction of buildings in flood hazard areas).
Defined storm tide event (DSTE)	The event (measured in terms of the likelihood of reoccurrence) and associated inundation level adopted to manage the development of a particular area. The DSTE is the 1% annual exceedance probability (AEP) storm tide, equivalent to a 1 in 100 year average recurrence interval (ARI) unless otherwise indicated for essential community service infrastructure.
Demand unit	<p>Demand units provide a standard of unit measurement to express demand on a trunk infrastructure network.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Development footprint	<p>The location and extent of all development proposed on a site. This includes all buildings and structures, open space, all associated facilities, landscaping, on-site stormwater drainage, on-site wastewater treatment, all areas of disturbance, on-site parking, access and manoeuvring areas.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Display home	<p>The temporary use of premises for:</p> <ul style="list-style-type: none"> <li>(a) display to the general public as a type of Accommodation activity that can be built; or</li> <li>(b) the display of an Accommodation activity for the general public for some other business or commercial purpose including the promotion of a contest for which the premises are offered as a prize; or</li> <li>(c) the promotion and sale of land within a residential estate or other Accommodation activities within which it is located.</li> </ul>
Domestic outbuilding	A Class 10a building, as defined in the Building Code of Australia, that is ancillary to a residential use on the same premises and is limited to non-habitable buildings for the

Column 1 Term	Column 2 Definition
	<p>purpose of a shed, garage and carport.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Dune crest height	<p>The highest point of a ridge or hillock of sand or other material on the coast and built up by the wind.</p>
Dwelling	<p>A building or part of a building used or capable of being used as a self-contained residence that must include the following:</p> <ul style="list-style-type: none"> <li>(a) food preparation facilities; or</li> <li>(b) a bath or shower; or</li> <li>(c) a toilet and wash basin; or</li> <li>(d) clothes washing facilities.</li> </ul> <p>This term includes outbuildings, structures and works normally associated with a dwelling.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Flood hazard area	<p>An area that is:</p> <ul style="list-style-type: none"> <li>(a) identified as a flood hazard area on Overlay map - FH - 01:29 (Flood hazard overlay); or</li> <li>(b) if not identified on the Flood hazard overlay map, an area of land affected by the predicted 1 percent AEP flood event.</li> </ul>
Gross floor area	<p>The total floor area of all storeys of a building (measured from the outside of the external walls or the centre of a common wall), other than areas used for the following:</p> <ul style="list-style-type: none"> <li>(a) building services, plant and equipment; or</li> <li>(b) access between levels; or</li> <li>(c) ground floor public lobby; or</li> <li>(d) a mall; or</li> <li>(e) the parking, loading and manoeuvring of motor vehicles; or</li> <li>(f) unenclosed private balconies whether roofed or not.</li> </ul> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Gross leasable area	<p>The total floor area, inclusive of all walls and columns, capable of being occupied by separate tenants for their exclusive use, including basements, mezzanine and toilets.</p>
Ground level	<p>The:</p> <ul style="list-style-type: none"> <li>(a) level of the natural ground; or</li> <li>(b) ground level of the lot on the day the first plan of survey identifying the lot was registered; or</li> <li>(c) level of the natural ground has been changed, the level as lawfully changed.</li> </ul>
Habitable room	<p>A room used for normal domestic activities, and:</p> <ul style="list-style-type: none"> <li>(a) includes a bedroom, living room, lounge room, music room, television room, kitchen, dining room, dewing room, study, playroom, family room, and sunroom; but</li> <li>(b) excludes a bathroom, laundry, water closet, pantry, walk-in wardrobe, corridor, hallway, lobby, photographic darkroom, clothes-drying room, and other spaces of a specialised nature occupied neither frequently nor for extended periods.</li> </ul> <p>(Source—Building Code of Australia 1996 – Volume One)</p>



Column 1 Term	Column 2 Definition
Hazardous material	A substance with potential to cause harm to persons, property or the environment because of one or more of the following: (a) the chemical properties of the substance; or (b) the physical properties of the substance; or (c) the biological properties of the substance.
Heritage place	A place that is: (a) identified as a Local heritage place on Overlay map - HER - 01:29 (Heritage overlay); or (b) listed on the Whitsunday Regional Council Local Heritage Register.
Household	An individual or a group of two or more related or unrelated people who reside in the dwelling, with the common intention to live together on a long-term basis and who make common provision for food or other essentials for living. The term does not include individuals living in rooming accommodation.  (Source—Queensland Planning Provisions version 4.0)
Landslide hazard	An area that is: (a) identified as slope greater than, or equal to 15% on Overlay map - LH - 01:29 (Landslide hazard overlay); or (b) if not identified on the Landslide hazard overlay map, an area of land with a slope greater than, or equal to 15%.
Maritime development	Businesses, infrastructure, services or the like that relate to, or must be adjacent to tidal waters to function.
Minor building work	An alteration, addition or extension to an existing building which results in an increase in the gross floor area of the building(s) of less than five per cent of the gross floor area of the existing building(s) or 50m <sup>2</sup> , whichever is the lesser.  (Source—Queensland Planning Provisions version 4.0)
Minor electricity infrastructure	All aspects of development for an electricity supply network as defined under the <i>Electricity Act 1994</i> , (or for private electricity works that form an extension of, or provide service connections to properties from the network), if the network operates at standard voltages up to and including 66kV.  This includes: (a) augmentations/upgrades to existing power lines where the voltage of the infrastructure does not increase; and (b) augmentations to existing substations (including communication facilities for controlling works as defined under the <i>Electricity Act 1994</i> ) where the voltage of the infrastructure does not increase, and where they are located on an existing substation lot.  (Source—Queensland Planning Provisions version 4.0)
Minor marine development	An alteration, addition or extension to an existing maritime development where the floor area, including balconies, is less than five per cent of the building or 50m <sup>2</sup> , whichever is the lesser.
Multi-unit uses	A premise that contains three or more dwellings for separate households.

Column 1 Term	Column 2 Definition
Net developable area	<p>The area of land available for development. It does not include land that cannot be developed due to constraints such as acid sulfate soils, conservation land, flood affected land or steep slope.</p> <p>Note—for the purpose of a local government infrastructure plan, net developable area is usually measured in hectares, net developable hectares (net dev ha).</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Netserv plan	<p>A distributor-retailer’s plan about its water and wastewater networks and provision of water service and wastewater service pursuant to section 99BJ of the <i>South East Queensland water (Distribution and retail restructuring) Act 2009</i>.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Non-resident workers	<p>Workers who reside in areas for extended periods when employed on projects directly associated with resource extraction, major industry, major infrastructure or rural uses, but have a permanent place of residence in another area.</p> <p>This includes workers engaged in fly-in/fly-out or drive-in/drive-out arrangements.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Obstacle limitation surface	<p>Are a series of surfaces that set the height limits of objects in the airspace surrounding an aerodrome. Objects that project through the obstacle limitation surface become obstacles.</p>
Outermost projection	<p>The outermost projection of any part of a building or structure including, in the case of a roof, the outside face of the fascia, or the roof structure where there is no fascia, or attached sunhoods or the like, but does not include retractable blinds, fixed screens, rainwater fittings, or ornamental attachments.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Planning assumptions	<p>Assumptions about the type, scale, location and timing of future growth.</p>
Plot ratio	<p>The ratio of gross floor area to the area of the site.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Projection area(s)	<p>Area or areas within a local government area for which a local government carries out demand growth projections.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Secondary dwelling	<p>A dwelling used in conjunction with, and subordinate to, a dwelling house on the same lot.</p> <p>A secondary dwelling may be constructed under a dwelling house, be attached to a dwelling house or be free standing.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Sensitive use	<p>Any defined use identified in any of the following activity groups:</p> <p>(a) Accommodation activities; or</p>

Column 1 Term	Column 2 Definition
	(b) Community activities; or (c) Recreation activities; or (d) where for a reconfiguration of a lot accommodating any of the above activities.
Service catchment	An area serviced by an infrastructure network. An infrastructure network is made up of one or more service catchments. Service catchments are determined by the network type and how it has been designed to operate and provide service to the urban areas.  Note—for example: <ul style="list-style-type: none"> <li>• stormwater network service catchments can be delineated to align with watershed boundaries;</li> <li>• open space network service catchment can be determined using local government accessibility standards; and</li> <li>• water network service catchment can be established as the area serviced by a particular reservoir.</li> </ul> (Source—Queensland Planning Provisions version 4.0)
Setback	For a building or structure, the shortest distance measured horizontally from the outer most projection of a building or structure to the vertical projection of the boundary of the lot.  (Source—Queensland Planning Provisions version 4.0)
Significant attributes	The significant attributes of a heritage place or area include the streetscape, heritage character, landscape, topography, landmarks and views.
Site	Any land on which development is carried out or is proposed to be carried out whether such land comprises the whole or part of one lot or more than one lot if each of such lots is contiguous.  (Source—Queensland Planning Provisions version 4.0)
Site cover	The proportion of the site covered by a building(s), structure(s) attached to the building(s) and carport(s), calculated to the outer most projections of the building(s) and expressed as a percentage.  The term does not include: <ul style="list-style-type: none"> <li>(a) any structure or part thereof included in a landscaped open space area such as a gazebo or shade structure; or</li> <li>(b) basement car parking areas located wholly below ground level; or</li> <li>(c) eaves and sun shading devices.</li> </ul> (Source—Queensland Planning Provisions version 4.0)
Storey	A space that is situated between one floor level and the floor level next above, the ceiling or roof above, but not a space that contains only: <ul style="list-style-type: none"> <li>(a) a lift shaft, stairway or meter room; or</li> <li>(b) a bathroom, shower room laundry, water closet, or other sanitary compartment; or</li> <li>(c) a combination of the above.</li> </ul> A mezzanine is a storey.  A roofed structure on or part of a rooftop that does not solely

Column 1 Term	Column 2 Definition
	<p>accommodate building plant and equipment is a storey.</p> <p>A basement is not a storey.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Stream protection zone	<p>An area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function of a protection zone is to physically protect and separate a stream, lake or wetland from future disturbance or encroachment.</p>
Temporary development	<p>Also known as relocatable development.</p> <p>A use that is impermanent and may be irregular or infrequent that does not require the construction of a permanent building or the installation of permanent infrastructure or services.</p> <p>Note—provisions for temporary use timeframes for defined uses may be provided within section 1.7 Local government administrative matters.</p> <p>Editor's Note—it is recommended that local government use the ability under section 1.7 to further refine this definition for use within the local government area for defined uses.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Total use area	<p>The sum of all the areas (exclusive of all walls and columns) of all storeys of a building which are used or intended for use for a particular purpose, plus any other area of a site which is used, or intended to be used, for the same purpose. The term does not include:</p> <ul style="list-style-type: none"> <li>• areas (inclusive of all walls and columns) of any lift wells, lift motor rooms, air conditioning and associated mechanical or electrical plant and equipment rooms;</li> <li>• areas of any staircases;</li> <li>• areas of any common foyer where these are not being used for commercial or retail purposes;</li> <li>• areas of any public toilets;</li> <li>• areas of any staff toilets, washrooms, recreation areas and lunchrooms, provided that such areas are not open to persons other than staff; and</li> <li>• areas used for the access, parking and associated manoeuvring of motor vehicles.</li> </ul>
Transit oriented development	<p>Mixed use residential and employment areas, designed to maximise access to public transport through higher density development and pedestrian-friendly street environments.</p>
Ultimate development	<p>The realistic extent of development anticipated to be achieved when a site (or projection area or infrastructure service catchment) is fully developed.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Urban area	<p>Means:</p> <p>(a) an area identified in a gazette notice by the chief executive as an urban area; or</p> <p>(b) if no gazette notice has been published—an area identified as an area intended specifically for urban purposes, including future urban purposes (but not rural residential or future rural residential purposes) on a map</p>

Column 1 Term	Column 2 Definition
	<p>in a planning scheme that—</p> <ul style="list-style-type: none"> <li>(i) identifies the areas using cadastral boundaries; and</li> <li>(ii) is used exclusively or primarily to assess development applications.</li> </ul> <p>Example of a map for paragraph (b): a zoning map</p> <p>(Source—Sustainable Planning Regulation 2009)</p>
Urban purposes	<p>For the purpose of Priority infrastructure plans, urban purposes includes residential (other than rural residential), retail, commercial, industrial, community and government related purposes.</p> <p>(Source—Queensland Planning Provisions version 4.0)</p>
Urban services	<p>Public services and public facilities at an intensity historically and typically provided in cities. Urban services specifically include:</p> <ul style="list-style-type: none"> <li>(a) sanitary sewer systems;</li> <li>(b) storm drainage systems;</li> <li>(c) domestic water systems;</li> <li>(d) street cleaning services;</li> <li>(e) fire and police protection services;</li> <li>(f) public transit services; and</li> <li>(g) other public utilities associated with urban areas and normally not associated with rural areas.</li> </ul>

## Contents of Schedule 2

### Schedule 2 Mapping

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SC2.3 Strategic framework maps	
SC2.4 Zone maps	
SC2.5 Local plan maps	
SC2.6 Overlay maps	

## Tables of Schedule 2

Table SC 2.1.1 Map index	
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## Schedule 2 Mapping

### SC2.1 Map index

The table below lists any strategic framework, zoning, local plan and overlay maps applicable to the planning scheme area

Editor's note—Mapping for the LGIP is contained in Schedule 3 (LGIP mapping and supporting material).

**Table SC 2.1.1 Map index**

Map number(s)	Map title	Gazettal date
<b>Overview map</b>		
WRC - 01	Local government planning scheme area and context	
<b>Strategic framework maps</b>		
SFM - 01:05	Strategic framework map	
<b>Zone maps</b>		
ZM - 01:29	Zoning map	
<b>Local plan maps</b>		
HILP - 01	Hamilton island local plan: Heights plan	
<b>Overlay maps</b>		
ASS - 01:14A	Acid sulfate soil overlay	
AL - 01:29	Agriculture land overlay	
AE - 01:02	Airport environs overlay	
BH - 01:29	Bushfire hazard overlay	
CP1 - 01:14	Coastal protection overlay: Storm tide inundation	
CP2 - 01:14	Coastal protection overlay: Erosion prone areas and permanent inundation	
ES - 01:29	Environmental significance overlay	
ER - 01:29	Extractive resources overlay	
FH - 01:29	Flood hazard overlay	
HER - 01:29	Heritage overlay	
INF1 - 01:29	Infrastructure overlay: Transport infrastructure	
INF2 - 01:29	Infrastructure overlay: Utility infrastructure	
LH - 01:29	Landslide hazard overlay	
WW1 - 01:29	Waterways and wetlands overlay	
WW2 - 01	Waterways and wetlands overlay: Climatic region	



## SC2.2 Overview map







## **SC2.3 Strategic framework maps**





## **SC2.4 Zone maps**





## **SC2.5 Local plan maps**





## **SC2.6 Overlay maps**





## **Schedule 3      Local government infrastructure plan mapping and supporting material**

A Local government infrastructure plan (LGIP) is not included in the Whitsunday Regional Council Planning Scheme at this stage.

An LGIP will be provided that responds to the recent infrastructure planning and charging legislative reform at a later stage.

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Table SC 4.1.1	Notation of decisions under section 89 of the Act
Table SC 4.2.1	Notation of resolutions under Chapter 4, Part 2, Division 2 of the Act
Table SC 4.3.1	Notation of registrations made under section 267 of the Act

## Schedule 4 Notations required under the *Planning Act 2016*

### SC4.1 Notation of decisions affecting the planning scheme under section 89 of the Act

Table SC 4.1.1 Notation of decisions under section 89 of the Act

Date of decision	Location (real property description)	Decision type	File/Map reference
20/04/2004	2SP220384	Development permit for material change of use and era - roof and sheet metal manufacturing.	20040024
19/12/2005	900, 901, 951, 953, 957 & 959SP194473 & 1 & 2SP172275	Preliminary approval - all stages including residential use, tavern, golf club, service station, commercial uses, child care centre, medical centre, motel and motor home site and retirement resort.	DA04/398
28/09/2006	4RP743558	Development permit for material change of use and reconfiguration of a lot - 34 lots.	DA05/388
20/12/2006	6, 14, 15, 131, 132, 200 & 201 SP225070 & 16SP178753	Preliminary approval for a material change of use to override council planning scheme under section 3.1.6 of the integrated planning act for a staged integrated community titled development comprising residential (short and long term accommodation), retail and commercial premises, eighteen (18) hole golf course and ancillary uses in accordance with the Whitsunday springs master plan.	20050622
18/12/2007	102SP219982	Development permit for reconfiguration of a lot - two (2) lots into two hundred and fifty two (252) lots comprising two hundred and forty (240) residential lots, two (2) buffer lots, ten (10) public open space lots in stages.	20070500
4/12/2008	31RP885979	Development permit for material change of use - rural service industry and reconfiguration of a lot - one (1) lot into thirteen (13) lots.	DA07/414
4/12/2008	Part of 2RP729167, being proposed 21SP201458	Development permit for material change of use - rural service industry/produce store and warehouse.	DA08/013
11/12/2008	101 & 100 SP167803	Development permit for reconfiguration of a lot and material change of use of land - residential subdivision comprising sixty eight (68) dwelling house lots including two (2) lots for multiple dwellings/accommodation units and preliminary approval for material change of use for accommodation units/multiple dwelling units over proposed	20070807

Date of decision	Location (real property description)	Decision type	File/Map reference
		lot 76 (175 persons) and proposed lot 100 (216 persons) and clearing of vegetation.	
17/04/2009	6RP737335	Development permit for material change of use from rural zone to urban residential zone; development permit for staged reconfiguration of a lot - stage 1a - one (1) lot into twenty residential lots, one (1) drainage lot and balance lot; and stage 1c - one (1) lot into twenty (20) urban residential lots and one(1) single dwelling lose, easement and preliminary approval overriding the planning scheme to alter the level of assessment for material change of use of premises for eleven (11) code assessable dual occupancy lots.	20070720
10/03/2010	35RP705716	Development permit for material change of use of premises for forty-three (43) dwelling houses & reconfiguration of a lot - one (1) lot into forty-three (43) lots.	DA09/035
11/08/2010	1&2RP710765	Development permit for material change of use - sales or hire premises.	20100051
8/09/2010	15RP745336	Preliminary approval to override the Bowen shire planning scheme - material change of use to facilitate industrial development - changes to levels of assessment for produce store, caretaker's residence, rural service industry, light industry, vehicle depot and machinery repair station; change to the development assessment provisions for caretakers residence; introduction of new definitions being bulk store, freight store, machinery showroom and warehouse.	DA09/324
28/10/2010	42RP727501	Preliminary permit to override the planning scheme for a material change of use of premises to facilitate industrial development in accordance with the industrial zone.	DA09/006
13/12/2011	6SP171809	Development permit for reconfiguration of lot (1 into 43 lots) and material change of use (43 dwelling houses).	20101136
26/04/2012	6RP706708 & 5K103854	Development permit for material change of use - commercial premises consisting of four (4) refreshment premises and ancillary car parks and structures.	20110549
15/07/2013	7RP729788 & 259HR1534	Development permit for reconfiguration of a lot - stage development - two (2) lots into one hundred and fifty two (152) lots and open space/parkland.	20120784
25/07/2013	111SP129633	Preliminary approval for material change of use and reconfiguration of a lot to vary the effect of the 2006 Bowen shire planning scheme to facilitate future industrial	20121022

Date of decision	Location (real property description)	Decision type	File/Map reference
		development.	

Editor's note—This schedule must include details of:

- Development approvals that are substantially inconsistent with the planning scheme
- variation approvals
- decisions agreeing to a superseded planning scheme request to apply to a superseded scheme to a particular development.

## SC4.2 Notation of resolution(s) under Chapter 4, Part 2, Division 2 of the Act

**Table SC 4.2.1 Notation of resolutions under Chapter 4, Part 2, Division 2 of the Act**

Date of	Date of effect	Details	Contact

Editor's note—This schedule must provide information about the adopted infrastructure charges for the local government and where a copy of the adopted charges can be obtained.

## SC4.3 Notation of registration for urban encroachment provisions under section 267 of the Act

**Table SC 4.3.1 Notation of registrations made under section 267 of the Act**

Date of decision	Location of premises (real property description)	Details of registration	Term of registration



## Contents of Schedule 5

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## Tables of Schedule 5

Table SC 5.1	Designation of premises for development of infrastructure under section 42 of the Act	
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## Schedule 5 Designation of premises for development

Table SC 5.1 Designation of premises for development of infrastructure under section 42 of the Act

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
23/11/2012	2SP204635	Power House Road, Collinsville	Powerlink Queensland's proposed Collinsville Substation Replacement (Collinsville North) Project, which consists of a new 132 kilovolt substation to replace the existing Collinsville Substation, and reconfiguration of the transmission lines from the existing Collinsville Substation into the new Collinsville North Substation.
Designation matters Nil			
18/11/2011	5 on Crown Plan B6677, 1 & 3 RP700122, 11 & 12 SP166797, 13 & 14 SP194471	Gregory Street, Bowen	Bowen Health Service which will provide public and private health facilities plus support facilities including relative, staff and non-acute accommodation, paediatric, commercial and medical services, engineering and maintenance services, teaching and research facilities, car parking and helipad.
Designation matters Nil			
27/02/2009	2RP742329, 61 & 86 DK155, 5047PH370, 33RP802431, 38RP908340, 161SP122361, 31SP108590, 3RP739389, 121SP122358, 101SP122357, 28HR410, 3RP738754, 4RP738754, 25HR1317, 1SP115943, 551H12423, 698, 491 & 162 SP138969, 1RP730524, 1 & 4 RP730832, 1RP740830		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt transmission line (Stage 1).
Designation matters			



Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
Nil			
17/04/2009	AP12411, AP12412, AP12413, SR2500, SR2501	Unnamed road, Springlands Strathalbyn Road, Bogie Unnamed Road, Bogie Tabletop Road, Springlands Johnny Cake Road, Springlands	Whitsunday Regional Council; Burdekin Shire Council; Townsville City Council - Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland, proposes to build community infrastructure.
Designation matters Nil			
30/10/2009	43K12448, 33RP746283, 41SP122354, 23SP106414, 3RP742547, 16SP129649, 3RP742546, 111HR1821, 110HR1989, 72 – 79 M4881		Whitsunday Regional Council - Powerlink Queensland's proposed Strathmore to Bowen 132 kilovolt (kV) transmission line (Stage 2) and Bowen North substation.
Designation matters Nil			
29/06/2001	121HR687	18 Mill Street, Proserpine	Proserpine Magistrates Court & Queensland Police Service (joint facility)
Designation matters Nil			
06/02/2016	121SP117924	56 Coral Esplanade, Cannonvale	Cannonvale State School
Designation matters Nil			
10/04/2015	25C74042	Garrick St Collinsville QLD 4804	Collinsville Healthcare Precinct
Designation matters Nil			
27/11/2015	170SP277854, 236HR1153	Kelsey Creek Road Proserpine	Proserpine Substation and the Upgrade Project consisting of the installation of a new 132/66 kV transformer, capacitor bank and associated equipment to expand the existing Powerlink Queensland substation at Kelsey Creek Road, Kelsey

Date the designation, amendment, extension or repeal takes effect	Location of premises (real property description)	Street address	Type of infrastructure
			Creek, which is located approximately 4.3 kilometres north of Proserpine.
Designation matters Nil			

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## Schedule 6 Planning scheme policies

### SC6.1 Planning scheme policy index

The table below lists all the planning scheme policies applicable to the planning scheme area.

**Table SC 6.1.1 Planning scheme policy index**

Policy number	Planning scheme policy title
SC6.2	Environmental features planning scheme policy
SC6.3	Heritage planning scheme policy
SC6.4	Landscaping planning scheme policy
SC6.5	Natural hazards planning scheme policy
SC6.6	Third party advice or comment planning scheme policy
SC6.7	Growth management planning scheme policy
SC6.8	Whitsunday Regional Council development manual planning scheme policy

#### SC6.1.1 Scope of the Planning Scheme Policies

The table below lists the scope of all the planning scheme policies, providing an indication as to when Council may request an applicant to provide further information in the form of a planning scheme policy.

**Table SC 6.1.1.1: Scope of the Planning Scheme Policies**

Planning Scheme Policy/Report	Scope
<b>Environmental features planning scheme policy</b>	
Acid sulfate soils assessment report	Applications triggering assessment against the Acid sulfate soils overlay code.
Acid sulfate soils management plan	Applications triggering assessment against the Acid sulfate soils overlay code and found to be disturbing acid sulfate soils within the acid sulfate soils assessment report.
Ecological assessment report	Applications triggering assessment against the: <ul style="list-style-type: none"> <li>a) Environmental significance overlay code; or</li> <li>b) Waterway and wetland overlay code.</li> </ul>
Vegetation management plan	Applications triggering assessment against the: <ul style="list-style-type: none"> <li>a) Construction management code; or</li> <li>b) Waterway and wetlands overlay code.</li> </ul>
<b>Heritage planning scheme policy</b>	
Heritage impact assessment report	Applications triggering assessment against the Heritage overlay code.
Heritage management plan	Applications triggering assessment against the Heritage overlay code.
Archaeological management plan	Applications triggering assessment against the Heritage overlay code.
<b>Landscaping planning scheme policy</b>	
Landscaping plan	Applications triggering assessment against the Landscaping code.
Landscaped separation buffer	Applications triggering assessment against the:

	<ul style="list-style-type: none"> <li>a) Landscaping code; or</li> <li>b) Reconfiguring a lot code; or</li> <li>c) Agricultural land overlay code.</li> </ul>
Planting species list	All development is to have regard for the Planting species list.
<b>Natural hazard planning scheme policy</b>	
Bushfire hazard assessment report	Applications triggering assessment against the Bushfire hazard overlay code.
Bushfire hazard management plan	Applications triggering assessment against the Bushfire hazard overlay code.
Coastal hazard assessment report	Applications triggering assessment against the Coastal environment overlay code.
Flood hazard assessment report	Applications triggering assessment against the Flood hazard overlay code
Landslide hazard (geotechnical) assessment report	Application triggering assessment against the Landslide hazard overlay code.
<b>Growth management planning scheme policy</b>	
Development needs assessment report	At Council discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme), outside of the existing urban footprint may be required to undertake this report.
Economic impact assessment report	At Councils discretion. Applications proposing the development of Business or Entertainment Activities may be required to undertake this report where the development is: <ul style="list-style-type: none"> <li>a) outside of a designated Centre zone and exceeding a GFA of 150m<sup>2</sup>; or</li> <li>b) within a designated Centre zone, but exceeding the maximum GFA for that Centre zone; or</li> <li>c) within the Mixed use zone and exceeding a GFA of 1,500m<sup>2</sup>.</li> </ul>
Structure plan	At Councils discretion. Applications proposing the development of five (5) or more lots (including those lots created under a community title scheme) may be required to undertake this report.
Traffic impact assessment report	At Councils discretion. Applications proposing the development of the following activities may be required to undertake this report: <ul style="list-style-type: none"> <li>a) Accommodation activities: Five (5) or more lots (including those lots created under a community title scheme); or</li> <li>b) Business, Entertainment, Industry, Recreation or Other Activities: Exceeding a GFA of 1,500m<sup>2</sup>; or</li> <li>c) Community Activities: Exceeding a GFA of 500m<sup>2</sup>.</li> </ul>



## **SC6.2 Environmental features planning scheme policy**

### **SC6.2.1 Introduction**

#### **SC6.2.1.1 Relationship to the planning scheme**


- (1) This planning scheme policy provides:
  - (a) information the Council may request for a development application; and
  - (b) guidance or advice about satisfying an assessment benchmark which identifies this planning scheme policy as providing that guidance or advice.

#### **SC6.2.1.2 Purpose**

- (1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  - (a) Acid sulfate soil assessment report;
  - (b) Acid sulfate soils management plan;
  - (c) Ecological assessment report; and
  - (d) Vegetation management plan.

#### **SC6.2.1.3 Environmental features overlay mapping**

- (1) Environmental features overlay mapping has been prepared for the local government area, showing the areas of environmental and waterway (water quality) health. This mapping has been prepared in accordance with the requirements of the State Planning Policy (SPP). The specific environmental and waterways overlays to which this PSP applies are:
  - (a) Acid sulphate soils overlay code. Mapping:
    - (i) identifies the Known presence of acid sulfate soils for; Land at or below 5m AHD and Land above 5m AHD and below 20m AHD sub-categories; and
    - (ii) has been prepared at a scale at which a site specific investigation of acid sulfate soils will be necessary to determine the presence and extent of acid sulfate soil on a site (Acid sulfate soils assessment report) and the necessity for an Acid sulfate soils management plan;
  - (b) Environmental significance overlay code. Mapping:
    - (i) identifies Regulated vegetation, Wildlife habitat, Protected and Regulated vegetation features; and
    - (ii) is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of Matters of environmental significance on a site and necessity for a Vegetation management plan;
  - (c) Waterways and wetlands overlay code. Mapping:
    - (i) identifies Matters of state environmental significance: High ecological value waters (watercourse), High ecological value waters (wetlands), High ecological significance wetlands, Marine

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- (ii) parks and Declared fish habitat area and Matters of local environmental significance: Stream order 1 - 5 sub-categories; and is not a substitute for a site based assessment. A site specific Ecological assessment report should be undertaken and prepared to verify, specific to the site, the presence of matters of environmental significance on a site and necessity for a Vegetation management plan.

## SC6.2.2 Requirements of environmental features documentation

- (1) Environmental features documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.2.2.1 (Requirements of Environmental features documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

**Table SC 6.2.2.1 Requirements of environmental features documentation**

Documentation	Preparation	Report requirements
Acid sulfate soils assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Acid sulfate soils assessment report may be requested to provide additional information to Council.</li> <li>A site specific Acid sulfate soil assessment report is to be prepared in accordance with SC6.2.3 (Acid sulfate soils assessment report).</li> <li>An Acid sulfate soils assessment is to be prepared in accordance with the Queensland Acid Sulfate Soils Technical manual (Queensland Government, 2014), or any later guideline as agreed by Council and is to be provided as part of the site specific Acid sulphate soil assessment report.</li> <li>All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Acid sulfate soils management plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in the field of acid sulfate soils identification and management.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Acid sulfate soils management plan may be requested to provide additional information to Council.</li> <li>A site specific Acid sulfate soil management plan is to be prepared in accordance with:               <ol style="list-style-type: none"> <li>SC6.2.4 (Acid sulfate soils management plan); and</li> <li>State Planning Policy – State interest guideline: Water quality, August 2014, or any later guideline as agreed by Council.</li> </ol> </li> </ul>
Ecological assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in ecology surveys, assessment and reporting.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Ecological assessment report may be requested to provide additional information to Council.</li> <li>A site specific Ecological assessment report is to be prepared in accordance with SC6.2.5 (Ecological assessment report).</li> </ul>

<p>Vegetation management plan</p>	<ul style="list-style-type: none"> <li>• Prepared by a suitably qualified professional with a relevant tertiary qualification in ecology, conservation biology or environmental planning and at least 5 years' experience in vegetation management, assessment and reporting.</li> <li>• Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>• A site specific Vegetation management plan may be requested to provide additional information to Council.</li> <li>• A site specific Vegetation management plan is to be prepared in accordance with SC6.2.6 (Vegetation management plan).</li> </ul>
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## **SC6.2.3 Acid sulfate soils assessment report**

### **SC6.2.3.1 Purpose of an Acid sulfate soils assessment report**

- (1) An Acid sulfate soils assessment report is required to:
  - (a) quantify the extent and severity of acid sulfate soils for a particular site;
  - (b) ensure appropriate methods are implemented to mitigate or avoid the disturbance of acid sulfate soils; and
  - (c) provide information and guidance to support the outcomes required by the Acid sulfate soils overlay code.

### **SC6.2.3.2 Preparation of an Acid sulfate soils assessment report**

- (1) The site-specific Acid sulfate soils assessment report is to include an acid sulfate soils assessment, as detailed in Table SC 6.2.2 (Requirements of environmental features documentation) of this planning scheme policy.
- (2) An Acid sulfate soil assessment report is to:
  - (a) explain the methodology and findings of the acid sulfate soils assessment to determine the presence, extent and severity of any actual acid sulfate soils or potential acid sulfate soils on the site;
  - (b) evaluate the potential for harm to the environment or to constructed assets as a result of the development; and
  - (c) make recommendations as to whether management measures are needed.
- (2) If the acid sulfate soil assessment report finds that acid sulfate soils will be affected by the development, then an Acid sulfate soil management plan is to be prepared in accordance with SC6.2.4 (Acid sulfate soils management plan).


## **SC6.2.4 Acid sulfate soils management plan**

### **SC6.2.4.1 Purpose of an Acid sulfate soils management plan**

- (1) An Acid sulfate soils management plan is required to:
  - (a) explain how acid sulfate soils will be managed on the site to minimise or prevent harm to the environment or to constructed assets; and
  - (b) provide information and guidance to support the outcomes required by the Acid sulfate soil overlay code.

### **SC6.2.4.2 Preparation of an Acid sulfate soils management plan**

- (1) An Acid sulfate soil management plan is to include at a minimum:
  - (a) a two-dimensional map of the actual or potential acid sulfate soils to the depth of disturbance;
  - (b) details that reflect potential on-site and off-site impacts of the disturbance on the soil and the groundwater levels;
  - (c) the methods that will be used to avoid, treat or otherwise manage acid sulfate soils, including the contained on-site management and treatment of potential and actual acid sulfate soils;
  - (d) the details of any pilot project or field trial to be undertaken to prove the effectiveness of any new technology or innovative management practice being proposed;
  - (e) details of the management of the height of the groundwater table on-site and off-site both during and after construction;
  - (f) details of all soil and water monitoring, both manual and automated, to be performed during and after treatment, and including verification testing of soils;
  - (g) details of the handling and storage of neutralising agents;
  - (h) details of contained on-site treatment and management of potentially contaminated stormwater run-off, and leachate including details of groundwater management associated with the works both in the short and long term;
  - (i) a description of contingency measures to be implemented on and off the site if the management procedures prove to be unsuccessful and acid is generated or leachate problems occur; and
  - (j) details of the treatment and management of surface drainage waters for disturbed acid sulfate soils.
- (2) The Acid sulfate soil management plan is to provide for the ongoing management and monitoring of impacts of acid sulfate soil material throughout the construction and operation of the project and describe the construction schedules and environmental management procedures.
- (3) The development is to be staged so that the potential impact of any area disturbed at any one time is limited and easily managed. Documentation containing the schedule of monitoring is to be made available for Council inspections.

- 
- (4) Action is to be taken to prevent or minimise any adverse impacts on surface water, groundwater, the site and surrounding areas. These actions are to be documented in the acid sulfate soil management plan and include:
- (a) objectives and outcomes;
  - (b) management measures;
  - (c) performance indicators;
  - (d) elements to be monitored;
  - (e) a monitoring schedule;
  - (f) contingency plans;
  - (g) responsibilities;
  - (h) reporting and review requirements; and
  - (i) training arrangements.

## **SC6.2.5 Ecological assessment report**

### **SC6.2.5.1 Purpose of an Ecological assessment report**

- (1) An Ecological assessment report is required to:
  - (a) quantify the matters of environmental significance on a particular site;
  - (b) ensure appropriate methods are implemented to appropriately protect, manage or restore matters of environmental significance on the site; and
  - (c) provide information and guidance to support the outcomes required by the Environmental significance overlay code and Waterways and wetlands overlay code.

### **SC6.2.5.2 Undertaking an Ecological assessment report**

- (1) An Ecological assessment report is to incorporate a tree survey plan in accordance with SC6.2.5.3 (Preparation of a Tree survey plan), which identifies all the trees on the development site.
- (2) Prior to any field survey work commencing, records are to be investigated to identify likely regional ecosystems, flora, and fauna species (including weed and pest animal species) which may occur on the site or on adjoining lands within a one kilometre radius of the site. Records to be investigated include:
  - (a) research reports;
  - (b) local knowledge (such as from local catchment and environment groups);
  - (c) databases, such as the Council and Queensland Government regional ecosystem mapping, and flora and fauna records held by the Queensland Government (Wildnet), Queensland Museum and Queensland Herbarium; and
  - (d) published literature.
- (3) The field survey is to assess the presence or likely presence of ecological features, significant vegetation communities, and flora and fauna species (including weed and pest animal species) on the site. Specifically, it should:
  - (a) incorporate coverage of all major habitat types on the site;
  - (b) use survey techniques suited to a diversity of flora and fauna; and
  - (c) consider seasonal variations, survey duration and climatic conditions.
- (4) Ecological features and processes are essential to the conservation of biodiversity and the maintenance of ecosystem services. Some examples of ecological features and processes which need to be identified on or adjoining the site are:
  - (a) areas that contain nationally and internationally important flora, fauna, ecological communities and heritage places as identified in the *Environment Protection and Biodiversity Conservation Act 1999*;
  - (b) areas declared as Fish Habitat Areas under the *Fisheries Act 1994*;



- (c) areas prescribed under the *Nature Conservation Act 1992*, including areas subject to an Interim Conservation Order and areas subject to a conservation plan;
  - (d) areas identified as having conservation significance under the *Coastal Protection and Management Act 1995*;
  - (e) important habitat features or evidence of fauna species, such as trees supporting scratch marks and hollows, stags, scats, tracks and other traces, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees;
  - (f) areas that would be suitable for habitat restoration, consolidating any existing habitat on site or on adjoining sites.
- (5) To identify flora and vegetation communities, plot or transect-based survey methods are to be used when establishing a flora species inventory, weed survey, or searching for significant flora species. All vegetation communities, including wetlands and, within these, all microhabitats (such as dry gullies) are to be identified. The regional ecosystem type is to be classified and the age, structure, composition and condition of the vegetation is to be assessed. Plans and literature may also have flora and fauna records.
- (6) For fauna surveys, a minimum of 4 days and 4 nights of survey time are recommended to minimise any sampling duration influences within any given sampling period. Regard must also be had for any migratory species which may not be present but habitually use the location. In circumstances where less sampling effort is proposed, appropriate justification is to be provided in the ecological assessment report. The biodiversity survey principles to be considered when undertaking a fauna survey include:
- (a) survey methodology which accounts for habitat diversity and species requirements;
  - (b) survey design to minimise factors which may reduce the quality of the survey results;
  - (c) data is collected in a consistent format; and
  - (d) ecological investigations in accordance with best-practice research ethics.
- (7) Fauna data is to be supported by the start and end dates of the survey, coordinates of the survey location, scientific and common name of identified species and the location precision.
- (8) Identify any existing impacts or threatening processes to the ecological features, vegetation communities (regional ecosystems) and flora and fauna species on the site.
- (9) Outline the likely impacts of development on the ecological features and flora and fauna species. Examples of spatial and temporal impacts from development include:
- (d) loss or fragmentation of habitat;
  - (e) decrease or change in structure, composition, complexity and connectivity of vegetation;
  - (f) increased edge effects, such as noise and light;

- (g) earthworks and installation of infrastructure, such as retaining walls, paths, roads, stormwater treatment devices;
- (h) weed and pest animal invasion;
- (i) changes to fire risks and regimes;
- (j) changes to flow regimes, nutrients, sediment and pollutant loads;
- (k) barriers to safe wildlife movement such as roads or fences; and
- (l) introduction of domestic animals.

### **SC6.2.5.3 Preparation of a Tree survey plan**

- (1) A Tree survey plan forms part of the Ecological assessment report (SC6.2.5.4 Preparation of an Ecological assessment report) and involves identifying, assessing and surveying all trees on a site and provides a description of the site and the proposed works.
- (2) The Tree survey plan comprises a map and a supporting table or report outlining the location and other attributes of trees located on the site. It is to incorporate the following information:
  - (a) a scaled tree survey map overlaid on the development layout, identifying the location of:
    - (i) individual trees, ensuring each tree is numbered and the area of the canopy spread is shown indicatively;
    - (ii) those trees proposed for retention;
    - (iii) those trees proposed for removal; and
    - (iv) any tree protection zones;
  - (b) a table which includes:
    - (i) the number for each tree identified on the tree survey map;
    - (ii) tree species (botanical and common names);
    - (iii) height;
    - (iv) diameter at breast height;
    - (v) canopy spread (in square metres);
    - (vi) condition/health;
    - (vii) evidence of fauna use or habitat value including scratch marks, hollows, nests, termites and scats;
    - (viii) trees to be removed or root zones to be impacted; and
    - (ix) trees to be retained;
  - (c) photographs of the site, key tree species and evidence of fauna use, where relevant; and
  - (d) any other supporting information provided by a qualified arborist.

### **SC6.2.5.4 Preparation of an Ecological assessment report**

- (1) The Ecological assessment report informs the design of the development layout and footprint and is to be completed prior to the development design and layout.
- (2) The level of detail contained within the Ecological assessment report will vary, reflecting the nature of the development and site attributes. The report is to include at a minimum:
  - (a) a description of the methodology used to complete the assessment:

- (i) provide a full description of the field survey methodology used and assumptions made;
  - (ii) detail all background investigations undertaken including literature reviewed, and recognised specialists, authorities and local naturalists consulted or referenced; and
  - (iii) reports that rely primarily on desktop research with little or no field-based work are not acceptable;
- (b) a description and map of the ecological features and processes, vegetation communities and flora and fauna species of the site and adjacent lands will at a minimum:
- (i) identify and detail ecological features and provide a map displaying the location and extent of the ecological features. This is referred to as an ecological features map. Appropriate photographs and figures will enable the identification and location of ecological features on the ground;
  - (ii) in addition to identifying ecological features, the Ecological Features map is also to include:
    - (A) 1m contours for the existing site topography;
    - (B) areas included in the Environmental significance overlay map;
    - (C) location of waterway corridors and wetlands as shown on the Waterway and wetlands overlay map;
    - (D) existing buildings and infrastructure such as roads or sewer lines; and
    - (E) nature and extent of any vegetation protected under the *Vegetation Management Act 1999*;
  - (iii) describe key ecological processes occurring on the site and adjacent lands;
  - (iv) include appropriate photographs, figures and maps that will enable the identification and location of ecological features on the ground;
  - (v) accurately map and describe the vegetation communities, (remnant and non-remnant vegetation) in the site and on adjacent lands. Include details such as age, structure, composition and condition of vegetation communities on the site and on adjacent lands;
  - (vi) describe and map accurately the terrestrial and aquatic flora species and vegetation communities (including details such as age, structure, composition, condition, State/national significance and regional ecosystem status) in the site and on adjacent lands. A table outlining the location and attributes of trees on the development site should also be provided;
  - (vii) document and describe the presence of any flora species listed as threatened under Commonwealth or State legislation;
  - (viii) provide any past flora and fauna records of the site and adjoining lands within a 1km radius of the site. Records include research reports, local knowledge and databases, such as the Queensland Museum and Queensland Herbarium records;
  - (ix) identify terrestrial and aquatic fauna species present or likely to be present within the site and adjacent lands;
  - (x) prepare an appropriately scaled map identifying the location of key habitat features or evidence of fauna species, including trees supporting scratch marks and hollows, stags, fruit and seed falls, fauna trails, fallen logs, termite mounds, ground diggings, rock outcrops, nests in banks and roost, nest and den trees; and
  - (xi) document and describe the presence of any fauna species.
- (c) document potential development impacts on ecological features and processes including:
- (i) an outline of the proposed development:

- (A) nature of the land use;
    - (B) the extent of the development footprint and details of the site layout; and
    - (C) development design including the building height in metres, location of any outdoor lighting, audio systems or other noise generating activities;
  - (ii) identification of the proposed hours of operation if non-residential including:
    - (A) the number of people anticipated on site at various times during the day and night; and
    - (B) the number and type of vehicle movements anticipated on site during the ongoing operation phase;
  - (iii) for the construction phase, details of the sequence of any proposed vegetation clearing, type of construction machinery and proposed barriers to restrict site access to ecologically sensitive areas;
  - (iv) differentiation between the impacts likely to occur during the construction of the development versus those impacts resulting from the ongoing operation of the development (including cumulative impacts of the development); and
  - (v) details of potential spatial (on-site and off-site) and temporal (short- and long-term) direct and in-direct impacts from the development on flora and fauna species and vegetation communities, including consideration of the construction and operational phases of the development. Specifically discuss the likely consequences of the identified impacts for the site and adjacent lands;
  - (vi) the degree of confidence with which the impacts of the action are known and understood;
- (d) detail how the layout of the development avoids impacts to the ecological features and processes and significant flora and fauna species and outline the impact mitigation measures that will be undertaken to reduce the impacts to ecological features and processes by:
- (i) clearly demonstrating how the proposed mitigation strategies will enable the development to meet the nature conservation obligations as described in the relevant statutory planning mechanisms; and
  - (ii) providing information about development designs to mitigate impacts to ecological features and processes, such as:
    - (A) protecting ecological connectivity;
    - (B) enhancing habitat extent and condition; and
    - (C) rehabilitating degraded areas.

## SC6.2.6 Vegetation management plan

### SC6.2.6.1 Purpose of a Vegetation management plan

- (1) A Vegetation management plan is required to ensure appropriate methods are implemented to appropriately protect against, manage or restore the disturbance of vegetation before, during and after construction works on a site.
- (2) A Vegetation management plan may be required prior to or as a condition of a development approval; in which case it is required to be lodged before the commencement of site works or any interference with vegetation.

### SC6.2.6.2 Preparation of a Vegetation management plan

- (1) A Vegetation management plan is to comprise a plan of layout and supporting text.
- (2) The plan of layout is to include the following standard features as a minimum:
  - (a) cadastral and property boundaries and dimensions adequate to interpret the plan;
  - (b) layout of development, including existing and proposed alignments of services and infrastructure;
  - (c) location and description of vegetation to be retained, cleared and restored, including drainage lines, waterway corridors, wetlands and other ecological features;
  - (d) location of protective fences or other vegetation protection measures such as designated vehicle access, signage, tree guards and retaining clumps of trees for wind and storm protection;
  - (e) contours (including areas for proposed filling and excavation);
  - (f) location and type of erosion measures;
  - (g) location of dedicated work areas including stockpile and disposal sites; and
  - (h) location of machinery access ways.
- (3) The supporting text is a critical component of a Vegetation management plan and reports on the four main steps of vegetation management processes, namely:
  - (a) project management;
  - (b) vegetation protection;
  - (c) clearing and disposal; and
  - (d) rehabilitation and maintenance.
- (4) Each step is presented in Table SC 6.2.6.2.1 (Vegetation management plan preparation) with suggested approaches as to how to achieve the key aims and outcomes.

**Table SC 6.2.6.2.1 Vegetation management plan preparation**

Key aims or outcomes	Suggested approach
A. Project Management	
• To formulate and implement vegetation	• Vegetation management plan to be

<p>management actions.</p> <ul style="list-style-type: none"> <li>• To clearly identify objectives, methods and reporting lines.</li> <li>• To inform all relevant people, companies and workers of their responsibilities.</li> </ul>	<p>prepared in conjunction with engineering requirements.</p> <ul style="list-style-type: none"> <li>• Vegetation management to be an integral part of the construction and operational phases.</li> <li>• Nominate a person with responsibility for overseeing development works (such as the site supervisor), a person responsible for implementing vegetation management plan actions on site, and a person for point-of-contact for the Council.</li> <li>• Instruct all workers and contractors as to their role in vegetation management.</li> <li>• Provide the method of assessing compliance with the vegetation management plan.</li> </ul>
<p><b>B. Vegetation protection</b></p>	
<ul style="list-style-type: none"> <li>• To effectively protect vegetation during construction and operational phases.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify vegetation for removal and protection on a vegetation retention plan.</li> <li>• Refer to appropriate Australian Standards e.g. AS 4970-2009 (Protection of trees on development sites), and AS 4373-2007 (Pruning of amenity trees).</li> <li>• Implement vegetation protection measures during construction. These commonly include designated vehicle access ways, signage, protective barrier fences, silt fences, tree guards and dedicated work areas. Establish these measures prior to works commencing and maintain the measures throughout the construction phase.</li> <li>• Protect the root zones of individual trees or clumps of trees from compaction, filling, stockpiling or excavation. Refer to AS 4373-2007 (Pruning of amenity trees).</li> <li>• Identify a replacement formula for trees which are damaged.</li> </ul>
<p><b>C. Clearing and disposal</b></p>	
<ul style="list-style-type: none"> <li>• To minimise the adverse impacts of vegetation clearance.</li> <li>• To maximise recycling or re-use of cleared vegetation.</li> <li>• To minimise the impacts on existing fauna.</li> </ul>	<ul style="list-style-type: none"> <li>• Clearly identify and indicate on a plan the area of vegetation proposed to be cleared in relation to tree protection zones and structural root protection zones.</li> <li>• Use clearing methods that will not damage adjacent protected vegetation and that will minimise soil profile disturbance. Match the type of equipment to be used with the specific clearing task. There are many options available, including excavator-mounted hydraulic grabs etc.</li> <li>• Recycle cleared vegetation for re-use on or off site. Recycling techniques include mulching, tub-grinding, wood chipping and salvage. Do not recycle weed materials as this has potential to spread weed propagules.</li> <li>• Obtain advice from a qualified arborist when work is proposed within the tree</li> </ul>

	<p>protection zone.</p> <ul style="list-style-type: none"> <li>• Clear vegetation sequentially to allow for natural retreat of fauna.</li> <li>• Employ a suitably qualified fauna spotter and a fauna catcher during the vegetation clearing and disposal phase of the project.</li> </ul>
<p><b>D. Rehabilitation and maintenance</b></p>	
<ul style="list-style-type: none"> <li>• To restore and enhance areas in the post-construction phase.</li> <li>• To maximise survival opportunities for areas of retained vegetation and newly rehabilitated areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Use species native to the site, including species known to provide food and habitat for native fauna or those species identified in SC6.4.5 (Planting species list).</li> <li>• Use a mix of species which replicate all strata in the nominated Regional Ecosystem that was originally on site pre-clearing.</li> <li>• Use species to augment the functioning of ecological corridors and nodes through the site.</li> <li>• Do not use plants that will compete with or displace existing local native species, or that have the potential to become new and emerging weed species.</li> <li>• Specify a maintenance program in the Vegetation management plan to ensure the long-term health and vigour of retained vegetation and healthy growth of new plantings, including specified growth targets. Give details on mulching, watering and fertiliser regimes, regular inspection schedules for damage or disease, replacement planting criteria and weed control measures.</li> </ul>

## **SC6.3 Heritage planning scheme policy**

### **SC6.3.1 Introduction**

#### **SC6.3.1.1 Relationship to the planning scheme**

- (1) This planning scheme policy provides:
  - (a) information the Council may request for a development application; and
  - (b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

Note – This planning scheme policy does not remove obligations under the *Queensland Heritage Act 1992* for places identified on the Queensland Heritage Register.

#### **SC6.3.1.2 Purpose**

- (1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  - (a) Heritage impact assessment report;
  - (b) Heritage management plan; and
  - (c) Archaeological management plan.

#### **SC6.3.1.3 Heritage overlay mapping**

- (1) Heritage overlay mapping has been prepared for the local government area, showing the areas of local and state heritage significance. This mapping has been prepared in accordance with the requirements of the SPP. The specific overlay to which this PSP applies is:
  - (a) Heritage overlay code. Mapping:
    - (i) identifies the State heritage place and Local heritage place features.



## SC6.3.2 Requirements of heritage documentation

- (1) Heritage documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.3.2.1 (Requirements of heritage documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

**Table SC 6.3.2.1 Requirements of heritage documentation**

Documentation	Preparation	Report requirements
Heritage impact assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Heritage impact assessment report may be requested to provide additional information to Council.</li> <li>A site specific Heritage impact assessment report is to be prepared in accordance with:               <ol style="list-style-type: none"> <li>SC6.3.3 (Heritage impact assessment report);</li> <li>the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and</li> <li>the <i>Aboriginal Cultural Heritage Act 2003</i>.</li> </ol> </li> <li>All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Heritage management plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with tertiary qualification in an area related to heritage conservation and appropriate technical expertise in the field of cultural heritage identification and mitigation.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Heritage management plan may be requested to provide additional information to Council.</li> <li>A site specific Heritage management plan is to be prepared in accordance with:               <ol style="list-style-type: none"> <li>SC6.3.4 (Heritage management plan);</li> <li>the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and</li> <li>the <i>Aboriginal Cultural Heritage Act 2003</i>.</li> </ol> </li> <li>All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Archaeological management plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with tertiary qualification in archaeology and appropriate technical expertise in the surveying, identification, recording, assessment and evaluation archaeological sites.</li> <li>Consultation with other entities may also be necessary including Council, State</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Archaeological management plan may be requested to provide additional information to Council.</li> <li>A site specific Archaeological management plan is to be prepared in accordance with:               <ol style="list-style-type: none"> <li>SC6.3.5 (Archaeological management plan);</li> <li>Guideline: Archaeological</li> </ol> </li> </ul>

	<p>government and other relevant agencies or individuals.</p>	<p>investigations, DEHP, 2013.</p> <ul style="list-style-type: none"> <li>e) the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance (1999); and</li> <li>f) the <i>Aboriginal Cultural Heritage Act 2003</i>.</li> </ul> <ul style="list-style-type: none"> <li>• All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
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### **SC6.3.3 Heritage impact assessment report**

#### **SC6.3.3.1 Purpose of a Heritage impact assessment report**

- (1) A Heritage impact assessment report is required to:
  - (a) quantify the extent and severity of potential damage to or impacts on a Heritage place; and
  - (b) provide information and guidance to support the outcomes required by the Heritage overlay code.

#### **SC6.3.3.2 Preparation of a Heritage impact assessment report**

- (1) A Heritage impact assessment report is to include at a minimum:
  - (a) a description of the history of the place and a description of the place (including any relevant components, contents, spaces and views that contribute to the significance of the place noted in the Place Card);
  - (b) a review of the Statement of Significance of the place;
  - (c) reference to an existing Conservation management plan or Archaeological management plan and the management policies included in either plan (if available);
  - (d) plans or some form of documentation that illustrate the development plan and site layout;
  - (e) a heritage impact statement (based on the principles of the Burra Charter: The Australian ICOMOS Charter for places of cultural heritage significance), including:
    - (i) photographs of the Heritage place;
    - (ii) the identification of the aesthetic, architectural, historical, scientific and social or technological significance; and
    - (iii) the demonstration that proposed development conserves, or minimises the impact on, the significance of the place and, if relevant, reflects the management policies contained in the Conservation management plan or Archaeological management plan;
  - (f) if it is determined that the proposed development will impact the significance of the place, information must be provided to demonstrate why the change is required, what options were considered and what measures are provided to reduce the detrimental impact that may result from the change; and
  - (g) list any references used in the production of the statement and any relevant technical information or correspondence from government departments.

## **SC6.3.4 Heritage management plan**

### **SC6.3.4.1 Purpose of a Heritage management plan**

- (1) A Heritage management plan is required to:
  - (a) identify the strategies and management techniques a development is to implement to mitigate or reduce adverse impacts on a Heritage place as a result of development; and
  - (b) provide information and guidance to support the outcomes required by the Heritage overlay code.

### **SC6.3.4.2 Preparation of a Heritage management plan**

- (1) A Heritage management plan is to include at a minimum:
  - (a) an outline of the significance of the place, the conditions of approval for development to a Heritage place and particular requirements to manage the significance of the place during development, including where necessary an archival recording of the place where demolition or removal is required;
  - (b) a description of the extent of the heritage boundary and the specific heritage features within the boundary;
  - (c) an outline of the requirements for the management of any approved works within sensitive areas, including:
    - (i) council conditions of approval for the work;
    - (ii) work method statements for work requiring particular care and attention to appropriate conservation methods; and
    - (iii) training of contractors, including 'tool box talks';
  - (d) an assessment of the risk inherent in particular activities to the significance of the place and appropriate mitigation and/or monitoring responses; and
  - (e) a procedure for the incidental discovery of items of potential cultural heritage significance, including archaeological artefacts.

## **SC6.3.5 Archaeological management plan**

### **SC6.3.5.1 Purpose of an Archaeological management plan**

- (1) An Archaeological management plan is required to:
  - (a) provide additional information regarding the extent and severity of ground-breaking activities on a site;
  - (b) identify the management activities which will be undertaken to reduce adverse impacts as a result of development that has been identified as an archaeological place; and
  - (c) provide information and guidance to support the outcomes required by the Heritage overlay code.

### **SC6.3.5.2 Preparation of an Archaeological management plan**

- (1) An Archaeological management plan is to be prepared in accordance with Table SC6.3.2 (Requirements of heritage documentation) and include at a minimum:
  - (a) descriptions of the significant archaeological features and artefacts of a place, or the potential for archaeological features and artefacts to be present, and the proposed methodology to manage impacts on the features and artefacts during approved ground-breaking activity, including the procedure to manage unexpected discoveries;
  - (b) outline of the methodology for evaluating the extent, nature and integrity of the site and its significance should ground breaking activities be unavoidable;
  - (c) definitions of the appropriate management measures for the site, having regard to its potential significance, inclusive of the establishment of any ground disturbance exclusion zones and/or monitoring areas;
  - (d) specification of the process for dealing with new/unexpected finds of an archaeological nature resulting from ground-breaking activities, including advising Council of any such discovery; and
  - (e) an outline of the process for the curation and long-term ownership and management of any archaeological material collected as a result of development activities within the curtilage of a Heritage place that has been identified as an archaeological place.

## **SC6.4 Landscaping planning scheme policy**

### **SC6.4.1 Introduction**

#### **SC6.4.1.1 Relationship to the planning scheme**

- (1) This planning scheme policy provides:
  - (a) information the Council may request for a development application; and
  - (b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

#### **SC6.4.1.2 Purpose**

- (1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  - (a) Landscaping plan;
  - (b) Landscaped separation buffer plan; and
  - (c) Planting species list.

## SC6.4.2 Requirements of landscaping documentation

- (1) Landscaping documentation to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.4.2.1 (Requirements of landscaping documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

**Table SC 6.4.2.1 Requirements of landscaping documentation**

Documentation	Preparation	Report requirements
Landscaping plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in landscape architecture, horticulture or similar</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Landscaping plan may be requested to provide additional information to Council.</li> <li>A site specific Landscaping plan is to be prepared in accordance with               <ol style="list-style-type: none"> <li>SC6.4.3 (Landscaping plan);</li> <li>SC6.4.5 (Planting species list); and</li> <li>SC6.8 (WRC development manual).</li> </ol> </li> </ul>
Landscaped separation buffer plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation of agricultural or industrial impacts or the design of landscaped buffers.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A site specific landscaped separation buffer plan may be requested to provide additional information to Council.</li> <li>A site specific Landscaped separation buffer plan is to be prepared in accordance with               <ol style="list-style-type: none"> <li>SC6.4.4 (Landscaped separation buffer plan);</li> <li>SC6.4.5 (Planting species list); and</li> <li>SC6.8 (WRC development manual).</li> </ol> </li> </ul>
Planting species list	-	-

### **SC6.4.3 Landscaping plan**

#### **SC6.4.3.1 Purpose of a Landscaping plan**

- (1) A landscaping plan is required to:
  - (a) identify the suitable purposes and specifies plants recommended to be established on the site; and
  - (b) ensure appropriate methods and management activities are implemented to ensure survival of vegetation; and
  - (c) provide information and guidance to support the outcomes required by the Landscaping code.

#### **SC6.4.3.2 Preparation of a Landscaping plan**

- (1) A Landscaping plan is to include a plan of layout and supporting text.
- (2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum:
  - (a) the project description and location;
  - (b) landscape architect / designer's name and contact details;
  - (c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;
  - (d) the location of property boundaries, road alignments and street names;
  - (e) the location of underground and overhead services, including drainage, sewerage, power lines, electricity, telephone and gas;
  - (f) the location, botanical name and size of existing trees and shrubs and intended retention or removal of these plants to be clearly nominated;
  - (g) contours and spot levels, both existing and proposed to all surfaces, including levels at the base of all existing vegetation to be retained, and surface levels of paved areas and access covers;
  - (h) location and design of proposed stormwater drainage works including direction of overland flow, location of field inlets (as required) and methods to ensure erosion control;
  - (i) details of the location of any earth cuts, fills or mounds within landscaped areas and details of proposed measures to ensure stability, including location, height and materials of retaining walls;
  - (j) location of all existing and proposed buildings, landscape structures, storage areas, pathways, driveways and parking areas, outdoor furniture (where relevant e.g. centres) and fencing;
  - (k) details including design, materials used and colours of proposed edging, surface treatments, fencing, pergolas and raised gardens;
  - (l) location and nature of all proposed vegetation including:
    - (i) a graphic code/key (as nominated on the plan);
    - (ii) scientific or botanical names of plants;



- (iii) common names of plants (not essential);
  - (iv) spread at maturity;
  - (v) height at time of planting (measured from pot soil level to top of growing tip) (not essential);
  - (vi) crown width at time of planting (not essential); and
  - (vii) quantity of each species used;
- (m) evidence of measures taken for conservation, protection and maintenance of sites which have environmental, ecological, cultural, architectural, historic, scenic, visual, streetscape or scientific significance; and
- (n) a maintenance plan, detailing the intended arrangements for maintenance of the landscaping, and the conservation, protection and maintenance of significant sites, including at a minimum, the schedule for:
  - (i) weed control;
  - (ii) irrigation and watering;
  - (iii) plant maintenance and pruning; and
  - (iv) fertilizer management.

## **SC6.4.4 Landscaped separation buffer plan**

### **SC6.4.4.1 Purpose of a Landscaped separation buffer plan**

- (1) A landscaped buffer plan is required to:
  - (a) achieve appropriate separation between:
    - (i) sensitive land uses and Rural, Special industry or High impact industry zones; or
    - (ii) major infrastructure elements (such as State-controlled roads) and sensitive uses; or
    - (iii) environmentally significant areas or edges of existing Native vegetation from development;
  - (b) ensure appropriate mitigation methods and management activities are implemented to reduce the potential conflict between incompatible uses; and
  - (c) provide information and guidance to support the outcomes required by the Landscaping code, Reconfiguring a lot code and the Agricultural land overlay code.

### **SC6.4.4.2 Preparation of a Landscaped separation buffer plan**

- (1) A Landscaped separation buffer plan is to include a plan of the layout and supporting text.
- (2) A description and dimensioned site plan (drawn to an appropriate metric scale) is to include at a minimum :
  - (a) the project description and location;
  - (b) landscape architect / designer's name and contact details;
  - (c) the date on which the plan was prepared together with a plan number which clearly identifies the plan and any amendments thereof;
  - (d) the location of property boundaries, road alignments and street names;
  - (e) consideration and descriptions of the existence and location of surrounding land uses. The development should be in a position which will not result in the potential for land use conflict between neighbouring land uses;
  - (f) consideration of the nature of the buffer. Buffer areas may be temporary and can be reserved for public open spaces or further residential development once conflicting land use has ceased. Residential subdivision applications may contain mandatory identified buffer areas for development unless the development occurs after neighbouring agricultural activities have ceased;
  - (g) the extent of the buffer area, the location and spacing of the trees and shrubs with the provision of a list of tree and shrub species, having regard to the type of buffer required.
- (10) Separation buffers are to be provided between sensitive uses or any part of a lot included in a Residential zone, Emerging community zone or Rural residential zone and Rural or Industry zones. This buffer may be provided in the form of a landscaped separation buffer (distances set out in Table SC 6.4.4.2.1) or as an open space separation buffer (distances set out in Table SC 6.4.4.2.2).

- (a) To be effective, a landscaped separation buffer is to meet the following criteria:
- (i) be located as close as practicable to the point of release of the spray;
  - (ii) not be located on land used for a Rural activity;
  - (iii) provide a minimum landscaped separation distance in accordance with the dimensions of Table SC 6.4.4.2.1 (Landscaped separation buffer distances).

**Table SC 6.4.4.2.1 Landscaped separation buffer distances**

Zone/Existing Use	Total landscaped separation buffer distance (including fire break)
Rural zone	40m
Low impact industry zone	
Medium impact industry zone	
Waterfront and marine industry zone	
Low impact industry use	
Marine industry use	
Medium impact industry use	
Research and technology industry use	
Service industry use	
Warehouse use	
High impact industry zone	50m
High impact industry use	
Special impact zone	60m
Special industry use	

- (iv) provide a 10m cleared fire break area on either side of a vegetated strip (this fire break area is included within the total width of the landscaped separation buffer. Where the total width of landscaped separation buffer is 40m, 10m cleared area is located either side of a 20m wide vegetated area).
- (v) the vegetated area is to be comprised of a minimum of three rows ensuring there is foliage from base to crown with no gaps in the lower canopy:
  - (A) rows 1 and 3 are composed of short to medium sized tree species; and
  - (B) row 2 is composed of taller tree species.
- (vi) contain random plantings of a variety (at least 3) of tree and shrub species of differing growth habits, at a spacing of 2.5m and listed in Table SC 6.4.5.2.3 (Large screening shrubs and windbreaks) of PSP SC6.4.5 (Planting species list);
- (vii) provide a permeable barrier which allows air to pass through the buffer. A porosity of 0.5 is acceptable (that is, approximately 50% of the screen should be air space);
- (viii) have a mature tree height of 1.5 times the spray release height or target vegetation height, whichever is the highest;
- (ix) have mature height and width dimensions which do not detrimentally impact upon adjacent cropped land;
- (x) be planted in accordance with PSP SC6.8 (WRC development manual);
- (xi) be contained within a legal covenant which outlines maintenance requirements; and
- (xii) will not be considered operational until the trees reach the minimum effective height to control spray drift (1.5 times the spray release height or target vegetation height, whichever is the highest). Until then the landscaped separation buffer is to be maintained in line with a scheduled maintenance plan. The maintenance plan is to include at a minimum a schedule for:

- (A) weed control;
  - (B) irrigation and watering;
  - (C) plant maintenance and pruning; and
  - (D) fertilizer management.
- (xiii) Residential areas should not be developed within 300metres of the incompatible land uses until the buffer is considered as operational;


Note –

- (1) The precise design of the buffer will depend on many different factors including the chemicals used, method of application, the site, the proposed land-uses and the adjacent or nearby land uses and characteristics including road reserves and existing vegetation; and
- (2) Natural geographical features (watercourses and ridge lines), public open spaces, road reserves etc. can be incorporated into meeting the required distances.
- (b) To be effective, an open space buffer is to meet the following criteria:
- (i) be located as close as practicable to the point of release of the spray;
  - (ii) not be located on land used for a Rural activity; and
  - (iii) provide a minimum open space separation distance in accordance with Table SC 6.4.4.2.2 (Open space separation distances).

**Table SC 6.4.4.2.2 Open space buffer distances**

Industry	Open Space
Sugarcane	300m
Small Crops	300m
Orchards	300m
Grazing	60m

- (11) Landscaped separation buffers between major infrastructure elements (such as State-controlled roads) and sensitive uses or between environmentally significant areas or edges of existing native vegetation and development are to meet the following criteria:
- (a) earth mounding is provided where necessary to achieve satisfactory attenuation, visual screening or land use separation;
  - (b) selected plant species are appropriate to the location, drainage and soil type; meet the buffer's functional requirements and require minimal ongoing maintenance;
  - (c) plant selection includes a range of species in accordance with the SC6.4.5 (Planting species list) to provide variation in form, colour and texture to contribute to the natural appearance of the buffer;
  - (d) planting density results in the creation of upper, mid and understorey strata with:
    - (i) large trees planted at 6m centres;
    - (ii) small trees planted at 2m centres;
    - (iii) shrubs planted at 1m centres;
    - (iv) one plant per 1m along each row;
    - (v) each row being 3m apart;
    - (vi) a minimum of six species used in the buffer with a maximum species of 2 species of shrubs; and
    - (vii) tufting plants, vines and groundcovers are planted at 0.5m to 1m centres;
  - (e) where adjoining the edge of native vegetation or waterway understorey, shrubs and vines are used to bind appropriately the buffer edges against degradation and weed infestation; and

- 
- (f) is maintained in line with a scheduled maintenance plan until reaching its growth maturity. The maintenance plan is to include at a minimum a schedule for:
- (i) weed control;
  - (ii) irrigation and watering;
  - (iii) plant maintenance and pruning; and
  - (iv) fertilizer management.

## SC6.4.5 Planting species list

### SC6.4.5.1 Purpose of the planting species list

- (1) The purpose of this planting species list is to:
  - (a) identify suitable species of plants for establishing within the region; and
  - (b) identify suitable purposes for the species of plants recommended.

### SC6.4.5.2 Planting species list

- (1) It should be noted that plants have been categorised according to their most likely purpose, but some will be multipurpose, for example most street trees can also be used in parks, and some of the smaller, compact street or park trees will also be useful screening plants.
- (2) The Planting species list contains the following recommended species:

**Table SC 6.4.5.2.1 Verge/street trees plant list**

Species	Common name	Wet/Dry	Height (m)	Locally Available
<i>Acacia leptostachya</i>	Townsville Wattle	D	2-5	
<i>Acacia oraria</i>	Coastal Wattle	W/D	5-10	Y
<i>Acmena smithii</i>	Lilly pilly	W	5-10	
<i>Alphitonia excelsa</i>	Red Ash	W	8-10	Y
<i>Brachychiton acerifolius</i>	Flame tree	W	10-15	Y
<i>Brachychiton australis</i>	Broad-leaved Bottle Tree	D	6-10	
<i>Callistemon viminalis</i>	Weeping Bottlebrush	W/D	8-18	Y
<i>Cassia brewsteri</i> syn <i>Senna brewsteri</i>	Leichardt Bean	W/D	2-8	
<i>Cassia tomentella</i>	Velvet Bean tree	W/D	6-12	Y
<i>Chionanthus ramiflora</i>	Native Olive	W	3-5	Y
<i>Cupaniopsis anacardioides</i>	Tuckeroo	W/D	15-25	Y
<i>Cupaniopsis wadsworthii</i>	Cut leaf tuckeroo	W	3-5	Y
<i>Diploglottis obovata</i>	Blunt Leaved Tamarind	W	5-10	Y
<i>Evodiella muelleri</i>	Little pink evodia	W	5-10	Y
<i>Gossia bidwillii</i>	Python wood	W	5-10	
<i>Grevillea baileyana</i>	Scrub Beefwood	W/D	10-15	
<i>Harpulia hillii</i>	Tulipwood	W	10-20	Y
<i>Harpulia pendula</i>	Tulip wood	W	10-20	Y
<i>Hymnosporum flavum</i>	Native frangipani	W	5-12	
<i>Larsenaikia jardinei</i>	Shiny Leaved Larsenaikia	W/D	10-15	Y
<i>Lysiphyllum hookeri</i>	White Bauhinia	D	4-8	
<i>Petalostigma pubescens</i>	Quinine Berry	D	5-10	
<i>Pittosporum ferrugineum</i>	Rusty Pittosporum	W	8-10	Y
<i>Planchonia careya</i>	Cocky apple	W/D	8-15	Y
<i>Randia fitzlanni</i>	Native Gardenia	W/D	5-10	Y
<i>Syzigium australe</i>	Lilly pilly	W	5-12	Y
<i>Syzigium luehmanni</i>	Lilly pilly	W	5-12	
<i>Syzigium paniculatum</i>	Magenta Lilly Pilly	W	10-15	
<i>Xanthostemon chrysanthus</i>	Golden penda	W	8-20	Y

**Table SC 6.4.5.2.2 Large and/or park trees plant list**

Species	Common name	Wet/Dry	Height (m)	Locally Available
<i>Alphitonia petriei</i>	Pink Ash	W	10-25	Y
<i>Auranticarpa rhombifolia</i>	Diamond Leaf Pittosporum	W	20-25	
<i>Arytera divaricata</i>	Gap Axe	W	30-35	
<i>Alstonia scholaris</i>	Milky pine	W	15-30	Y
<i>Agathis robusta</i>	Qld Kauri	W	20+	
<i>Araucaria cunninghamii</i>	Hoop pine	W/D	20-30	
<i>Backhousia citriodora</i>	Lemon Ironwood	W	5-10	Y
<i>Brachychiton acerifolius</i>	Flame tree	W/D	10-15	Y
<i>Brachychiton compactus</i>	Whitsunday bottle tree	W/D	10-20	Y
<i>Cassia brewsteri</i>	Brewsters Cassia	W/D	6-12	
<i>Cassia tomentella</i>	Velvet Bean tree	W	6-12	Y
<i>Casuarina cunninghamiana</i>	River She-oak	W/D	10-30	Y
<i>Cordia subcordata</i>	Orange cordia	W	8-15	
<i>Corymbia tessellaris</i>	Moreton Bay Ash	W/D	10-30	Y
<i>Cupaniopsis anacardioides</i>	Tuckeroo	W/D	15-25	Y
<i>Commersonia bartramia</i>	Brown Kurrajong	W	12-20	
<i>Elaeocarpus grandis</i>	Blue Quandong	W	20-30	Y
<i>Elaeocarpus obovatus</i>	Hard Quandong	W	30-40	
<i>Eucalyptus raveretianna</i>	River Black Butt, Black Ironbox	W/D	18-25	Y
<i>Eucalyptus tereticornis</i>	Blue Gum, Forest Red Gum	W/D	20-30	Y
<i>Euroschinus falcata</i>	Ribbonwood, Pink Poplar	W/D	20-30	Y
<i>Flindersia australis</i>	Crows Ash	W	15-25	Y
<i>Flindersia schottiana</i>	Bumpy Ash	W	25-40	Y
<i>Harpulia hillii</i>	Tulipwood	W	10-20	Y
<i>Harpulia pendula</i>	Tulip wood	W	10-20	Y
<i>Jagera pseudorhus</i>	Pink tamarind, Foambark	W	6-10	Y
<i>Lophostemon confertus</i>	Brush box	W	20-30	Y
<i>Mallotus philippensis</i>	Red Kamala	W	10-20	Y
<i>Melaleuca dealbata</i>	Blue tea tree	W	12-25	Y
<i>Melaleuca leucadendra</i>	Weeping paperbark	W/D	20-30	Y
<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark	D	15-20	
<i>Millettia pinnata</i>	Pongamia	W/D	8-20	Y
<i>Melicope elleryana</i>	Pink Euodia	W	15-30	Y
<i>Mimusops elengi</i>	Spanish cherry	W/D	15-18	Y
<i>Nauclea orientalis</i>	Leichardt tree	W	20-30	Y
<i>Paraserianthes toona</i>	Mackay Cedar	W/D	20-30	Y
<i>Pleiogynium timoreense</i>	Burdekin plum	W/D	10-20	Y
<i>Syzigium australe</i>	Lilly pilly	W	5-12	Y
<i>Terminalia porphyrocarpa</i>		D	10-15	
<i>Terminalia sericocarpa</i>	Damson	W	20-30	Y
<i>Toona australis</i>	Red Cedar	W	15-25	Y
<i>Waterhousia florabunda</i>	Weeping Lilly Pilly	W/D	20-30	Y
<i>Xanthostemon chrysanthus</i>	Golden penda	W	8-20	Y

**Table SC 6.4.5.2.3 Large screening shrubs and windbreaks plant list**

Species	Common name	Wet/Dry	Height (m)	Locally Available
<i>Acacia decora</i>		W/D	2-5	

<i>Acacia flavescens</i>	Yellow wattle	W/D	4-10	Y
<i>Acacia holosericea</i>	Soapbush Wattle	D	4-5	Y
<i>Acacia leptocarpa</i>		D	6-10	Y
<i>Acacia leptostachya</i>	Townsville wattle	D	2-5	Y
<i>Callistemon spp.</i>	Bottlebrush	W/D	5-12	Y
<i>Cassia brewsteri</i>	Brewsters Cassia	W/D	6-12	
<i>Cassia brewsteri syn Senna brewsteri</i>	Leichardt Bean	W/D	1-8	
<i>Cassia tomentella</i>	Velvet Bean tree	W	6-12	
<i>Clerodendrum floribundum</i>	Lolly Bush	W/D	3-5	
<i>Cordia subcordata</i>	Orange cordia	W	8-15	
<i>Cupaniopsis wadsworthii</i>	Cut leaf tuckeroo	W/D	3-5	
<i>Dodonaea triquetra</i>	Large-leaved Hop Bush	W/D	3-5	
<i>Dodonaea viscosa</i>	Sticky Hop Bush	W/D	1.5-4	Y
<i>Eugenia reinwardtiana</i>	Beach Cherry	W/D	2-6	
<i>Glochidion lobocarpum</i>	Cheese Tree	W/D	1-6	Y
<i>Glochidion summatranum</i>	Umbrella Cheese Tree	W	3-8	Y
<i>Hibiscus tiliaceus</i>	Native hibiscus	W	4-10	Y
<i>Macaranga involucrata</i>	Brown Macaranga	W/D	4-10	
<i>Macaranga tanarius</i>	Macaranga	W/D	4-10	
<i>Pipturis argenteus</i>	Native mulberry	W	4-10	
<i>Syzygium australe</i>	Lilly pilly	W/D	5-12	Y

**Table SC 6.4.5.2.4 Small to medium shrubs plant list**

Species	Common name	Locally Available
<i>Abelia grandiflora 'Dwarf'</i>	Glossy Abelia	
<i>Acalypha Inferno</i>		Y
<i>Acalypha Firestorm</i>		Y
<i>Ardisia crenulata</i>		
<i>Baeckia 'La Petite'</i>		
<i>Baeckia virgata</i>	Twiggy Health Myrtle	
<i>Banksia robur</i>	Swamp Banksia	
<i>Banksia spinulosa</i>	Hairpin Banksia	
<i>Bauhinia galpinii</i>	Orange Bachinia	
<i>Bouganvillea-Smartly Pants</i>	Dwarf Bonganvillea	
<i>Breynia disticha</i>	Snow Bush	
<i>Bromeliad Spp.</i>		
<i>Calathea zebrina</i>	Zebra Plant - Ground cover	
<i>Calliandra tweedi</i>		
<i>Callistemon 'Little John'</i>		
<i>Callistemon 'Wildfire'</i>		
<i>Callistemon pachyphyllus - green</i>		
<i>Canna Lily - all varieties</i>		
<i>Cassia odorata</i>		
<i>Codiaeum - all varieties</i>	Croton	
<i>Codiaeum 'Golddust'</i>		
<i>Codiaeum 'Norma'</i>		
<i>Codiaeum 'Petra'</i>		
<i>Cordyline - all varieties</i>		
<i>Cordyline 'Rubra'</i>		
<i>Cordyline stricta</i>		
<i>Cordyline terminalis</i>		
<i>Cuphea ignea</i>	Cigar Flower	
<i>Dracaena - all varieties</i>		Y
<i>Drejerella guttata</i>	Shrimp Plant	



<i>Duranta 'Aussie 2000'</i>		Y
<i>Duranta 'Sheena's Gold'</i>		Y
<i>Duranta repens 'Alba'</i>		Y
<i>Euphorbia pulcherrima</i>	Poinsetta	
<i>Gordonia exillaris</i>		
<i>Graptophyllum excelsum</i>	Scarlet Fuchsia	
<i>Graptophyllum pictum</i>	Caricature Plant	
<i>Graptophyllum tricolor</i>		
<i>Grevillia 'Superb'</i>	Gordonia	
<i>Hakea plurinervia</i>		
<i>Hakea purpurea</i>		
<i>Heliotropium arborescens</i>	Cherry Pie	
<i>Hemerocallis littoralis</i>	Spider Lilly	
<i>Hibiscus - all varieties</i>		
<i>Hibiscus spp.</i>	Chinese Rose	
<i>Ixora - 'Red Sunkist, Little Willy'</i>		Y
<i>Ixora - dwarf varieties</i>		Y
<i>Ixora 'Prince of Orange'</i>		Y
<i>Ixora 'Pygmy Pink' Twilight Glow</i>		Y
<i>Ixora 'Sunshine'</i>		Y
<i>Justica carnea</i>	Flamingo Plant	
<i>Leea indica</i>	Hawaiian Holly	Y
<i>Leptospermum flavescens</i>		
<i>Melaleuca 'Claret Tops'</i>		Y
<i>Melaleuca thymifolia</i>	Thyme honey myrtle	
<i>Melaleuca trichoscatachya 'Compacta'</i>		
<i>Metrosideros Springfire</i>		
<i>Metrosideros Tahiti</i>		
<i>Murraya paniculata</i>	Mock Orange	Y
<i>Murraya Min a Min</i>	Mini Mock Orange	Y
<i>Mussaenda sp</i>	Bankock Rose	
<i>Odontonema strictum</i>	Firespike	
<i>Pachystachys lutea</i>	Lollipop Plant or Super Goldie	
<i>Pedilanthus - 'Exotica &amp; Tricolour'</i>		
<i>Pentas lanceolata</i>	Star – cluser	
<i>Persoonia falcata</i>	Geebung	Y
<i>Philodendron 'Xanadu'</i>		
<i>Philodendron roystonii</i>		
<i>Philodendron selloum</i>	Lacy Tree Philodendron	
<i>Phyllanthus multiflorus</i>	Waterfall Plant	Y
<i>Phyllanthus cuscutiflorus</i>		Y
<i>Plumbago capensis 'Blue'</i>		
<i>Poinsettia - all varieties</i>		
<i>Polyscias sp.</i>	Aralia	Y
<i>Russellia equisetiformis</i>	Coral Plant	
<i>Scaevola taccada</i>	Sea Lettuce	Y
<i>Schefflera arboricola</i>	Dwarf Umbrella Tree	
<i>Steptosolen jamesohnii</i>	Marmalade Bush	
<i>Syzygium paniculatum - 'Dwarf'</i>		
<i>Syzygium var 'Aussie Copper'</i>		
<i>Syzygium var 'Bush Christmas'</i>		
<i>Syzygium zeherii</i>		
<i>Szyzigium wilsonnii</i>	Powder Puff Lilly Pilly	
<i>Thuja orientalis</i>		
<i>Tibouchina 'Jules'</i>		
<i>Westringia fruticosa Zena</i>		Y

**Table SC 6.4.5.2.5 Groundcover, borders and tufted or clumping plants plant list**

<b>Species</b>	<b>Common name</b>	<b>Locally Available</b>
<i>Abelia grandiflora</i> 'Nana'		
<i>Adenium obesum</i>		Y
<i>Agapanthus orientalis</i> 'White' & 'Blue'		
<i>Aglaonema</i> sp	Chinese Evergreen	
<i>Ajuga reptans</i> 'Burgundy'	Wild Mint	
<i>Alpinia caerulea</i>	Native Ginger	Y
<i>Alpinia zerumpet</i>	Green Ginger	Y
<i>Ardisia crenata</i>	Spice berry	
<i>Aspidistra elatior</i>	Cast Iron Plant	
<i>Babingtonia tozerensis</i>		
<i>Babingtonia bidwillii</i>	Howies Sweet Midget	
<i>Baeckia virgata</i> 'Mt Tozer'		
<i>Baeckia virgata</i> 'Sweet Midget'		
<i>Baeckia virgata</i> dwarf		
<i>Beaucarnia recurvata</i>	Ponytail palm	Y
<i>Brachycome</i> spp	Rock Daisy	
<i>Chlorophytum</i> spp.	Spider Plant	Y
<i>Clivia miniata</i> 'Belgian Hybrid'	Kaffir Lilly	
<i>Cordyline australis</i>		
<i>Crinum pedunculatum</i>	Native Spider Lilly	Y
<i>Cuphea</i> 'Madhatter'	False heather	Y
<i>Cuphea</i> 'Mexican Heath'		Y
<i>Dampiera diversifolia</i>		
<i>Dianella Border Silver</i>		Y
<i>Dianella caerulea</i>	Paroo Lilly	Y
<i>Dieffenbachia maculata</i>	Dumb Cane	
<i>Dietes bicolor</i>	Flax Lilly	Y
<i>Dietes grandiflora</i>	Fortnight Lilly	
<i>Erigeron karvinskianus</i>	Seaside Daisy	
<i>Eustrephus latifolius</i>	Wombat Berry	Y
<i>Evolvulus</i> 'Blue Sapphire'	Wild Ins	Y
<i>Ferns - all varieties</i>		
<i>Furcraea foetida variegata</i>	Hemp Plant	Y
<i>Gardenia</i> 'Radicans'	Minature Gardenia	Y
<i>Gazania - perennial varieties</i>		
<i>Gazania</i> 'Sunshine'		
<i>Gloriosa superba</i>	Glowy Lily	
<i>Grevillea</i> 'Bronze Rambler'		
<i>Grevillea</i> 'Fanfare'		
<i>Grevillea biternata</i>		
<i>Heliconia psittacorum</i>	'Parrot Flower'	
<i>Heliconia</i> spp		
<i>Hemerocallis</i>	Day Lilies	
<i>Hemigraphis alternata</i>	Purple Wattle Plant	Y
<i>Heterocentron elegans</i>	Lascondra 'Peal Flower'	
<i>Hibertia scandens</i>		Y
<i>Hippeastrum</i> sp		
<i>Hymenocallis</i>	Thai Spider lilly	Y
<i>Liriope evergreen giant</i>		Y
<i>Liriope Stripey White</i>		Y
<i>Lomandra hystrix</i>	Mat-rush	Y
<i>Lomandra longifolia</i>	Mat Rush	
<i>Lonicera nitida</i>	Box Honeysuckle	
<i>Medinilla magnifica</i>		Y
<i>Medinilla Pixie Pink</i>		Y

<i>Ophiopogon japonicus</i>	Mondo Grass	Y
<i>Philodendron xanadu</i>		Y
<i>Scaevola 'Purple Fanfare'</i>		
<i>Sedum spp.</i>		Y
<i>Spathiphyllum</i>	Madonna Lily	Y
<i>Spathiphyllum 'La Petite'</i>	Peace Lilly	Y
<i>Strelitzia reginae</i>	Bird of Paradise	Y
<i>Strelitzia nicholai</i>		Y
<i>Tropaeolum sp</i>	Nasturtium	
<i>Verberba xhlybrida</i>	Gloria Lily	
<i>Viola hedracea</i>	Native Violet	
<i>Xanthorrhoea australis</i>	Grasstree	
<i>Xanthorrhoea fulva</i>	Grasstree	
<i>Xerochrysum bracteatum</i>	Everlasting Paper Daisy	Y
<i>Zamioculcas zammifolia</i>	Zanzibar Gem	Y
<i>Zoyzia</i>	No Mow Grass	Y

**Table SC 6.4.5.2.6 Palms, ferns and cycads plant list**

Species	Common name	Locally Available
<i>Archontophoenix alexandrae</i>	Alexander Palm	Y
<i>Archontophoenix cunninghamiana</i>	Bangalow Palm	
<i>Asplenium Nidus</i>	Bird Nest Fern - Shade	
<i>Bismarckia nobilis</i>	Bismarck Palm	
<i>Carpentaria acuminata</i>	Carpentaria Palm	
<i>Chamaedorea atrovirens</i>	Cascade Palm	
<i>Chamaedorea metalica</i>		
<i>Chamaedorea safrizii</i>	Bamboo Palm	
<i>Chrysalidocarpus cabadae</i>		
<i>Chrysalidocarpus lucubensis</i>	Madagascar Palm	
<i>Chrysalidocarpus lutescens</i>	Golden Cane Palm	
<i>Cyathea cooperii</i>	Tree Fern	
<i>Cycas revoluta</i>	Sago Palm	
<i>Cyrtostachys renda</i>	Sealing Wax	
<i>Dictyosperma album</i>	Princess Palm Red Hurricane Palm	
<i>Elaeis guineensis</i>	African Oil	
<i>Howea forsteriana</i>	Kenna Palm	
<i>Hyophorbe lagenicaulis</i>	Bottle Palm	
<i>Hyophorbe verschaffeltii</i>	Spindle Palm	
<i>Laccospadix australasica</i>	Atherton Palm	
<i>Licuala grandis</i>	Fan	
<i>Licuala ramsayi</i>		
<i>Livistona australis</i>	Cabbage Palm	
<i>Livistona chinensis</i>	Chinese Fan palm	
<i>Livistona decora</i>	Weeping Cabbage Palm	Y
<i>Macrozamia miquellii</i>		
<i>Macrozamia moorei</i>	Cycad	
<i>Neodypsis decaryi</i>	Triangle Palm	
<i>Normanbya normanbyi</i>	Black Palm	
<i>Pandanus pedunculatus</i>	Screw Pine	
<i>Phoenix canariensis</i>	Canary Island Date	
<i>Pritchardia pacifica</i>	Fijian Fan Palm	
<i>Ptychosperma elegans</i>	Solitaire Palm	
<i>Ptychosperma macarthurii</i>	Macarthur Palm	
<i>Ravenea rivularis</i>	Majestic Palm	
<i>Rhapis excelsa</i>	Lady Palm	
<i>Rhapis hunillii</i>	Dwarf Lady cluster	

<i>Roystonea oleracea</i>	Carribbean Royal	
<i>Roystonea regia</i>	Cuban Royal	
<i>Sabal palmetto</i>	Palme Ho Palm	
<i>Veitchia joannis</i>	Handsome solitary feather palm	
<i>Veitchia merrillii</i>	Christmas Palm	
<i>Washingtonia robusta</i>	Cotton Palm	
<i>Wodyetia bifurcata</i>	Foxtail Palm	
<i>Zamia furfuracea</i>	Jamaica sagotree cardboard cycad	
<i>Zamia furfuracea</i>	<i>Cardboard Cycad</i>	

**Table SC 6.4.5.2.7 Climbers and creepers plant list**

<b>Species</b>	<b>Common name</b>	<b>Locally Available</b>
<i>Aristolochia acuminata</i>	Native Dutchman's Pipe	Y
<i>Clamatis Vitalba</i>	Old Man's Beard	
<i>Cougea tomenhosa</i>	Shower orchid	
<i>Ficus pumila</i>	Climbing Fig	
<i>Hardenbergia violacea</i>	Sarsparilla vine	
<i>Hibbertia scandens</i>	Twining guinea flower	
<i>Hoya carnosa</i>	Wax Plant	
<i>Jasminum aemulum</i>		
<i>Jasminum didymum</i>	Coastal Jasmine	Y
<i>Jasminum sambac</i>	Grand Duke of Tuscany	
<i>Lonicera – multiflora</i>	Honeysuckle	
<i>Lonicera heckrottii</i>	Honeysuckle	
<i>Lonicera japonica</i>	Japanese Honeysuckle	
<i>Mandevilla x amabilis</i>	Dipladenia	
<i>Millettia megasperma</i>	Native Wisteria	
<i>Mucuma Bennettii</i>	New Guinea Creeper	
<i>Pandorea jasminoides</i>	Bower of Beauty	
<i>Pandorea pandorama</i>	Wonga-Wonga Vine	Y
<i>Passiflora coccinea</i>	Red Passion Flower	
<i>Passiflora edulis</i>	Passionfruit	
<i>Quisqualis indica</i>	Rangoon Creeper	
<i>Solanum jasminoides</i>	Jasmine Nightshade	
<i>Stephanotis floribunda</i>	Clustered Wax Flower	
<i>Strongylodon macrobotrys</i>	Jade Vine	
<i>Trachelospermum jasminoides</i>	Star Jasmine	
<i>Vitex rotundifolia</i>	Creeping vitex	Y

## **SC6.5 Natural hazards planning scheme policy**

### **SC6.5.1 Introduction**

#### **SC6.5.1.1 Relationship to the planning scheme**

- (1) This planning scheme policy provides:
  - (a) information the Council may request for a development application; and
  - (b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

#### **SC6.5.1.2 Purpose**

- (1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  - (a) Bushfire hazard assessment report;
  - (b) Bushfire management plan;
  - (c) Coastal hazard assessment report;
  - (d) Flood hazard assessment report;
  - (e) Landslide hazard (geotechnical) assessment report.

#### **SC6.5.1.3 Hazard overlay mapping**

- (1) Natural hazard mapping has been prepared for the local government area, showing the areas natural hazard susceptibility. This mapping has been prepared in accordance with the requirements of the SPP. The specific hazard overlays to which this PSP applies are:
  - (a) Bushfire hazard overlay code. Mapping:
    - (i) identifies the Very high risk, High risk and Medium risk sub-categories; and
    - (ii) has been prepared at a scale at which a site specific investigation of bushfire hazard will be necessary to determine the exact nature of the hazard on a site (Bushfire hazard assessment report) and the necessity for a Bushfire management plan;
  - (b) Coastal environment overlay code. Mapping:
    - (i) identifies Maritime development areas, High hazard and Medium hazard sub-categories for storm tide inundation, Coastal erosion and Permanent inundation due to sea level rise at 2100 sub-category;
    - (ii) is not a substitute for a site based assessment. A site specific Coastal hazard assessment should be undertaken to verify, specific to the site, the coastal hazard risk (unless provided by council) and appropriate mitigation responses to this;
  - (c) Flood hazard overlay code. Mapping:
    - (i) identifies predicted 1% AEP flood extent and Flood hazard area;

- (ii) is not a substitute for a site based assessment. A site specific flood hazard assessment should be undertaken to verify, specific to the site, the flood hazard risk (unless provided by council) and appropriate mitigation responses to this;
- (d) Landslide hazard overlay code. Mapping:
  - (i) identifies slope of 15% or greater; and
  - (ii) is not a substitute for a site based assessment. A site specific geotechnical assessment report should be undertaken to verify, specific to the site, the landslide risk and appropriate mitigation responses to this.

## SC6.5.2 Requirements of natural hazard documentation

- (1) Natural hazard documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.5.2.1 (Requirements of natural hazard documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

**Table SC 6.5.2.1 Requirements of natural hazard documentation**

Documentation	Preparation	Report requirements
Bushfire hazard assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in the identification of bushfire hazard.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Bushfire hazard assessment report may be requested to provide additional information to Council.</li> <li>A site specific Bushfire hazard assessment report is to be prepared in accordance with SC6.5.3 (Bushfire hazard assessment report).</li> <li>All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Bushfire hazard management plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in the identification and mitigation and have:               <ol style="list-style-type: none"> <li>knowledge and experience in applying relevant legislation, plans, policies, standards and guidelines relating to bushfire hazard and fire ecology relating to Queensland requirements; or</li> <li>have knowledge and experience in developing bushfire management plans in accordance with the methodology set out in SC6.5.4 (Bushfire hazard management plan) of this planning scheme policy; or</li> <li>be accredited practitioner (BPAD Level 2/3) under the Bushfire Planning and Design Accreditation Scheme from the Fire Protection Association of Australia; or</li> <li>have qualifications and experience in the field of ecology, environmental management or similar to assess and protect site-based and strategic biodiversity values.</li> </ol> </li> <li>Consultation with other entities</li> </ul>	<ul style="list-style-type: none"> <li>A site specific Bushfire hazard management plan may be requested to provide additional information to Council.</li> <li>A site specific Bushfire hazard management plan is to be prepared in accordance with SC6.5.4 (Bushfire hazard management plan)</li> <li>All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>

	<p>may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Rural fire brigade).</p>	
Coastal hazard assessment report	<ul style="list-style-type: none"> <li>• Prepared by a Registered professional Engineer Queensland or equivalent with experience in coastal or flood management.</li> <li>• Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).</li> </ul>	<ul style="list-style-type: none"> <li>• A site specific Coastal hazard assessment report may be requested to provide additional information to Council.</li> <li>• A site specific Coastal hazard assessment is to be carried out in accordance with: <ul style="list-style-type: none"> <li>a) SC6.5.5 (Coastal hazard assessment report);</li> <li>b) Guideline: A risk assessment approach to development assessment in coastal hazard areas, DEHP, 2013;</li> <li>c) AS/NZS ISO 31000: 2009 Risk management—Principles and guidelines;</li> <li>d) Draft SPP Guideline, state interest—natural hazards, Guidance on coastal hazards; and</li> <li>e) current engineering best practice.</li> </ul> </li> <li>• All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Flood hazard assessment report	<ul style="list-style-type: none"> <li>• Prepared by a Registered Professional Engineer Queensland or equivalent with experience in flood hazard assessment and flood management.</li> <li>• Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. Utility providers).</li> </ul>	<ul style="list-style-type: none"> <li>• A site specific Flood hazard assessment report may be requested to provide additional information to Council.</li> <li>• A site specific Flood hazard assessment is to be conducted in accordance with: <ul style="list-style-type: none"> <li>a) SC6.5.6 (Flood hazard assessment report); and</li> <li>b) AS/NZS ISO 31000: 2009 Risk management – Principles and guidelines;</li> </ul> </li> <li>• All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
Landslide hazard (geotechnical) assessment report	<ul style="list-style-type: none"> <li>• Prepared by a Registered Professional Engineer Queensland or equivalent: <ul style="list-style-type: none"> <li>a) who holds a degree in civil engineering or engineering geology with current membership of a recognised professional institution and whose primary business (with a minimum of 10 years of</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The site-specific Landslide hazard (geotechnical) assessment report may be requested to provide additional information to Council.</li> <li>• A site specific Landslide hazard (geotechnical) assessment report is to be prepared in accordance with SC6.5.7</li> <li>• A landslide risk assessment is to</li> </ul>



	<p>experience) is in the field of geotechnical engineering or engineering geology; or</p> <p>b) who has local experience with landslides or demonstrable general experience with landslides and their mitigation and rehabilitation.</p> <ul style="list-style-type: none"> <li>• Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<p>be prepared in accordance with the Landslide Risk Management Guidelines (Australian Geomechanics Society 2007, c and d) in Australian Geomechanics, Volume 42, No. 1 March 2007, or any later guideline of the Australian Geomechanics Society as agreed by Council and is to be provided as part of the site specific Landslide hazard (Geotechnical) assessment report.</p> <ul style="list-style-type: none"> <li>• All investigations, testing and design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.</li> </ul>
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### SC6.5.3 Bushfire hazard assessment report

#### SC6.5.3.1 Purpose of a Bushfire hazard assessment report

- (1) A Bushfire hazard assessment report is required to:
  - (a) quantify the bushfire hazard for a particular site;
  - (b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of bushfire hazard; and
  - (c) provide information which supports the outcomes required by the Bushfire hazard overlay code.

#### SC6.5.3.2 Undertaking a Bushfire hazard assessment report

- (1) The method for assessing bushfire hazard involves quantitative and qualitative assessments. The quantitative element requires an assessment of three key characteristics of land that have been found to be the main determinants of the severity of bushfire hazard. These factors are vegetation communities, slope and aspect. The qualitative review should consider the known bushfire behaviour.
- (2) For most types of development, bushfire risk is assessed based on the vegetation existing on and in proximity to the site. However if reconfiguring a lot, the level of bushfire hazard should be assessed as if the vegetation in that area, including any areas designated for revegetation, has reached its mature state.
- (3) The steps to be followed and information provided when preparing a Bushfire hazard assessment report are outlined below.

##### Step 1: Assessment of vegetation communities

The type of vegetation community can determine the rate at which dry fuel accumulates and its susceptibility to bushfire. Some vegetation communities protect fuel from drying out in all but extreme bushfire seasons and can then be susceptible to very destructive bushfires.

Alternatively, vegetation communities may expose fuels to drying and therefore be frequently available for burning. Frequent bushfires can result in the development of bushfire-tolerant grassy woodlands or grasslands and less destructive bushfire behaviour.

Table SC 6.5.3.2.1 (Hazard scores and associated fire behaviours for vegetation communities) lists hazard scores for a range of vegetation community types for the purpose of assessing bushfire hazard.

**Table SC 6.5.3.2.1 Hazard scores and associated fire behaviours for vegetation communities**

Vegetation Communities	Fire behaviour	Hazard score
Wet sclerophyll forest, tall eucalypts (>30 m), with grass and mixed shrub understorey.	Infrequent fires under severe conditions, flame lengths may exceed 40 m, floating embers attack structures for 1 hour, radiant heat and direct flame are destructive for 30 minutes.	10
Paperbark heath and swamps, eucalypt forest with dry-shrub ladder fuels.	Fire intensity depends on fuel accumulation, but can be severe, with flame lengths to 20 m, spot fires frequent across firebreaks, radiant heat and direct flame for 15 minutes.	8
Grassy eucalypt and acacia forest, exotic pine plantations, cypress pine forests, wallum	Fire intensity may be severe with flame lengths to 20 m, but less attack from embers.	6

heath.		
Native grasslands (ungrazed), open woodlands, canefields.	Fast moving fires, available to fire annually to 4 years. Usually no ember attack, radiant heat for >10 m, duration <2 minutes.	5
Intact acacia forests, with light grass to leaf litter, disturbed rainforest.	Fires infrequent, usually burn only under severe conditions, relatively slow fires, usually little ember attack.	4
Orchards, farmlands, kikuyu pastures.	Fires very infrequent, slow moving, may be difficult to extinguish, frequent fire breaks.	2
Grazed grasslands, slashed grass.	Grazing reduces intensity and rate of spread of fire, duration <2 minutes.	2
Desert lands (sparse fuels), mowed grass.	Gaps in fuel, usually slow fire spread.	1
Intact rainforest, mangrove forest, intact riverine rainforest.	Virtually fireproof.	0

Note – Vegetation assessment should be based upon examination of the vegetation on and surrounding the subject site. Narrow strips of vegetation may be flammable; however, bushfires will not generally reach their full intensity where bushfire fronts are less than 100 metres wide. For this reason the following examples may be viewed as having the next lower hazard score (i.e. paperbark heath would have a score of 6 not 8, cypress pine forest 5 not 6):

- a) areas with a linear shape (e.g. roadside vegetation beside a cleared paddock); and
- b) units of vegetation less than 50 hectares in area and more than one kilometre from the nearest extensive vegetation.

Where the vegetation community is assessed as having a vegetation community hazard score of zero, no other factors need to be taken into account. No further action is required.

### Step 2: Assessment of slope

Studies have shown that fires burn more quickly and with greater intensity up slopes, generally doubling every 10 degrees of slope. Also, the steeper the slope, the more difficult it is to construct ring roads, firebreaks and provide access for emergency crews. Trees situated downhill from structures will have their crowns close to the structures. This presents bushfire hazards particularly for exposed structures such as timber decks.

Table SC 6.5.3.2.2 (Hazard scores for slope) presents the hazard scores for different categories of slope.

**Table SC 6.5.3.2.2 Hazard scores for slope**

Slope	Hazard score
Gorges and mountains (>30%)	5
Steep hills (>20% to 30%)	4
Rolling hills (>10% to 20%)	3
Undulating (>5% to 10%)	2
Plain (0% to 5%)	1

Note – For site-specific assessment of bushfire hazard, if the site is downhill from the hazard, the slope effect may be taken as zero as the fire intensity will be less. However, burning heavy fuels may roll downhill and trees may fall down, so recommended setbacks from the hazard still need to be observed.

### Step 3: Assessment of aspect

Aspect affects bushfire hazard due to the effects that exposure to direct sunlight has on different vegetation communities, including the drying rates of fuels. Aspect also correlates closely with exposure to low humidity winds that increase bushfire intensity. In extremely broken country where there is a range of aspects, the predominant aspect should be used.

As aspect has only a minor influence on flatter land, aspect is not considered to be significant on land with a slope less than 5%. Table SC 6.5.3.2.3 (Hazard score for aspect) lists the hazard score for different aspects.

**Table SC 6.5.3.2.3 Hazard score for aspect**

Aspect	Hazard score
North to north-west	3.5

North-west to west	3
West to south	2
North to east	1
East to south and all land under 5% slope	0

#### Step 4: Combining scores to identify the severity of bushfire hazard

The scores for the individual factors determined for vegetation communities, slope and aspect are added to give a total for each sub-unit as follows:

*Total hazard score = vegetation community hazard score + slope hazard score + aspect hazard score.*

The total hazard score determines the severity of bushfire hazard for each sub-unit as set out in Table SC 6.5.3.2.4 (Hazard score ranges to identify the severity of bushfire hazard).

**Table SC 6.5.3.2.4 Hazard score ranges to identify the severity of bushfire hazard**

Total hazard score	Severity of bushfire hazard
13 or greater	High
6 to 12.5	Medium
1 to 5.5	Low

Note – Buildings in High severity bushfire hazard areas should be constructed in accordance with the Level 1 requirements of AS 3959:1999 (Construction of Buildings in Bushfire-Prone Areas).

#### Step 5: Field verification

Preliminary bushfire hazard maps should be prepared based on the results of Step 4 above by aggregating all sub-units with similar levels of bushfire hazard severity into 'high' and 'medium' severity classifications. Field verification or 'ground truthing' of these preliminary results should then be undertaken. A number of sample areas should be evaluated to test the accuracy of the preliminary bushfire hazard findings.

#### Step 6: Qualitative assessment

Known bushfire behaviour complements the quantitative assessment and should be considered as part of the qualitative review.

Known bushfire behaviour is extremely difficult to use as a quantitative planning tool. This is because the absence of bushfire, even for an extended period of time, does not mean that an area will not burn and may lead to massive fuel accumulation with dangerous bushfire behaviour if it does ignite. Known bushfire behaviour may identify sites where combinations of slope and wind have led to severe bushfire behaviour in the past, and where extra precautions to protect assets might be required. The reliability of known bushfire behaviour may be difficult to assess and Queensland Fire and Rescue Service should be consulted if problems are indicated.

#### Step 7: Safety buffer

The final step in identifying bushfire hazard areas is to add a safety buffer, as land adjacent to a bushfire hazard area is vulnerable to bushfire attack from these areas.

Any land within 100m of an area identified as having a high bushfire severity classification should be included in the High bushfire hazard area and any land within 50m of an area identified as having a Medium bushfire severity classification should be included in the Medium bushfire hazard area. The safety buffers should be integrated into the preparation of maps that identify bushfire hazard areas.

Table SC 6.5.3.2.5 (Total hazard score and severity of bushfire hazard with safety buffers) shows the width of the safety buffers that apply to the various bushfire hazard severity classifications.

**Table SC 6.5.3.2.5 Total hazard score and severity of bushfire hazard with safety buffers**

<b>Total hazard score</b>	<b>Severity of bushfire hazard</b>	<b>Extent of safety buffer</b>
13 or greater	High	100m
6 to 12.5	Medium	50m
1 to 5.5	Low	Not applicable

## **SC6.5.4 Bushfire hazard management plan**

### **SC6.5.4.1 Purpose of a Bushfire management plan**

- (1) A Bushfire management plan is required to:
  - (a) identify the strategies a development is to implement for mitigating the impacts of bushfire on life, property and the environment, where a site has been identified as having a medium or high bushfire; and
  - (b) provide information and guidance to support the outcomes required by the Bushfire hazard overlay code.

### **SC6.5.4.2 Preparing a Bushfire hazard management plan**

- (1) A Bushfire management plan identifies specific risk factors associated with the development, planning for the separation of at-risk elements and potential hazards, and providing access and treatments to facilitate an effective response to bushfire.
- (2) A Bushfire management plan is to be prepared having regard to the principles outlined in SC6.5.4.3 (Managing bushfire hazard risks) and is to include the following information:
  - (a) a site specific Bushfire hazard assessment report using the methodology set out in SC6.5.3 (Bushfire hazard assessment report) of this planning scheme policy;
  - (b) an assessment of other site-specific factors that are important in devising suitable bushfire mitigation strategies, such as likely direction of bushfire attack, environmental values that may limit mitigation options, location of evacuation routes and safety zones and identification of the risks on site and from nearby sites;
  - (c) an assessment of the specific risk factors associated with the development including:
    - (i) the intended future population size and characteristics;
    - (ii) the likely usage patterns on the site;
    - (iii) the estimated traffic generation;
    - (iv) the nature of activities to be conducted on the site;
    - (v) the storage or handling of hazardous chemicals;
    - (vi) the use of the site for emergency services or disaster response purposes;
    - (vii) particular warning or evacuation requirements; and
    - (viii) the total extent of clearing, revegetation and landscaping proposed for the site which is to be indicated on a site plan;
  - (d) mitigation measures identified for the development that address major factors in bushfire attack, including embers and burning debris, radiant heat, direct flame contact and wind. Smoke should also be addressed where it is relevant to mitigation measures for vulnerable uses, such as hospitals, aged-care facilities and facilities in which aged or disabled persons reside, or where resident populations are susceptible to respiratory disorders;
  - (e) a plan for mitigating the bushfire risk identified in the Bushfire hazard assessment report. The plan is to recommend specific mitigation actions for the development including:
    - (i) appropriate land uses;

- (ii) access, including road layout, accessways, driveways, evacuation routes, including an easement on site and on adjoining lands, access routes for two-wheel drive vehicles and fire-fighting appliances and evacuation requirements;
- (iii) lot layout and orientation;
- (iv) site layout including identification of proposed locations of buildings or building protection zones;
- (v) the need and construction standards for fire maintenance trails;
- (vi) access requirements and access routes for two-wheel drive vehicles and fire- fighting appliances;
- (vii) warning and evacuation procedures, plans and routes including capacity of public roads especially perimeter roads and traffic management treatments, and responsibility for their maintenance;
- (viii) fire-fighting requirements including infrastructure and water supply;
- (ix) landscaping, including details of new vegetation or landscape treatments to be used on site, particularly in the building protection zone;
- (x) operational, design, construction or management measures for responding to particular requirements of some land uses, such as air quality management and design standards of tanks and fittings;
- (xi) any other specific measures such as external sprinkler systems which are only as an adjunct to other passive controls, and alarms;
- (xii) ongoing purchaser or resident education and awareness programs; and
- (xiii) ongoing maintenance, management and response awareness programs, including tenure and community title arrangements. This should also include identification of specific responsibilities for actions required in the bushfire management plan for owners or occupiers of the development, the developer and Council.

### **SC6.5.4.3 Principles for managing bushfire hazard risks**

#### **Separation distances from sources of bushfire hazard**

- (1) Topographical features of the site and design elements are used to maximise separation between sources of bushfire hazard and dwellings or buildings, and manage risk. These features include the following:
  - (a) roads, particularly perimeter roads and roads separating building locations on lots from vegetation with a hazard score higher than 4;
  - (b) fire maintenance trails where used;
  - (c) parkland and other areas maintained with reduced fuel loads such as mown grass, sports ovals, golf courses and car parks;
  - (d) water bodies and waterways;
  - (e) landscaped areas; and
  - (f) easements and other reserves such as future road reserves and maintained overland flow paths.

#### **Design and construction of building protection zones**

- (2) Building protection zones are to be established for the protection of buildings from bushfire:

- (a) the inner 10m of the building protection zone is to be maintained in a very low fuel state. This area is designed to prevent continuity of fuel, such as shrubs or build-up of leaf litter extending to the building through:
  - (i) paving, lawn or non-combustible mulch such as gravel;
  - (ii) tree retention only if there is a vertical and horizontal separation of 2m between plants to ensure the canopy is not continued.
- (3) The outer 10m of the building protection zone is to be maintained in a reduced fuel state. This area is designed to reduce bushfire intensity and shield buildings from radiant heat, and prevent flames transferring from ground fuels to the canopy. In the outer zone, trees may be retained or planted in small clumps, retaining vertical and horizontal separation between any other plants to ensure that canopy is not continuous.
- (4) In all areas of the building protection zone, trees should be a distance 1.5 times the mature canopy height away from buildings, and should not overhang buildings.

### **Design of roads and public access**

- (5) When reconfiguring a lot involves the opening of a new road, a perimeter road is the preferred option to separate bushland from urban areas. The public road system in a bushfire-prone area is to provide alternative access or egress for firefighters and residents during a bushfire emergency if part of the road system is cut by fire. Roads should provide sufficient width to allow fire-fighting vehicle crews to work with fire-fighting equipment about the vehicle.
- (6) New lots do not back directly onto hazardous vegetation. The perimeter road allows for fire-fighting access. If a perimeter road is not used to isolate a cul-de-sac from the hazardous vegetation, alternative formal access and egress are provided (E.g. a fire maintenance trail). Using public roads is preferable to using easements.

### **Fire maintenance trails**


- (7) Fire maintenance trails are only effective in the context of a strategic advantage and access for hazard-reduction operations. Fire maintenance trails present difficulties and costs associated with maintaining fire maintenance trails on private land. Proposals for fire maintenance trails will need to demonstrate clear benefits over the use of a perimeter road. A perimeter fire trail cannot be imposed on the adjoining lands.
- (8) Fire maintenance trails are primarily used as access for firefighters. They are also used for fire control lines and maintenance of buffers protecting development. In non-urban areas, they may surround isolated dwellings or groups of dwellings. In suburban subdivisions, they may function as a strategic control line around the hazard side of the development, if they are connected to the public road system at frequent intervals.
- (9) Fire maintenance trails are to be designed and located in accordance with a Bushfire hazard management plan prepared in accordance with this planning scheme policy. The bushfire management plan is to demonstrate that the fire maintenance trails:
  - (a) are located, designed and constructed to buffer development from bushfire hazard and allow access for fire-fighting vehicles to strategic areas of the site for firefighting;
  - (b) adjacent to Council parkland are to be on private land where no public road interface can be achieved;
  - (c) are unfenced and accessible at all times by fire-fighting vehicles;



- (d) connect through to a road network or network of other fire maintenance trails;
- (e) respond to site topography and bushfire characteristics of the site and surrounding area;
- (f) are located, designed and constructed to protect firefighter safety and provide for movement, manoeuvring and access to water supplies for firefighting.
- (g) are designed so that dead ends are avoided; however if a dead end exists, a turnaround of sufficient radius for a full lock by a Category 1 fire tanker should be constructed (radius<sup>3</sup> 12m) and if there is insufficient space for such a turnaround due to the topography, provision should be made to allow a maximum three-point turn (radius<sup>3</sup> 10m);
- (h) are designed and constructed to avoid adverse environmental impacts, including soil erosion, impacts on natural hydrological flows, or other land degradation;
- (i) link to existing fire maintenance trails or roads at each end and at maximum intervals of 200m, having regard to site topography, firefighter safety and the need to regularly access water supplies;
- (j) do not alter natural hydrological flows or expose acid sulfate soils; and
- (k) primary trails are maintained to provide safe four-wheel drive access by fire-fighting vehicles.

### **Landscaping**

- (10) The preparation of a landscaping plan is to be guided by best practice ensuring the design and species selection in the landscape plan:
  - (a) prevents flame impingement on the dwelling;
  - (b) provides space and access for property protection;
  - (c) reduce fire spread;
  - (d) deflects and filter embers;
  - (e) provides shelter from radiant heat;
  - (f) reduces wind speed;
  - (g) meets the spacing requirements in the bushfire protection zone;
  - (h) uses site features including topography and driveways to manage hazards;
  - (i) maximises separation distances between structures and sources of bushfire hazard; and
  - (j) identifies the use of appropriate materials and species in landscaping to manage fuel loads.
- (11) All vegetative material can burn under the influence of bushfire. Careful attention must be paid to species selection, their location relative to their flammability, avoidance of continuity of vegetation horizontally and vertically, and ongoing maintenance to readily remove flammable fuels such as leaf litter, twigs and debris.



Selection of plant species is not to be relied upon as a primary measure to reduce bushfire risk.

## SC6.5.5 Coastal hazard assessment report

### SC6.5.5.1 Purpose of a Coastal hazard assessment report

- (1) A Coastal hazard assessment report is required to:
  - (a) demonstrate that a development will not increase risk to people and property from coastal hazards impact or create an adverse coastal hazard impact including an impact on the ongoing operation of development in coastal hazard areas; and
  - (b) provide information and guidance to support the outcomes required by the Coastal environment overlay code.

### SC6.5.5.2 Desired outcomes for a Coastal hazard assessment report

- (1) The following minimum outcomes have been identified to guide the consideration of risk to development from a coastal hazard. These outcomes in Table SC 6.5.5.2.1 (Outcomes for a coastal hazard assessment report) are not necessarily exhaustive having regard to a site or development.

**Table SC 6.5.5.2.1 Outcomes for a coastal hazard assessment report**

<b>Outcome 1</b>	Development in an area subject to a coastal hazard protects safety and amenity.
<b>Outcome 2</b>	Buildings and structures are designed to withstand coastal hazards and minimise cost and disruption to the community associated with responding to coastal hazard impacts.
<b>Outcome 3</b>	An acceptable standard of amenity for future users of the premises is achieved.
<b>Outcome 4</b>	Difficult to evacuate uses and vulnerable uses are to be located outside of Medium storm-tide sub-category areas and the High storm-tide sub-category coastal hazard areas.
<b>Outcome 5</b>	Development relying on an evacuation route or supporting infrastructure located elsewhere demonstrates that those elements in themselves are not susceptible to a coastal hazard.
<b>Outcome 6</b>	Any action taken to mitigate the impacts of coastal hazards does not impact adversely on an adjacent premises or the ability of others to implement their future adapt, defend or retreat actions.
<b>Outcome 7</b>	Development in an area subject to coastal hazards protects biodiversity, the integrity of environmental networks and coastal resources.

### SC6.5.5.3 Undertaking a Coastal hazard assessment report

- (1) The nature and severity of flood actions is to be established for the site and is to inform the appropriate site and use mitigation measures that are development specific.
- (2) The coastal hazard assessment is to address the sources of coastal hazards, specifically including both the impacts of storm tide and longer term salt-water inundation due to tidal flooding.
- (3) The flood actions to be considered in the coastal hazard assessment include the following:
  - (a) the extent of inundation;
  - (b) flow velocities and depths of inundation through the assessment area;

- (c) hydrostatic and hydrodynamic forces on a structure and a building;
- (d) debris impacts;
- (e) proximity to coastal waters and associated wave actions;
- (f) erosion and associated scour;
- (g) distance to land unaffected by flooding; and
- (h) duration of flooding.

#### **SC6.5.5.4 Preparation of a Coastal hazard assessment report**

- (1) The Coastal hazard assessment report is to:
  - (a) include a Coastal risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of natural hazard documentation ) of this planning scheme policy;
  - (b) describe the impacts of coastal hazards on the site;
  - (c) describe all proposed mitigation measures for the site. These mitigation measures are to:
    - (i) address the full extent of exposure to flood action;
    - (ii) address the location, design, siting, construction, and operational procedures for the development;
    - (iii) determine the risk of scour or erosion for the particular coastal hazard area and mitigation methods;
    - (iv) be specific to the full extent, nature and characteristics of the intended use, including affected populations;
    - (v) be contained wholly on the site; and
    - (vi) include existing or committed defence measures in developing a site-specific response.
  - (d) address the outcomes for a Coastal hazard assessment report as detailed in Table SC 6.5.5.2 (Desired outcomes for a Coastal hazard assessment report) detailed in this planning scheme policy;
  - (e) describe any residual risks likely to be experienced on site or created by the development external to the site.

## **SC6.5.6 Flood hazard assessment report**

### **SC6.5.6.1 Purpose of a Flood hazard assessment report**

- (1) A Flood hazard assessment report is required to:
  - (a) quantify the flood hazard for a particular site;
  - (b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of flood hazard; and
  - (c) provide information and guidance to support the outcomes required by the Flood hazard overlay code and the Coastal environment overlay code.

### **SC6.5.6.2 Preparing a Flood hazard assessment report**

- (1) The Flood hazard assessment report is to include the following key elements:
  - (a) assessment of the flood risk and implications up to and in excess of the defined flood event; the flood risk does not stop at the defined flood event so the suitability of a land use must consider the implications of larger floods, particularly in regard to the risk to people. The following should be identified:
    - (i) the potential impacts of flood hazard on the development;
    - (ii) the potential impacts of the development on flood hazard;
    - (iii) the location and height of buildings, particularly habitable floor areas;
    - (iv) the location and design of plant and equipment, including electrical fittings; and
    - (v) impact of increases in rainfall intensity at 2050 and 2100 in regard to safety and property damage;
    - (vi) in the case of overland flow flooding a severe storm impact assessment being provided in accordance with Queensland Urban Drainage Manual;
    - (vii) as relevant, include accurate hydrological and hydraulic modelling for the waterway network and assessment of existing flooding and flood levels of major water systems, including modelling of the 50%, 10%, 1%, 0.5% and 0.2% AEP flood events and the Probable Maximum Flood (PMF);
  - (b) identification of the stakeholders exposed to or affected by the risk of flooding and their compatibility to the risk and how flood risk to people is managed. specifically identifying:
    - (i) number of people likely to be at risk and who may need to be evacuated;
    - (ii) special care uses (the publication Evacuation Planning by Emergency Management Australia (Commonwealth Government 2005) provides a list of special needs groups);
  - (c) identification of public and private premises, social systems and environmental elements at risk of flooding, including consideration of extreme flood events;
  - (d) identification of all critical electrical services, hazardous storages and other high risk elements;
  - (e) evacuation routes – identify applicable routes, if relied upon, and flood immunity of those routes, and an assessment of the safety of people moving to those routes;

- (f) isolation – potential to have evacuation route cut off early in the flood;
  - (g) burden placed on emergency services – while important to allow safe access for emergency services, they cannot be relied on as a solution to egress difficulties and evacuation;
  - (h) special care requirements at evacuation destination – uses focused on vulnerable people such as children or elderly and their special requirements for care and the ability of evacuation centres to provide that care;
  - (i) length of flood recovery and social and economic impacts; that is, the likelihood and consequences of flooding. This evaluation requires a quantitative analysis that uses numerical values, rather than the descriptive scales used in qualitative and semi-quantitative analysis for both consequences and likelihood. The quality of the analysis depends on the accuracy and completeness of the numerical values used
  - (j) flood-resilient design – this may include both using flood-compatible materials and building design aspects such as locating the least flood-tolerant uses at the highest development levels;
  - (k) definition of flood hazard management strategies is to include:
    - (i) a description and evaluation as to the impact of the proposed mitigation strategies on the existing and likely future use of land and buildings in proximity to the proposed development;
    - (ii) the proposed method of perpetuating the restricted use and required mitigation measures through appropriate forms of legal documentation, notation on titles and methods for conveying the risk management data to future owners and leaseholders; and
    - (iii) the procedure to conduct emergency flood management, evacuation and rescue operations including flood emergency management plans.
- (2) Development which proposes a lowering of flood immunity standards through a risk assessment (usually an industrial use) is to ensure the building materials are constructed of flood-compatible materials.

## **SC6.5.7 Landslide hazard (geotechnical) assessment report**

### **SC6.5.7.1 Purpose of a Landslide hazard (geotechnical) assessment report**

- (1) The Landslide hazard (geotechnical) assessment report is required to:
  - (a) quantify the landslide hazard for a particular site;
  - (b) ensure appropriate methods are implemented to appropriately mitigate or avoid the risk of landslide hazard; and
  - (c) provide information and guidance to support the outcomes required by the Landslide hazard overlay code.

### **SC6.5.7.2 Risk assessment criteria**


- (1) For the purposes of completing the risk assessment, tolerable risk criteria apply and are specified by the Australian Geomechanics Society in Table 1 (AGS Suggested Tolerable loss of life individual risk) in the Practice Note Guidelines for Landslide Risk Management 2007, except where societal risk applies as noted below.
- (2) 'Acceptable risk' criteria as described in Australian Geomechanics Society 2007 Practice note guidelines for landslide risk management 2007 are one order of magnitude lower than 'tolerable risk' as specified in Table 1 (AGS Suggested Tolerable loss of life individual risk) and are to apply to:
  - (a) essential community infrastructure;
  - (b) sensitive uses;
  - (c) assembly uses;
  - (d) difficult to evacuate uses; and
  - (e) hazardous materials.

### **SC6.5.7.3 Preparing a Landslide hazard (geotechnical) assessment report**

- (1) The site-specific Landslide hazard (geotechnical) assessment report is to include a landslide risk assessment, as detailed in Table SC 6.5.2.1 (Requirements of Natural hazard documentation) of this planning scheme policy and demonstrate that development on land susceptible to landslide has had appropriate regard to the geological elements including landslide risk on the site.
- (2) The site specific Landslide hazard (geotechnical) assessment report is to:
  - (a) include recommendations and a conclusion that are supported by the data and all stated assumptions contained in the assessment;
  - (b) be capable of being verified by a peer review;
  - (c) state whether the site is suitable for the development in compliance with the risk assessment criteria in SC6.5.7.2 (Risk assessment criteria) for the loss of life and for property loss; and
  - (d) identify the risk mitigation measures for the site.
- (3) As a guide the following report format and contents description indicates the depth of detail required:

- (a) an introduction including details of the development, such as site location and description including the real property description and the proposed development, reconfiguring a lot or construction details;
- (b) a description of existing conditions, including existing research material:
  - (i) aerial photographs;
  - (ii) geological maps;
  - (iii) geological reports;
  - (iv) site classification;
  - (v) geology (local and regional), including:
    - (A) surface and sub-surface materials; and
    - (B) geomorphology (slopes, ground contours, natural features, terrain analysis, landslide features);
  - (vi) site history, including the location size and type of previous landslips on or affecting the site and hazards outside the site but likely to affect it, such as landslides or rockfalls upslope of the site;
  - (vii) groundwater, including:
    - (A) watertable; and
    - (B) springs and seepage areas in the local area of interest;
  - (viii) surface drainage patterns;
  - (ix) vegetation cover on and around the site; and
  - (x) buildings, other structures, earthworks;
- (c) an assessment of land stability/suitability, including:
  - (i) proposed development components;
  - (ii) a landslide risk assessment for the site indicating the likelihood and consequences of landslides on or near the site affecting the development and the calculated risk to life and property having regard to SC6.5.7.2 (Risk assessment criteria); and
  - (iii) potential geotechnical effects of the development on land stability;
- (d) an assessment of development impacts, including:
  - (i) site layout;
  - (ii) roadworks, driveways and other pavements;
  - (iii) earthworks (excavation, materials usage);
  - (iv) foundations;
  - (v) surface drainage;
  - (vi) wastewater (treatment and disposal);
  - (vii) detailed existing stability of the site and of geotechnical constraints on buildings or other development work on the site as well as on land above and below the site;
  - (viii) overall effect of development on the stability of the site as well as on land above and below the site; and
  - (ix) overall effect of any site sewage disposal system or rainwater run-off system on slope stability;
- (e) recommendations on appropriate measures required to avoid or minimise risks of instability or other adverse environmental effects, on the site as well as land above or below the site, including:
  - (i) preferred locations for buildings, other structures and driveways;
  - (ii) foundation requirements;
  - (iii) pavement types and design;
  - (iv) construction methods to avoid problem areas;
  - (v) preferred excavation, retention and stabilisation techniques and the suitability of excavated materials for use in on-site earthworks;
  - (vi) surface and sub-surface drainage requirements;
  - (vii) preferred methods of wastewater disposal;
  - (viii) vegetation protection and revegetation requirements; and
  - (ix) design life adopted;



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- (f) a summary and conclusions on the overall suitability of the land for the proposed development; and
  - (g) appendices for field and laboratory test results, including the location and level of field investigations such as boreholes and trench pits.

## **SC6.6 Third party advice or comment planning scheme policy**

### **SC6.6.1 Introduction**

#### **SC6.6.1.1 Relationship to the planning scheme**


- (1) This planning scheme policy applies to any development application which has been 'properly made' with Council for assessment against the Planning Scheme. Council may require further expert advice or want to seek comments from a special interest person or group on the development application.

#### **SC6.6.1.2 Purpose**

- (1) This planning scheme policy:
  - (a) allows Local government to seek advice or comment, where appropriate, about an application in any circumstances the Local government determines, including, in the Local government's opinion if:
    - (i) the development may conflict with an overlay;
    - (ii) specialised technical advice is required to assess the development; or
    - (iii) the development may affect premises being of special interest to a person.
  - (b) describes the methods which may be used by Council to obtain third party advice or comment on a particular development application prior to the commencement of the Decision Stage.

### **SC6.6.2 Third party consultation**

- (1) The purpose of Consultation is to seek third party advice or comment on any development application prior to the commencement of the Decision Stage. The advice may be sought from any individual, stakeholder or interest group.
- (2) The advice or comment may be sought in any appropriate way, including:
  - (a) public notification in the newspaper; or
  - (b) placing a notice on the premises; or
  - (c) placing a notice on public land; or
  - (d) personal notification or contact; or
  - (e) public meetings; or
  - (f) meeting with a person having a special interest.
- (3) When seeking third party advice or comment, Council will provide appropriate information on the proposal including:
  - (a) a description of the proposal;

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- (b) details of where the development application can be inspected;
  - (c) provide a copy of relevant information;
  - (d) details of where comments may be lodged; and
  - (e) the last day upon which Council will accept advice or comment.
- (4) The providing of third party advice or comment for a development application under this planning scheme policy does not provide the consulted party with any Appeal Rights as described by The Act.

## **SC6.7 Growth management planning scheme policy**

### **SC6.7.1 Introduction**

#### **SC6.7.1.1 Relationship to the planning scheme**

- (1) This planning scheme policy provides:
  - (a) information the Council may request for a development application; and
  - (b) guidance or advice about satisfying an assessment benchmarks which identifies this planning scheme policy as providing that guidance or advice.

#### **SC6.7.1.2 Purpose**

- (1) The purpose of this planning scheme policy is to provide information, guidance and advice for satisfying the assessment benchmarks for the preparation of a site specific:
  - (a) Development needs assessment report;
  - (b) Economic impact assessment report;
  - (c) Structure plan; and
  - (d) Traffic impact assessment report.

## SC6.7.2 Requirements of growth management documentation

- (1) Growth management documentation is to be prepared in a clear and concise manner, consistent with the elements identified in Table SC 6.7.2.1 (Requirements of growth management documentation) below, as well as any specific requirements identified in the relevant sub-sections of this report.

**Table SC 6.7.2.1 Requirements of growth management documentation**

Documentation	Preparation	Report requirements
Development needs assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).</li> </ul>	<ul style="list-style-type: none"> <li>A Development needs assessment report may be requested to provide additional information to Council.</li> <li>A Development needs assessment report is to be prepared in accordance with SC6.7.3 (Development needs assessment report)</li> </ul>
Economic impact assessment report	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in economics and economic assessments.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals (e.g. business owners).</li> </ul>	<ul style="list-style-type: none"> <li>An Economic impact assessment report may be requested to provide additional information to Council.</li> <li>An Economic impact assessment report is to be prepared in accordance with SC6.7.4 (Economic impact assessment report)</li> </ul>
Structure plan	<ul style="list-style-type: none"> <li>Prepared by a suitably qualified professional with appropriate technical expertise in planning and design and the preparation of Structure plans.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A Structure plan may be requested to provide additional information to Council.</li> <li>A Structure plan is to be prepared in accordance with SC6.7.5 (Structure plan)</li> </ul>
Traffic impact assessment report	<ul style="list-style-type: none"> <li>Prepared by a traffic engineer who is a Registered professional Engineer Queensland.</li> <li>Consultation with other entities may also be necessary including Council, State government and other relevant agencies or individuals.</li> </ul>	<ul style="list-style-type: none"> <li>A Traffic impact assessment report may be requested to provide additional information to Council.</li> <li>A Traffic impact assessment report is to be prepared in accordance with:               <ol style="list-style-type: none"> <li>SC6.7.6 (Traffic impact assessment report);</li> <li>Guidelines for Assessment of Road Impacts of Development, Queensland Government, Department of Main Roads; and</li> <li>SC6.8 (WRC development manual).</li> </ol> </li> <li>All investigations, testing and</li> </ul>

		design should be undertaken in accordance with industry practice and the provisions of relevant Australian Standards.
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## **SC6.7.3 Development needs assessment report**

### **SC6.7.3.1 Purpose of a Development needs assessment report**

- (1) A Development needs assessment report is required to:
  - (a) justify the need for the development given the current demand and supply of existing land and uses; and
  - (b) ensure the development is economically feasible, with appropriate methods implemented to mitigate or avoid any negative impacts that may result from the development.

### **SC6.7.3.2 Preparation of a Development needs assessment report**

- (1) A Development needs assessment report is to include at a minimum:
  - (a) a supply analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
    - (i) existing supply of developed and undeveloped land zoned for the same or similar purpose as that proposed;
    - (ii) current competition for undeveloped land zoned for the same or similar purpose as that proposed;
    - (iii) the consistency of the location with regard to the function and accessibility of the development, including infrastructure provision; and
    - (iv) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;
  - (b) a demand analysis of land zoned for the same or similar purpose as that proposed by the development within the broader locality, having regard for:
    - (v) the existing population currently serviced by existing development and the socio-economic characteristic of this population;
    - (vi) the population anticipated to be serviced by the proposal over a short, medium and long term planning horizon and the socio-economic characteristic of this population;
    - (vii) the existing and anticipated demand for floor space/dwellings over a short, medium and long term planning horizon; and
    - (viii) establishment as to whether the proposed development would result in an excess of developed land (for that purpose) locally and within the broader context of the area; and whether the proposed development may be premature or inappropriate in this regard;
  - (c) the economic feasibility of the proposed development, having regard for:
    - (ix) the identified existing supply and demand (and future anticipated demand);
    - (x) the capacity/capability/maturity of the market to achieve what is required at a feasible rate and scale;
    - (xi) the development size;
    - (xii) nature of the services proposed to be included within it;
    - (xiii) configuration of the general road network which is likely to provide access to the development;
    - (xiv) location of any physical or psychological barriers to movement;
    - (xv) location of complimentary, competing/similar development;
    - (xvi) expected direct and indirect development employment during construction and operations;
    - (xvii) changing trends in lifestyle choices and social behaviour relating to community needs which may affect the proposal; and

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- (xviii) any other benefits or detriments to the local area or the community in general; and
  - (d) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.




## **SC6.7.4 Economic impact assessment report**

### **SC6.7.4.1 Purpose of an Economic impact assessment report**

- (1) An Economic impact assessment report is required to:
  - (a) quantify the economic effects a development may have on surrounding uses; and
  - (b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

### **SC6.7.4.2 Preparation of an Economic impact assessment report**

- (1) An Economic impact assessment report is to include at a minimum:
  - (a) the extent of existing floor space and approved new floor space in the area likely to be serviced by the proposed facility and in surrounding areas which could be affected by it;
  - (b) the likely trade area of the proposed facility having regard to the developments:
    - (xix) size;
    - (xx) nature of the services proposed to be included within it;
    - (xxi) configuration of the general road network which is likely to provide access to the facility;
    - (xxii) location of any physical or psychological barriers to movement; and
    - (xxiii) location of competing facilities;
  - (c) the nature and adequacy of existing facilities and approved new facilities in the trade area referred to above and the level of convenience provided by such facilities;
  - (d) the population, existing and projected, for the likely future trade area and the socio-economic characteristics of that population;
  - (e) the demand, or likely future demand, for commercial floor space in the area referred to above;
  - (f) whether the establishment of the proposed facilities would result in:
    - (i) an excess of commercial floor space of the type proposed in the area; or
    - (ii) would result in an excess of commercial floor space generally; and
    - (iii) whether the proposal may be premature or inappropriate in this regard;
  - (g) the likely impact of the proposed development together with the additional cumulative effect of any approved new commercial developments within the same area on existing businesses, with such impacts clearly articulated together with the means by which they can be ameliorated;
  - (h) whether the proposed location:
    - (i) is consistent with the function of the facility;
    - (ii) maximises accessibility within its potential trade area; and
    - (iii) maximises the use of public transport and pedestrian and cycle accessibility;

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- (i) whether, if not satisfactorily located, it would jeopardise the provision of facilities in a location better placed to provide a higher level of choice or degree of convenience and accessibility;
  - (j) the expected direct and indirect development employment during construction and operations;
  - (k) changing trends in shopping and other behaviour relating to community needs which may affect the proposal;
  - (l) the environment effects and urban design implications of the proposal;
  - (m) any other benefits or detriments to the local area or the community in general, including the expected direct and indirect development employment during construction and operations; and
  - (n) outline and detail the measures that will be implemented to avoid or mitigate significant impacts identified in the assessment.

## **SC6.7.5 Structure plan**

### **SC6.7.5.1 Purpose of a Structure plan**

- (1) A Structure plan is required to:
  - (a) identify the major elements of the locality surrounding a development that may impact on the planning and design of the site, ensuring the integration of the development and the continuation of corridors, networks and linkages with and beyond the development site;
  - (b) identify how constraints (within the various overlays) or competing interests have been addressed and reconciled; and
  - (c) reconcile how the site will fit into the future development of the surrounding area without compromising the effective and efficient development of those lands.

### **SC6.7.5.2 Preparation of a Structure plan**

- (1) The extent of the information contained in a Structure plan will depend upon the issues and their resolution, the context of the development in the surrounding area and the number of overlays that impact on the area and the site. The more constrained the site, the greater the level of detail required to justify the development.
- (2) The major components of the development are to be designed with consideration of this broader context. The Structure plan is to be clear about how the proposed development will integrate with the surrounding community and with the existing parks, service and infrastructure networks and the movement system (road network, public transport facilities and pedestrian and cyclist paths) in the area, including as required by the Transport and parking code.
- (3) The scope of a Structure plan is tailored to match the scale and likely impact of the proposed development and depends on the nature and extent of the:
  - (a) issues associated with the site and the immediate locality surrounding the site, such as land uses, availability of infrastructure, topographical features, significant vegetation, movement systems, natural features, historical features and existing character; and
  - (b) proposal, its uses, the sequence of development and external impacts such as stormwater quality and quantity management, traffic generation, public transport availability, infrastructure capacity, wildlife corridor linkages and social impacts.
- (4) In addition to the general requirements of a Structure plan, an industrial structure plan is to also identify:
  - (a) the most appropriate location for different types of industries to minimise land use incompatibilities and conflicts;
  - (b) the integration of the site with surrounding development including any necessary buffering; and
  - (c) that any reconfiguring a lot is appropriate for the intended industry for the locality.

- (5) The steps to be followed and information provided when preparing a Structure plan are outlined below.

**Step 1: Site and context assessment**

Prior to preparing a Structure plan, an assessment of the site and its context is undertaken and a site description of land prepared, supported by a map containing the following features as a minimum the:

- a) development layout;
- b) topography – contours and levels;
- c) existing street network and intersections and future connections (identifying minor road connections required to facilitate efficient movement and connectivity of the local road network), and their treatments and public transport routes and their stops;
- d) existing residences and structures (such as pool, tennis court or shed), land uses and approvals on surrounding sites;
- e) location of nearby schools, shopping centres, employment generators and other community facilities;
- f) location of surrounding existing and proposed park network and pedestrian and cyclist paths; and
- g) existing infrastructure.

**Step 2: Identification of constraints**

Land in the Emerging community zone or Industry investigation zone is generally suitable for development. However some land has values or constraints that will influence the location, form and density of development. As a minimum, values and constraints as identified in any overlays are mapped and considered in the design of the overall development.

**Step 3: Analysis of the site characteristics and constraints and allocation of land uses**

Once the site characteristics and constraints have been identified, they are addressed by the Structure plan as recommended by the relevant codes and local plans where applicable. In some cases it may be possible to develop all or part of constrained sites carefully and sensitively. Alternative approaches may be required to accommodate development, for example lower development yields or sensitive residential design to ensure the retention of land with environmental or scenic constraint or other values. For other sites, development will not be possible. In many cases, a local plan or provisions within codes will articulate whether development is possible, and if so, how it should occur.

The application must demonstrate integration, namely:

- a) compatibility of surrounding uses (existing and proposed) with the proposed use/s;
- b) that consideration has been given to the potential for the development and coordinated and integrated development of adjoining Emerging community zone or Industry investigation zone; and
- c) that the development does not prejudice the development of an adjoining premises by shifting unreasonable costs of infrastructure onto adjoining premises, such as parks, stormwater management facilities, roads and bridges.

On a smaller site, where it is not possible to include the full range of land uses that support a sustainable community, it is particularly important to demonstrate that the parks are well

planned (either on the site, or already approved on adjoining land) and an integrated road network can be achieved.

If a site is in the Emerging community zone, a Structure plan is to demonstrate that the allocation of land uses ensures the following:

- a) land is used primarily for residential purposes;
- b) residential communities are well serviced and enjoy high amenity by providing for a range of complementary business and employment opportunities and community uses and facilities as early as possible. These may include centres, education facilities, parks, health care facilities, youth clubs and emergency services;
- c) residential development has good access to public transport, local parks, education facilities, shops and community facilities. As such, these uses must be accommodated in locations that maximise the service they provide to the community and minimise any associated impacts. These uses must be centrally located or highly accessible to their respective catchments and wherever possible to be co-located in or near centres. Uses that are likely to draw significant levels of non-local traffic into residential streets will not be approved unless there is a significant offsetting of community benefit and traffic impacts can be minimised;
- d) residential development provides appropriate housing choices for all people and allows residents the opportunity to remain within their neighbourhoods during all stages of their life, with a range of housing choices provided throughout the area. However, houses at low density should predominate; and
- e) development does not impinge on the legitimate operation of existing uses and is suitably buffered from incompatible existing uses on the site or on adjacent land.

Industrial development may occur in the Industry investigation zone subject to the identification of environmental performance of the development and the mechanism for the provision of infrastructure in the development.

When allocating industry investigation zoned land for future industrial development, the nature of the industry and the intended industry zone is to align with the separation distances to sensitive zones as detailed in the Reconfiguring a lot code and the assessment benchmarks of the applicable codes.

If a site in the Centre zone or Mixed use zone, a Structure plan is to detail the following:

- a) the mixture and proportion of uses and how these will contribute to economic vitality and the physical environment;
- b) key site planning and design elements of the development and how these contribute to the overall centre or corridor structure, movement and circulation network and built form character;
- c) building, open space and landscape siting and how these promote and support:
  - i) economic activity and community service delivery;
  - ii) public transport interchange;
  - iii) accessibility and connectivity;
  - iv) safety and security;
  - v) community use and meeting;
  - vi) higher density residential living;
  - vii) the character and identity of the centre or mixed use area; and
  - viii) design for climatic comfort, energy efficiency and subtropical outdoor living;
- d) the streetscape and public space interface including public and publicly accessible spaces and linkages, active frontages or significant corner treatments;

- e) development interfaces to the surrounding neighbourhood, adjoining sites and to other buildings or uses within the site to mitigate and manage amenity impacts;
- f) air or noise impacts on the site and how these will be addressed through use, site planning or building design; and
- g) the existing reduced levels and proposed finished levels for all elements.

**Step 4: Document the Structure plan**

The structure plan design, including land use allocation, movement network design, and open space and park network provision, is to actively promote achievement of the applicable zone and the intent of any relevant local plan.

The structure plan design is to also enable the development to comply with the requirements of all other relevant codes unless specified otherwise by a local plan.

The structure plan is to contain the degree of detail appropriate to the particular development and its circumstance and at a minimum map and report on the following:

- a) the approximate lot or dwelling yield for each part of the site (density);
- b) the location of each proposed land use, including where applicable, the extent of facilities proposed such as community facilities, centres, employment and education facilities;
- c) how and where broad physical infrastructure is to be provided such as water, sewerage and stormwater;
- d) the general location and size of parks including corridor linkages and networks and identify the park zone precinct and type that aligns with the intended future function of the site;
- e) the existing and proposed pedestrian and cyclist paths;
- f) the existing and proposed road network, including level in the hierarchy;
- g) the existing and proposed public transport routes and stops; and
- h) the proposed staging of development.

When in map form, the information is to be provided at a maximum scale of 1:2,000 and includes a bar scale and north point.

**Step 5: Level of consultation required for a structure plan**

The preparation of a structure plan will entail the level of consultation required by the *Planning Act 2016* for impact assessable development. On smaller sites, the consultation required by the *Planning Act 2016* would generally suffice.

However, where the site or the proposal entails complex issues, or involves a large site with multiple precincts and land uses, and/or the structure plan is inadequately detailed to facilitate informed public submissions, Council may require additional material and community consultation as part of a formal Information Request.

## **SC6.7.6 Traffic impact assessment report**

### **SC6.7.6.1 Purpose of a Traffic impact assessment report**

- (1) A Traffic impact assessment report is required to:
  - (a) quantify the effects a development may have on traffic movement and safety on the site and adjacent transport network (streets and intersections) within the sphere of impact of the development; and
  - (b) ensure appropriate methods are implemented to appropriately mitigate or avoid any negative impacts that may be result from the development.

### **SC6.7.6.2 Preparation of a Traffic impact assessment report**

- (1) A Traffic impact assessment report includes at a minimum the following information for the site and the adjacent transport network (streets and intersections) within the sphere of impact of the development:
  - (a) an assessment of present traffic operations and safety without the development;
  - (b) an assessment of traffic operations and safety for the following scenarios:
    - (i) at completion of the development, and if the development is staged, also at each significant stage prior, including a comparison between current traffic arrangements and proposed traffic arrangements and an outline of the works proposed to offset anticipated traffic impacts;
    - (ii) without the development on a 10 year planning horizon from completion of the development; and
    - (iii) with the proposed and any additional upgrading works proposed in conjunction with the development on a 10 year planning horizon from completion of the project;  
Note—Council should be consulted regarding the expected traffic growth rates for assessing the future scenarios.
  - (c) a statement describing how the development will provide for safe and convenient movement to, from and within the site;
  - (d) a statement describing how the development will facilitate walking, cycling and greater use of public transport in preference to using private motor vehicles for trips to and from the development;
  - (e) a statement describing how public transport services and infrastructure will be improved as a result of the development, particularly where relating to indented bus bays and bus shelters;
  - (f) a statement describing the measures used to ensure maximum accessibility from the site to public transport, including where future public transport services are envisaged;
  - (g) a statement describing the measures used to ensure that through traffic is not introduced into local street systems;
  - (h) an assessment of existing parking supply and demand in the vicinity of the development for both on- and off-street parking, and an assessment of the impact of the development on this parking supply and demand;

- (i) a statement describing the appropriate provision for parking in the development based on land use and the potential for trip-making by public transport, or by walking and cycling;
- (j) a statement describing the appropriate provision for on-site bicycle parking facilities;
- (k) a statement describing whether the proposed means of ingress to or egress from the development are adequate and located appropriately according to the road hierarchy;
- (l) an assessment of the provisions made for the loading, unloading, manoeuvring and parking of service vehicles within the development and on the subject site;
- (m) an assessment of refuse storage area/s and demonstration of safe vehicle access for the removal of refuse;
- (n) an assessment of the proposed routes within the development used by service vehicles associated with the development, and the impacts of heavy vehicle movements on these routes;
- (o) an assessment of the potential for integration of access with adjacent development through sharing of common ingress and egress arrangements;
- (p) an assessment of the impacts on public transport, traffic operations and parking as a result of any temporary works required during construction;
- (q) a record of any comments made by the Department of Transport and Main Roads or any other State planning authority that comply with the rights and powers of these agencies;
- (r) an assessment of the existing and likely future amenity of the surrounding area, and of the potential impacts of the development on that amenity;
- (s) a statement describing all of the assumptions made in the preparation of the report and the design parameters adopted in the technical analysis;
- (t) a statement describing how traffic generation and parking proposed rates (based on gross floor area) are supported by reference to publicly available documents or attaching actual traffic survey data for a similar activity;
- (u) a statement describing how the layout of the development provides for the safe movement of pedestrians and cyclists within the development and to/from the core of the development and the frontage streets, taking into account the location of public transport and pedestrian facilities;
- (v) an assessment of the operation of any security boom gate or card reader and its impact on vehicle queuing on the frontage roads; and
- (w) an assessment of traffic signals operation based on existing signal phasing, including impact on adjacent intersections.



## **SC6.8 Whitsunday Regional Council development manual planning scheme policy**

### **SC6.8.1 Introduction**

#### **SC6.8.1.1 Relationship to the planning scheme**

- (1) The planning scheme policy applies to development requiring submission of approval applications, including design details and construction procedures.
- (2) It is the intention of the WRC Development manual to set out procedures and requirements that are consistent with the *Planning Act 2016* and its supporting legislation, and represent 'best practice' in accordance with accepted current state and national standards for design and construction.
- (3) The WRC Development manual sets out procedures involved in applying for an Operational Works Permit for Works that will ultimately be in the ownership and maintenance responsibility of Council or other services authorities or works which are subject to approval by Council.

#### **SC6.8.1.2 Purpose**

- (1) This planning scheme policy provides:
  - (a) a comprehensive, practical and authoritative guide through the development approval process from inception to completion for Developer's, Consultants, Contractors and Council Officers; and
  - (b) a consistent set of Engineering standards for implementation across the Whitsunday Region.

### **SC6.8.2 Whitsunday Regional Council (WRC) development manual**

- (1) For further detail regarding procedure or specifications, refer to the WRC development manual document.



# **WHITSUNDAY REGIONAL COUNCIL**

## **DEVELOPMENT MANUAL**

Version No. 1.2  
Issued 03/07/2017

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## DEFINITIONS AND ACRONYMS

AASHTO	American Association of State Highway & Transportation Officials
AC	Asphaltic Concrete
ADWF	Average Dry Weather Flow
AHD	Australian Height Datum
AMCORD	Australian Model Code for Residential Development
ARI	Average Recurrence Interval
ASD	Approach Sight Distance
ASS	Acid Sulphate Soils
AV	Air Values
BBQ	Bar-Be-Que
CBR	California Bearing Ratio
CD	Compact Disk
Consulting Engineer	Consulting Engineer is an RPEQ
CPESC	Certified Professional in Erosion & Sediment Control
CPTED	Crime Prevention through Environmental Design
DAYS	Business Days
DICL	Ductile Iron Cement Lined
EP	Equivalent Persons
ESA	Equivalent Standard Axles
ESC	Erosion & Sediment Control
ESCP	Erosion & Sediment Control Plan
ESCS	Erosion & Sediment Control Strategy
ESD	Entering Sight Distance
FRC	Fibre Reinforced Pipe
HDPE	High Density Polyethylene
IDF	Intensity Frequency Duration
IEAust	Institute of Engineering Australia
IPWEA	Institute of Public Works Engineering Australia
ITP	Inspection & Test Plan
K	Potassium
LATM	Local Area Traffic Management
MUTCD	Manual of Uniform Traffic Control Devices
N	Nitrogen
NATA	National Association of Testing Authorities
P	Phosphorus
PASS	Possible Acid Sulphate Soils
PE	Polyethylene
PVC-M	PVC Modified
DTMR	Department of Transport and Main Roads

Qld	Queensland
QUDM	Queensland Urban Drainage Manual
RM	Rising Main
RPEQ	Registered Professional Engineer Queensland
RPZD	Reduced Pressure Zone Device
SCADA	Supervisory Control and Data Acquisition
SISD	Safe Intersection Sight Distance
SQUIDS	Stormwater Quality Interception Devices
Surveyor	Registered Surveyor with the Surveyors Board Queensland
SV	Scour Valves
u PVC	Unplasticised PVC
vpd	Vehicles per day
Wet Sediment Basin	<p>A wet sediment basin has the capacity to contain all runoff expected from the y percentile, x- day rainfall depth where, depending on the sensitivity of the receiving waters and / or the duration that the structure is in use: x varies between 2 and 20 days and y varies between 75<sup>th</sup> and 90<sup>th</sup> percentile.</p> <p>Refer to IECA Best Practice Erosion &amp; Sediment Control</p>

# OPERATIONAL WORKS

## A1 – APPLICATION PROCEDURES

### GENERAL

#### AP1.01 INTRODUCTION

1. This manual sets out procedures involved in applying for an Operational Works Permit for Works that will ultimately be in the ownership and maintenance responsibility of Council or other service authorities or works which are subject to approval by Council;
2. It should be read in conjunction with the relevant preliminary approval and / or development permit conditions;
3. Conditions of a development permit (including reconfiguration) may require the Applicant to construct, bond and / or submit, various works or documentation before survey plans can be approved and sealed by Local Authority or before a development may be occupied or a land use commenced;
4. Preliminary approvals / Development permits requiring the construction of operational works generally involve the Applicant and / or a Designer applying for an Operational Works Permit and requesting Council approval of designs and specifications;
5. Plans for roadworks, drainage works, water supply, sewerage works, bridges, retaining walls, miscellaneous structures, buildings, pumping stations and flood control structures are to be prepared under the direction of and certified by a Registered Professional Engineer Queensland (RPEQ);
6. Plans for landscape works by a person of professional standing and competence in the field of Landscape Architecture or Landscape Design, at a standard acceptable to the Council. Where irrigation plans are required for public parks, traffic islands or roundabouts, they are to be prepared by an irrigation designer with a proven track record of successful irrigation design;
7. Designs, calculations, drawings and specifications are to be submitted as supporting information to an application for a Development Permit for Operational Works; and
8. Operational Works Permits will not be issued until evidence of payment of the Portable Long Service Leave and Occupational Health and Safety fees is provided.



## DESIGN APPROVAL

### AP1.02 PRE-LODGEMENT DISCUSSIONS

1. Prior to lodgement of an Operational Works application for approval of detailed designs, the Designer is encouraged to meet with Council officers to discuss the following matters in the event that the following issues have not been addressed at Reconfiguration of a Lot approval:
  - Legal point(s) of stormwater discharge;
  - Identify environmentally significant areas and heritage features;
  - Internal and external stormwater catchment boundaries;
  - Tailwater conditions including water quality requirements and determination of tailwater level;
  - Connection point(s) for water supply and available pressure and discharge capacities;
  - Discharge point(s) for sewerage;
  - Set back distances from watercourses for on-site wastewater treatment and disposal;
  - Future planning for the provision of services, eg, water supply, sewerage, drainage and road networks, stream management and stormwater quality management, structures, power, communications and gas. In special circumstances, the Council may require the installation of larger water mains to serve areas beyond the development;
  - Site Conditions;
  - Development Permit Conditions for the particular development;
  - Layout design, Speed restriction; and
  - Landscaping works for on street works and public open space.
2. Approval of designs can be expedited where the above issues have been resolved in advance;
3. The Designer may obtain As-Constructed information in relation to existing roads, stormwater drainage, water and sewer reticulation if available from Council, on application and payment of a prescribed fee (where applicable);
4. In addition to the above, it is advisable that the Designer discuss and obtain Council's agreement to the following issues (where required) prior to submission of designs:
  - Possible variations to Council's manuals and standards;
  - Variations to design due to inability to obtain drainage discharge approvals; and
  - Requests for Council to contribute towards some aspects of the work.
5. Resolution of these issues, particularly those requiring a decision of Council, (i.e. amendments to conditions of approval, or requests for Council contributions), is essential to avoid protracted approval periods and wasted design effort.

### AP1.03 DESIGN REQUIREMENTS

1. The design of operational works shall comply with the relevant Development Permit conditions, Council's local laws, Policies, Planning Scheme and the provisions of this Manual.

The developer shall meet all costs associated with the compliance with these minimum requirements;

2. It is Council's requirement that the design of all operational works shall be prepared under the direction of, and certified by a RPEQ. Designer must bear full responsibility for all aspects of the design of all operational works, which they prepare; and
3. Road safety audit to be undertaken by a suitably experienced RPEQ as per the requirements in Austroads Guide to Road Safety to verify designs and signage prior to submission to council.

#### **AP1.04 CONSENT OF ADJOINING LANDOWNERS**

1. Written approval is required from adjoining property owners authorising any operational works on their property; and
2. Approvals to discharge and / or easements over downstream drainage paths from the respective property owners are required from the development site to the approved point of discharge.

#### **AP1.05 DOCUMENTATION**

1. Associated with the lodgement of the "Application for Operational Works Development Permit", Engineering Plans and Specifications for the works are to be submitted to Council for approval. (The specific requirements for the submission);
2. Submissions with a full complement of supporting documentation will ensure minimal delays in Council's approval timeframes;
3. Following the issue of an operational works permit, any plans that are required to be amended shall be re- submitted with an accompanying letter outlining the amendments and including any necessary calculations or documentation as supporting information; and
4. Further, one complete specification shall be issued to Council incorporating any required amendments following the issue of an operational works permit.

#### **AP1.06 LOCAL AUTHORITY APPROVAL**

1. The 'Statement of Compliance – Operational Works Design' (refer Appendix A) has been introduced to expedite the approval process;
2. In all but critical aspects and the nominated non-complying aspects, Council's review will be on an audit basis only;
3. If the Council review reveals the Statement of Compliance to be inaccurate or incomplete, the submission may be returned to the Designer for resubmission. A subsequent review fee will be levied in these cases in accordance with Council's fees and charges;

4. It is the Designer's responsibility to ensure the design as submitted takes into account all site conditions and complies with Council's approval conditions, Council's local laws, Policies, the provisions of this Development Manual and other relevant authorities;
5. Council's review process does not warrant that an approved design complies with the above in every respect, and Council reserves its right to order the rectification of non-complying or unsafe works at the cost of the Developer, despite its prior approval;
6. Within five (5) days of Council's approval, the Designer shall submit an electronic copy of the requirements of 1.08 below; and
7. Two (2) street names for each new street (in line with any council naming policy) must be lodged for consideration and approved by Council before construction is complete.

### **AP1.07 APPROVAL OF OTHER AUTHORITIES AND REFERRAL AGENCIES**

1. The Applicant shall be responsible for gaining the approvals of any other Authorities having jurisdiction over any part of the works;
2. All works on State controlled roads will be subject to Department of Transport and Main Roads approval and is to be carried out in accordance with the Department's Policies, Standards and Guidelines; and
3. All referral agency conditions to be included in design documents and must be approved by each agency (if required), prior to submission to Council.

### **AP1.08 SUPPORTING INFORMATION**

#### **General**

1. Supporting Information for Operational works shall include the following:
  - Design Plans (1 x A1 and 1 x A3 plus 1 additional copy of all plans in PDF format);
  - Job Specification (1 copy);
  - Design Report (1 copy);
  - Design Checklist;
  - IDAS Checklist 4 (Operational work);
  - IDAS Form 1 (Application details);
  - IDAS Form 6 (Building or operational work assessable against a planning scheme);
  - Evidence that the prescribed Application Fee as stated in Council's Fees and Charges Schedule, has been paid;
  - Evidence of payment of the Portable Long Service Leave and Occupational Health and Safety fee; and
  - 'Permit to Enter & Construct' letters and easement documents relevant to the application.

## Design Plans

1. Design plans shall be definitive and clearly set out so as to present the design concepts in such a way that the project can be understood, specified for construction and satisfactorily built;
2. All design plans should be clearly numbered with separate sheets numbered as part of a set;
3. Sheets of drawings should not be overcrowded with information and should not rely on colour printing or colour wash to impart information. Drawings should be true to scale A1 size sheets and be suitable for black and white copying and photo reduction; and
4. Design plans shall be certified by an RPEQ (refer 1.03.2).

## Job Specification

1. A Job Specification shall be prepared by the Designer specifying site specific requirements not covered in standard specifications; and
2. All works shall be in accordance with Council's standard specifications where available. Where no Council standard specifications exist for a particular type of work, the Designer may use the Department of Transport and Main Roads specification or their own standard specification. Both options shall be subject to approval by Council.

## Design Report

1. The engineering design and materials used must be selected to minimise the whole of life cost to Council. The designer must demonstrate how the design complies with this requirement;
2. The Design Report shall be a bound report signed by the Designer and shall contain all the necessary design calculations, correspondence and information to enable Council to expeditiously check the design submission and grant approval to construct; and
3. The Design Report shall contain the following:
  - A completed "Statement of Compliance – Operational Works Design" endorsed by the Designer(s);
  - A copy of the development approval conditions on which the design is based including a summary of the design submission referencing each of the development approval conditions;
  - Records of pre-submission discussions with Council including confirming correspondence;
  - Copies of letters of approval from adjoining property owners for any works or discharge on their properties;
  - Evidence that negotiations have been entered into regarding provision of supply with Service Authorities (including approved reticulation / service plans, if available);
  - Stormwater drainage calculations in spreadsheet format in accordance with QUDM requirements including detail of pit types and capture charts used and tailwater levels adopted;
  - Stormwater Drainage Catchment Plan(s) detailing external catchments and internal

- sub catchments;
- Design details of alternatives proposed which depart from the Development Manual / Development Conditions with supporting arguments for how the alternative meets Council's objectives;
- Design calculations for detention basins, dissipaters, open channel, catch drain, adopted tailwater levels etc;
- Design criteria and parameters, operating regimes and calculations for permanent water quality works such as stormwater quality interception devices (SQIDs), sediment basins, trash racks, etc and demonstrated consistency with catchment Stormwater Quality Management Plan and Water Quality Report which accompanies the development application;
- An Erosion and Sediment Control Strategy (ESCS) addressing erosion and sediment management during construction;
- Traffic Management Plan in accordance with the Manual of Uniform Traffic Control Devices;
- Water and sewerage reticulation networks in a format compatible with Council's network system;
- If the water supply is from a newly developed source, provide information on quality, quantity, disinfection and infrastructure proposed;
- Pavement design including records of geotechnical tests indicating subgrade CBR's, adopted traffic load, requirements for subsoil drainage and subsoil drainage design by a geotechnical engineer;
- Geotechnical reports, where relevant, relating to slope and batter stability, in-situ materials etc;
- Structural and Geotechnical certification of design of miscellaneous structures including retaining walls, non-standard headwalls, drainage structures, reservoirs etc;
- Design parameters and operating regimes for water supply and sewerage pump stations;
- Full design drawings and pre-commissioning plan for water and sewerage pump stations;
- Landscaping Design Drawings for Subdivision Works showing details of Parks / Reserve Planting, Street Tree Planting, Buffer Zone Planting and any Hillslope Development Works if applicable;
- For staged development, master plans showing the overall design concept for:
  - Water including pump stations;
  - sewer including pump stations;
  - stormwater;
  - roadworks;
  - earthworks;
  - roads hierarchy;
  - pathways;
  - public transport;
  - lighting and other services;
  - easements, freehold lots and land to be deeded to Council for accommodating the works;
  - open space areas, and
  - Erosion and Sediment Control strategy and location of permanent survey marks.

With Stage 1 development and with updated copies to be provided with each subsequent stage. Subsequent development plans will show the 'as constructed' information of all the earlier stages.

- Selection of materials and components to be transferred to Council ownership must comply with Service Standards specified by Council (e.g. minimised whole of life cost; reliability etc); and

- A fully priced estimate of construction costs in the form of a priced schedule of quantities.

## **PLAN PRESENTATION**

### **AP1.09 GENERAL REQUIREMENTS**

1. These presentation minimum standards shall apply to engineering and landscaping plans submitted for approval for operational works associated with approved developments;
2. Standardisation of the presentation of operational works plans submitted for approval is necessary for consistency in Council's records and desirable for expedient review and approval; and
3. Scaled Engineering Drawings in accordance with this manual are required for plan review.

### **AP1.10 TITLE BLOCK**

1. Each sheet of the Design Drawings shall have a Title Block containing the following information:
  - Development / Estate Name (if any);
  - Locality / Approved Street Name;
  - Developer's Name;
  - Bar Scales as a minimum (Alternately Numerical Scale with original sheet size stated);
  - Plan Number and Sheet Number;
  - Schedule and Date of Amendments; and
  - Certification by RPEQ (for engineering drawings).

### **AP1.11 SHEET SIZES**

1. Preferred sheet sizes (Overall dimensions)
  - A1 841 mm x 593 mm
  - A3 420 mm x 297 mm

### **AP1.12 SCALES**

1. Scales used for plans should preferably be those recommended by the Standards Association. Generally, the following scales should be used 1:1, 1:2, 1:5 and multiples of 10 of these. All scales should be bar scales.

	Urban	Rural
Plans	1:500*	1:1000
Longitudinal Section:		
Horizontal	1:500	1:1000
Vertical	1:50	1:100
Intersection Details	1:100; 1:200	1:500
Cross Sections	1:100	1:100
Engineering Details	1:1, 1:2, 1:5 and multiples of 10 of these scales	

\* Sewerage Reticulation should be 1:500

## AP1.13 DIMENSIONS

### Dimensioning On Plans

1. Linear dimensions on all roadworks plans will be in metres, with the exception of some detail plans of small structures (eg. manholes) and some standard plans (eg. kerb and channel), which may be in millimetres; and
2. Details of methods of dimensioning shall be in accordance with AS 1155 Appendix A - Metric Units in Construction.

### Standard Cross-Section Intervals

1. Urban and rural cross-sections should be provided to roads at 20.0m intervals and tangent points, with further reduction to 10.0 m or 5.0 m intervals where necessary due to horizontal or vertical curvature.

### Chainages and Offset Dimensions

1. Chainage and Offset Dimensions on plans shall be expressed to 0.01 m. (0.005 may be used as the order of accuracy requires).

## AP1.14 LEVELS

1. All levels shall be reduced to Australian Height Datum, unless otherwise approved by the Local Authority;

2. Reduced levels of Bench Marks and Reference Pegs including Permanent Survey Marks shall be expressed to three decimal places i.e. 0.001 m. The location of the origin of the survey shall be on the plan;
3. Reduced levels of roadworks and stormwater drainage shall be expressed to three decimal places ie. 0.001m; and
4. Reduced levels of sewerage reticulation shall be expressed to three decimal places ie.0.001m.

### **AP1.15 GRADES**

1. Road grades shall be shown as a percentage to two decimal places; and
2. Pipe grades shall be shown either as a percentage to two decimal places or as gradient to one decimal place.

### **DESIGN DRAWINGS**

#### **AP1.16 DRAWINGS REQUIRED**

1. Operational works drawings will generally consist of the following:
  - Locality Plan;
  - Subdivision Layout / Staging Plan (if applicable);
  - Earthworks Plan;
  - Roadworks and Drainage Plan;
  - Longitudinal Section of each Road;
  - Type Cross-Sections for each road;
  - Cross-Sections of each Road;
  - Detail Plan of each Intersection and cul-de- sac;
  - Longitudinal Section of each Stormwater Drainage Line;
  - Sewerage Reticulation Plan, long section and pump station details;
  - Water Reticulation Plan and pump station plans and details;
  - Landscape Plan;
  - Erosion and Sediment Control Strategy;
  - Service providers Conduit Plan, including street lighting;
  - Stormwater Catchment Plan / Drainage Calculation Table; and
  - Miscellaneous Details.
2. The minimum requirements for each drawing are detailed in the following sections.

#### **AP1.17 LOCALITY PLAN**

1. Locate the subdivision / development in relation to adjacent towns, main roads, major streets, etc;
2. North Point; and



3. May be included on Layout / Staging Plan for large jobs or Roadworks and Drainage Plan for smaller jobs.

### **AP1.18 LAYOUT / STAGING PLAN**

1. For staged subdivisions, the layout plan should show the relationship of all new roads and infrastructure to each other, and to existing roads and infrastructure adjoining the subdivision. All adjacent structures and services are to be shown also;
2. Where development is to be carried out by Stages, the boundaries of proposed Stages should be shown on this plan, and the stages identified by numbering; and
3. For small subdivisions, where all new roads and infrastructure can be shown on one detail plan, the layout plan may be omitted.

### **AP1.19 EARTHWORKS PLAN**

1. The Earthworks Plan may be included with the Roadworks and Drainage Plan for smaller subdivisions and shall include:
  - Legend;
  - Existing site contours and finished surface contours. (Spot levels should be used to complement contours);
  - Limits and levels of major allotment cut and fill - distinguished by hatching;
  - Locations of cut and fill batters relative to allotment boundaries;
  - Location and levels of retaining walls (if required);
  - Batter slopes and treatments;
  - Appropriate flood levels in accordance with Council's Policies;
  - North Point;
  - Location(s) and level(s) of permanent survey mark(s), reference stations etc, used as datum for the works;
  - Vegetation including trees proposed to be removed and those to be retained; and
  - For smaller subdivisions, the earthwork details may be included on the Roadworks and Drainage Plan.

### **AP1.20 ROADWORKS AND DRAINAGE PLAN**

1. The Plan of each road shall include:
  - Legend;
  - Road reserve boundaries;
  - Allotment numbers and boundaries, both existing and proposed (including existing and proposed easements);
  - Chainages, on centreline or construction line;
  - Bearings of the centreline or construction line. (Set out co-ordinates may also be used);
  - Tangent point chainages of each curve;
  - Radius and arc, tangent length of each curve;
  - Chainage and the Intersection Point of road centre lines or construction lines;
  - Kerb lines, kerb radii, and chainage of all tangent points of the kerb line;

- Footpaths / bikeways and Pram ramp locations;
- Fencing;
- Access where required to be constructed;
- Edge of pavement, where no kerb is to be constructed;
- Dimensioned road reserve, footpath and pavement widths, where these differ from the standard cross- section;
- Existing and finished surface contours, highlighting cut and fill areas;
- Drain line locations, diameters (including extent of easements where required);
- Drainage structures and structure number;
- Subsoil drain locations;
- Location of existing utilities or other existing works within the site;
- Location of all service clashes including levels of services and clearance distance;
- Location and levels of Bench Marks and reference pegs;
- North Point;
- Line marking, and signing; \*
- Guide posts, guard rails and other traffic control devices; \*
- Creek protection works and the like;
- Street name signs;\* and
- Overland drainage paths.

\* May be shown on separate plan(s)

#### **AP1.21 LONGITUDINAL SECTIONS OF ROADS**

1. The longitudinal section of each road shall include:

- Chainages;
- Existing surface levels - Design road centreline levels;
- Cut or fill depths;
- Design grades;
- Chainages and levels of grade intersection points;
- Chainages and levels of tangent points of vertical curves;
- Chainages and levels of crest and sag locations;
- Lengths and radii of vertical curves;
- Sections on control lines on superelevated curves (i.e. pavement edges, kerb or lane edges), curve widening and superelevation details; and
- Location of services where they cross the centre of the road.

#### **AP1.22 TYPE CROSS-SECTIONS**

1. A type cross-section shall be shown for each road, including:

- Road reserve width;
- Pavement widths including medians (as applicable);
- Footpath widths;
- Crossfalls of pavement and footpaths;
- Pavement depth - nominal or design;
- Type of kerb and channel;
- Type of pavement surfacing;
- Sub-soil drainage;
- Table Drain details for rural roads; and
- Batter slopes.

2. The standard cross-section may be included in the detailed cross-sections provided for each road.

### **AP1.23 CROSS-SECTIONS OF ROADS**

1. A cross-section shall be shown at the intervals defined in this manual for each road and shall show:
  - Road reserve boundaries;
  - Pavement centre line and / or other construction line;
  - Natural surface profile;
  - Design Cross-Section;
  - Crossfall of pavement and footpath, pavement and footpath widths and pavement depths wherever these differ from the standard cross-section;
  - Chainage of cross section; and
  - Datum reduced level.

### **AP1.24 DETAIL PLANS OF INTERSECTIONS & CUL DE SACS**

1. Intersection detail plans shall include all the relevant information required for Roadworks and Drainage Plans, as listed above together with additional details such as kerb levels on all kerb returns, pavement contours, channelisation works, line marking, signing and pram ramps.

### **AP1.25 LONGITUDINAL SECTIONS OF STORMWATER DRAINAGE LINES**

1. A longitudinal section of each drain line shall be shown, including:
  - Chainages;
  - Existing surface levels;
  - Design finished surface and invert levels;
  - Drainage Structure chainages and offsets and inlet and outlet invert levels;
  - Distances between drainage structures;
  - Grade of each pipe;
  - Material and Diameter of each pipe length;
  - Hydraulic grade line;
  - Drainage structure type and sizes and/or reference to separate detail drawing; and
  - Crossings with any other services (location and invert level of pipe crossing).

### **AP1.26 SEWER CONCEPT PLAN**

1. Where a development incorporates multiple stages, a sewer concept plan must be prepared by the consultant;
2. This Concept Plan must be submitted prior to proceeding with detailed design and should include the following:
  - Location, size, approximate depth, and alignment of gravity sewers;
  - Location, size and alignment of rising mains;
  - Location of pump stations and lift stations including justification for the use;
  - Contour information at 1m intervals maximum or to suit the topography of the land for both natural surface and finished surface contours;
  - Contributing catchments (internal and external) showing the equivalent tenement

- (ET);
- Justification for re-directing flows between Sewerage Districts where proposed;
  - Details of the influence on downstream catchments and systems; and
  - The flow contributing to each section of main including the estimated design capacity. See Example below:

EP 300	
PWWF	14.3 L/sec
Pipe Size	225 diameter
Max Pipe Cap	26.2 L/sec

3. Access for maintenance of the system should be considered when locating manholes etc (Refer Section D 7.07);
4. During the preparation of the concept plan consideration must be given to the integration of other infrastructure design, overall site earthworks and the impacts on existing upstream and downstream developments and potential developments; and
5. As part of the preparation of the Concept Plan, the requirements of Section 2 - Concept Design in WSA 04- 2005 Sewage Pumping Code of Australia shall also be included.

### **AP1.27 SEWERAGE RETICULATION PLAN AND LONGITUDINAL SECTION**

1. The sewerage reticulation plan shall include:
  - Legend;
  - All allotments and allotment numbers;
  - Boundary of the subdivision;
  - North Point;
  - Location and size of existing sewers;
  - Invert levels of existing lines;
  - Location of other services which cross sewer lines;
  - Location of manholes with manhole numbers (including dimensions where not shown on alignment);
  - Identification of allotments, which are currently sewered;
  - Finished surface contours sufficient to enable verification of property connection design;
  - Details of permanent survey marks including AHD from which levels are to be transferred;
  - Grading information for new sewer lines including distance between manholes, pipe grades, pipe diameter, pipe material and class of each pipe length;
  - Manhole cover type and class;
  - Manhole inlet types;
  - Locations and level of sewer property connections and type;
  - Details of pumping stations including location, inlet/outlet levels, overflow, cut-off levels, electrical switchboard layout and water supply, size of pumping plant;
  - Diameter, material class and route of pressure main(s); indicating air valve and scour valve locations;
  - Clear identification of any alterations/connections to existing sewers to be

- completed by Council at developer's cost;
- Finished surface contours with spot levels to compliment contours;
- Ultimate sewer design flows including catchment plan for staged development if applicable;
- Gravity sewer pipe capacities;
- Structural design of pipes for pipes with more than 3m of cover;
- Thrust block calculation where required;
- Diagram showing all allotment controls;
- Flow velocities under different flow conditions;
- Rising main hydraulic grade line;
- System resistance and pump curves showing static and friction head and duty points;
- Demonstration of pipeline capacity to resist cyclical pressure effects over a 100-year lifespan of the systems;
- Estimation of pump start, stop, alarm, overflow and other control levels;
- Calculations supporting the provision of wet well storage;
- Calculations showing that floatation forces are counteracted for all buried or partially buried structures;
- Estimation of electrical loads – Mains Supply proposed; and Radio Frequency interference screening measures;
- Structural calculations where necessary for the pump well and associated works; and
- Calculations supporting the hydraulic design of emergency relief structures.

2. The longitudinal section of each sewerage line should include:

- Existing surface levels;
- Design finished surface;
- Manhole number;
- Distance between manholes;
- Grade of each pipe length;
- Diameter, material and class of each pipe length;
- Manhole diameter and cover type;
- Manhole inlet types;
- Invert levels of existing lines; and
- Crossings with any other services (including location, size, invert levels and clearance of pipe crossing).

## **AP1.28 WATER RETICULATION CONCEPT PLAN**

1. Where development incorporates a large number of lots with multiple stages, the Consultant shall submit a Water Reticulation Concept Plan of the water reticulation showing proposed main sizes, connections to existing mains and valve positions. The Concept Plan is to be supported by a computer network analysis.
2. This concept plan shall be submitted prior to providing with detailed design and should include the following:
  - Layout of mains, together with the development layout;
  - Key to network analysis, i.e. Node points, elevation, demand;
  - Size and type of mains, indicated graphically and distinguished by colour and/or line type;
  - Design parameters – number of lots, number of ET design flows;
  - Legend of land uses (i.e. Residential, Industrial Precincts etc.);
  - Supply points and pressure or Hydraulic Grade Line (HGL) as supplied by Council;
  - Location of pumps, pressure reducing valves and reservoir top water level (TWL) and volume where applicable;
  - Limit of water district serviced by the reticulation mains;
  - Contours for the entire development, at minimum 1m intervals; and
  - Consideration for connection to adjoining and/or future developments as directed.

## **AP1.29 WATER RETICULATION PLAN**

1. The water reticulation plan shall include:
  - Legend;
  - Water services for the development;
  - All allotments and allotment numbers;
  - Boundary of subdivision;
  - North Point;
  - Location and size of existing mains;
  - Location, size, material and class of new mains;
  - Location of other services which cross the mains;
  - Details of connection to existing mains;
  - Location of each bend;
  - The location of valves, hydrants, scours and caps, T's, reducers, etc;
  - Road crossing conduit locations, size and class;
  - Water service connection details;
  - Pump Stations and reservoir/s (if required);
  - Network Analysis (if required);
  - Type and class of pipes for the pressure and cyclical loading regime;
  - Thrust block calculation where required;
  - Operating conditions for pressure reducing valves; and
  - Structural calculations where necessary for valve pits and associated works.

## AP1.30 LANDSCAPE PLAN

1. The landscape plan shall contain the following details:

### Site and Layout

- Proposed and existing contours at 5 metre intervals.
- Extent of existing vegetation including type and location.
- Significant trees showing level at base and proposed levels, indicating which trees/vegetation is to be removed.
- Proposed layout of roadways including:
  - Kerb and channel;
  - Stormwater drainage pits and manholes;
  - Street lighting;
  - Property boundaries;
  - Traffic islands, roundabouts, traffic calming devices etc;
- Existing and proposed water supply, sewerage services and easements; and
- Proposed freehold lots covering water supply and sewerage infrastructure.
- Layout and numbering of individual lots, including street names;
- Existing parks, reserves etc;
- Adjoining land uses, access corridors;
- Existing watercourses, watersheds, gullies, with a buffer zone to either side of creeks, where required; and
- Revegetation areas including extent, type, technique and erosion prevention proposals.

### On-Street Works

- Alignment and location of proposed concrete footpaths and bike paths;
- Grass establishment areas; and
- Lighting proposals and street furniture, if appropriate.

### Traffic Islands and Roundabouts

- Alignment of kerb and channel and concrete backing to roadside kerb;
- Soil mix type and depth;
- Proposed planting layout and plant schedule, including species, number, size, set-out, staking;
- Mulch types and depth; and
- Irrigation proposals.

### Public Open Space

- Dimensions and landscape treatment to buffer zones;
- Location and dimension of all off-road bikeways and pedestrian pathways, with trees at 15 metre intervals, showing size and species;
- Location of boundaries to all parkland, reserves and easements, including fencing proposals and details of removable vehicle barriers;
- Location and type of play equipment, if applicable, including type, extent and edge treatment to safety surfacing;
- Proposed lighting;
- Mounding, showing base, crown, levels and gradients;
- Proposed furniture including benches, bins, BBQ's, shade structures, signage;
- Taps, drinking fountains, irrigation couplings;
- Proposed planting and mulched garden beds; and
- Irrigation plan at 1:200 scale.

2. Detailed specifications will be required to cover all proposed works including the following:
  - Play equipment and safety surfacing;
  - Plant schedule;
  - Revegetation requirements;
  - Grass establishment;
  - Mulch;
  - Hard landscaping;
  - Furniture and lighting; and
  - Irrigation, if applicable.

### **AP1.31 EROSION AND SEDIMENT CONTROL STRATEGY**

1. The Erosion and Sediment Control Strategy shall include:
  - North Point;
  - A plan of development showing the road and allotment boundaries;
  - Existing surface and finished surface contours at an interval close enough to define terrain;
  - Contours shall extend beyond the limits of the development site to fully define the limits of external catchments;
  - Existing drainage paths and drainage infrastructure;
  - Extent of clearing and trees to be removed;
  - Line diagram of drain lines and drainage structures;
  - The identification and location of all Erosion and Sediment control measures (ie catch drains, diversion drains, sediment traps, sediment basins etc.) that are proposed for the period when the site is disturbed;
  - Location of sensitive and restricted access areas;
  - Existing significant vegetation to be retained;
  - Revegetation works;
  - Calculations are to be submitted in accordance with QUDM and based on soil type(s) of the site;
  - Measures to be employed for each facet of the construction process. As a minimum this is to include stripping/earthworks, trenching/services installation and when stormwater and roadways are completed; and
  - Consideration for construction during the wet season (typically Nov – Mar) with regard given to increased storm intensity and minimising disturbed areas and for construction during the dry season with regard given to dust suppression.

### **AP1.32 SERVICE PROVIDERS / CONDUIT PLAN INCLUDING STREET LIGHTING**

1. This plan shall include:
  - Legend;
  - Road Reserve Boundaries;
  - Allotment Numbers and Boundaries;
  - North Point;
  - Kerb and channel or edge of pavement where no kerb is to be constructed;
  - Road Crossings Conduits Type and size;
  - Location of Pad Mount Transformers;
  - Location of Telecommunications Authority's Roadside Cabinets & Shelters and Cables;



- Location of Street Lighting including designation of hierarchy of all roads;
- Location of Electricity Authority's Cables and Facilities paying particular attention to connection to existing power supply;
- Electrical reticulation plans; and
- Gas pipes, valve, syphon points and storage facilities.

### **AP1.33 STORMWATER CATCHMENT PLAN/DRAINAGE CALCULATIONS TABULATION**

1. A catchment plan shall be submitted, for Council submission purposes only and shall not form part of construction documentation. The catchment plan shall include the following:
  - North point;
  - A plan of the development showing the road and allotment boundaries;
  - Existing and finished surface contours (in different line types) at an interval close enough to define the terrain and allow definition of the sub catchments;
  - Contours shall extend beyond the limits of the development site to fully define the limits of external catchments;
  - Sub catchment boundaries, labels and areas;
  - Line diagram of drainline, manhole, gully and outlet locations;
  - Labelling of stormwater structures;
  - Adjacent to each Stormwater Pit tabulation is to be provided illustrating the roadway approach flow, the width of approach flow, and the bypass flow;
  - Overland flow paths;
  - Proposed easements; and
  - Stormwater calculations shall be in a spreadsheet format in accordance with the QUDM. This tabulation should include a bypass flow width value at all kerb return pits.

### **AP1.34 PEST PLANT MANAGEMENT**

1. In accordance with the Land Protection (Pest and Stock Route Management) Act the applicant must not remove soil or any matter containing reproductive pest plant material, and transport such matter to another location. Appropriate measures must be put in place to ensure that soil and other organic materials are not inadvertently (or otherwise) transported to other locations;
2. Prior to the issue of a Development Permit for Operational Works, the applicant must:
  - Clearly state if there is an excess amount of soil on the development site;
  - Provide appropriate documentation to show where any excess soil is to be used or placed on the site;
  - Provide a plan which indicates where a shake down or wash down area will be placed to ensure that all vehicles entering and exiting the development site are subject to a cleansing procedure to remove soil and any other organic materials;
  - Construct a shakedown or wash down area during the first stage of development. This is not to be in the vicinity of a creek, or a waterway or drain which leads to a creek or other water body;
  - Permanently contained material which is removed on the site; and
  - Maintain the site to the point of sale so that declared weeds are eradicated or controlled.
3. Soil or other matter contaminated with weed seed or organic material should not be used in

landscaping, eg buffer mounds;

4. Reference should be made to council pest management unit to obtain advice; and
5. These conditions relate to all Class 1, 2 and 3 plants identified in the Land Protection (Pest and Stock Route Management) Act 2002.

### **AP1.35 MISCELLANEOUS DETAILS**

1. Detail are required for the following either on separate drawings or appropriate service plan:
  - Stormwater inlet and outlet structures, other than standard head walls;
  - Manhole details where pipe alignments are critical for clearances or flow considerations;
  - Water Quality permanent works structures (SQIDs, sediment basins, trash racks etc.);
  - Details of Erosion Control and Stormwater Management Structures;
  - Surcharge structures;
  - Overland drainage paths;
  - Sewer and water pump stations showing all relevant levels and dimensions for pumps, etc. (where not provided elsewhere);
  - Footbridges;
  - Reservoirs;
  - Water source treatment / disinfection works;
  - Entry structures;
  - Retaining walls;
  - Buildings; and
  - Any details or variations from standard drawings.

## **RECORDS**

### **AP1.36 DESIGN RECORDS**

1. The Designer shall provide Council with appropriate design records in a format such that design staff with no prior knowledge of the particular design can understand them readily;
2. A design file shall be maintained by the Developer or the Developer's Designer containing records of calculations, approvals and decisions, geotechnical data and other design data which could be relevant in reviewing aspects of the design or planning future maintenance responsibilities; and
3. The Developer is to provide a detailed submission for all structures being built as part of the development, for separate building approval and inspection. Submission is to include detailed design plans and a Structural Certificate from a RPEQ.



# **APPENDIX A**

## **STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN**

## DEVELOPMENT MANUAL

### WHITSUNDAY REGIONAL COUNCIL

#### STATEMENT OF COMPLIANCE OPERATIONAL WORKS DESIGN

This form duly completed and signed by an authorised agent of the Designer shall be submitted with the Operational Works Application for Council Approval.

**Name of Development**.....

**Location of Development**.....

**Applicant**.....

**Designer**.....

It is hereby certified that the Calculations, Drawings, Specifications and related documents submitted herewith have been prepared, checked and amended in accordance with the requirements of the Whitsunday Regional Council Development Manual and that the completed works comply with the requirements therein, except as noted below.

<b>Compliance with the requirements of the Operational Works Design Guidelines</b>	<b>Non-Compliance refer to non- compliance report / drawing number</b>
Plan Presentation	
Geotechnical requirements	
Geometric Road Design	
Pavements	
Structures / Bridges	
Subsurface Drainage	
Stormwater Drainage	
Site Re-grading	
Erosion Control and Stormwater Management	
Pest Plant Management	
Cycleway / Pathways	
Landscaping	
Water Source and Disinfection / Treatment Infrastructure (if applicable)	
Water Reticulation and Pump Stations	
<b>Compliance with the requirements of the</b>	<b>Non-Compliance refer to non- compliance</b>

<b>Operational Works Design Guidelines</b>	<b>report / drawing number</b>
Sewer Reticulation and Pump Stations	
Electrical Reticulation and Street Lighting	
Public Transport	
Associated Documentation / Specification	
Priced Schedule of Quantities	
Referral Agency Conditions	
Supporting Information (AP1.08)	
Other	

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Designer ..... RPEQ No .....

Name in Full.....

Signature ..... Date .....

## **OPERATIONAL WORKS**

### **CP1 – CONSTRUCTION PROCEDURES**

#### **GENERAL**

#### **INTRODUCTION**

1. This section of these Operational Works Manual details the minimum requirements acceptable to the Council associated with developments involving Operational Works defined as any works to be constructed that are subject to Council Approval. Typically, this involves the construction of Water Supply, Sewerage, Stormwater, Roadworks and Public Open Space associated with Development, Reconfiguration or other approvals.
2. This manual does not apply to works or services under the control of other authorities (i.e. works within State controlled road corridor). Separate approvals may be required from the other relevant authorities.
3. The section has been divided into four subsections as follows:
  - Requirements Prior to Construction;
  - Requirements During Construction;
  - Acceptance of Works; and
  - Final Acceptance of Works.

#### **REQUIREMENTS PRIOR TO CONSTRUCTION**

##### **GENERAL REQUIREMENTS**

1. Prior to the construction of any works associated with a development approval which requires operational works approval by Council the Designer responsible for the design of the works must first obtain an approval of the design, construction drawings and specifications from Council. The procedures to be undertaken in order to achieve approvals are outlined in detail in Section AP1 of this Manual.

##### **CONSTRUCTION INSPECTIONS**

1. Prior to construction of the works the Consulting Engineer who is a Registered Professional Engineer Queensland (RPEQ) is to be engaged to be responsible for the provision of inspection services in accordance with a Council Approved Inspection and Test Plan (ITP) and to exercise reasonable skill and diligence in order to ensure that the operational works requiring approval are executed in accordance with:
  - Council's development permit conditions;
  - Council's relevant policies and local laws;
  - This Manual, Council approved drawings, specifications and relevant Australian Standards;
  - Good engineering practice; and
  - Records compatible with Councils asset management information recording system are provided.

2. Inspections may be carried out by the Consulting Engineer or a delegate who shall be a suitably qualified/experienced person approved by the consulting engineer.
3. The Consulting Engineer is required to certify that all works have been carried out in accordance with the development approval and to the Whitsunday Regional Council (WRC) minimum Standards prior to Works Acceptance.

### **INSPECTION AND TEST PLAN**

1. The Contractor is to prepare an ITP (endorsed by the RPEQ) identifying the following items:
  - Element of work;
  - Tests and checks required;
  - Standard required to meet;
  - Frequency of testing;
  - Contractor's responsibility;
  - Consulting Engineer's responsibility;
  - Council's responsibility; and
  - Asset data recording requirements

Refer to CP1.16 for the requirements of the Inspection and Test Plan.

2. The Consulting Engineer in undertaking Construction Inspections shall:
  - Allocate competent and experienced staff to site inspection and testing;
  - Provide sufficient site presence, dependent on the contractor's progress and workmanship, and in accordance with the ITP, to be reasonably satisfied that the works meet the design, specification and performance requirements; and
  - Inspect and confirm acceptability of works as complying with the design intent and in accordance with the Council's requirements prior to requesting a Council inspection.

### **CONTRACTOR'S EROSION & SEDIMENT CONTROL PLAN**

1. Prior to construction commencing the contractor shall prepare an Erosion and Sediment Control Plan (ESCP) to manage the site during construction and the defect liability period.
2. The plan shall be consistent with the approved Erosion and Sediment Control Strategy (ESCS) and shall take into consideration the Contractor's proposed construction methodology and program.
3. The Contractor may propose an alternate construction methodology that differs from the approved ESCS. In this instance the Contractor shall discuss and obtain approval from the Consulting Engineer for the alternate strategy prior to submitting to Council.
4. The Contractor's ESCP shall be prepared by person or persons meeting the following criteria:
  - Six years or more field experience in civil engineering construction practices;
  - Educated in erosion and sediment control practice through regular industry sponsored seminars, publications, etc.;
  - An understanding of Rainfall Hydrology and an ability to calculate rainfall runoff; and
  - An understanding and ability to calculate open channel flows and velocities.
5. A copy of the Contractor's current approved ESCP is to be retained on site by the Contractor's Representative.
6. The Contractor's ESCP shall be submitted to the Consulting Engineer for review and approval

prior to the pre-start meeting.

7. The Consulting Engineer is to review the ESCP for compliance with the approved ESCS. Any amendments required to ensure ESCS compliance are to be incorporated by the Contractor prior to approval. The Consulting Engineer will issue a copy of the approved ESCP to the Council prior to the pre-start meeting.
8. It is the Contractor's responsibility to ensure that the ESCP is updated and amended to reflect any changes in the construction methodology and programme.
9. All amendments to the Contractor's ESCP shall be approved by the Consulting Engineer and a copy of the revised approved ESCP issued to Council.
10. The Contractor's ESCP shall consist of the following:
  - A layout plan detailing the measures to be employed during construction. On larger sites where works are to be progressively constructed a plan shall be provided for each stage of works;
  - A layout plan detailing the measure(s) to remain in place from the commencement of the defects liability period;
  - A written description of the sequencing of works or construction program;
  - An inspection and test plan for monitoring erosion and sediment control measures during the construction and the defects liability period;
  - Details of all Erosion and Sediment Control measures to be used. The Contractor may adopt standard details developed by other, e.g. IECA Best Practice Erosion and Sediment Control; and
  - The name of the person within the Contractor's organization who has the authority and responsibility for implementing, monitoring, updating or amending the Plan.
11. The Contractor's ESCP shall address the following issues:

#### **Minimising Disturbance**

- Limiting the exposure time and size of disturbed areas to a minimum;
- Allow for the use of existing vegetation as buffer zones;

#### **Control of Runoff**

- Sizing of structures, channels, catch drain and diversion drains for appropriate storm events;

	Design Life	ARI
Non-erosive design capacity	0-6 months	1 year
	6-12 months	2 years
Structural Stability	0-6 months	5 years
	6-12 months	10 years

- Diverting clean water runoff around disturbed areas;
- Dividing the site into smaller more manageable drainage areas;
- Early installation of temporary drainage works;
- Early installation of permanent drainage system and protection works;

#### **Erosion Control**

- Protecting service trenches and hard engineering structures (eg. driveways, kerbs, etc.) from erosion caused by runoff;
- Prompt revegetation of disturbed areas;



- Installing structures in drainage channels to slow flow velocity and encourage settlement of soil particles;
- Protection of disturbed areas from wind erosion (dust suppression);

### **Sediment Control**

- Locating stockpiles clear of drainage paths and protecting stockpiles from traffic, runoff and wind erosion;
- Minimising number of site access points;
- Stabilising site access points to prevent vehicles transporting materials off site;
- Intercepting drainage from disturbed areas and installing sediment barriers to slow the velocity of flow and allow fine particles to settle;
- Diverting larger contaminated flows to sediment traps to allow soil particles to settle or be treated prior to release into receiving waters;
- Protecting partially constructed drainage structures from sediment infiltration;

### **Revegetation**

- Progressive stabilisation and rehabilitation of completed works;
- Providing protection to revegetation works on steep batters during establishment period; and

### **Inspection, Clean out and Maintenance**

- The inspection, clean out and maintenance regime is to take into account the duration that the site will be disturbed and the timing of construction. If the site is disturbed (i.e. rehabilitation works are not complete) during the period December to May (wet season) a more rigorous inspection, clean out and maintenance regime will be required than for a site, which is disturbed during the period June to November.
- The following References / Guidelines may assist in preparing the ESCP:
- Best Practice Erosion and Sediment Control, International Erosion Control Association, (Australasia) 2008;
- Queensland Urban Drainage Manual;
- Guidelines for the Preparation of Erosion and Sediment Control Plans for Building Sites, Cairns City Council July 2003; and
- Erosion and Sediment Control Standard Version 9, Brisbane City Council, 2000.

### **CONSTRUCTION SECURITY BOND**

1. Prior to construction of the works commencing the developer is required to lodge a security bond in cash or unconditional Bank Guarantee to the value of 5% of the estimated cost of the construction of the works prepared and certified by the Consulting Engineer.
2. A bank guarantee should include:
  - A binding contractual relationship between Council and the guaranteeing bank;
  - Specific requirements for renunciation of the guarantee; and
  - Require adequate notice of renunciation.
3. The bond is to be accompanied by Council's Security Lodgement Form (Appendix E) clearly identifying the purpose of the bond together with the Consulting Engineer's certification of the value of the works.

4. The bond is required to provide security to Council in the event that costs are incurred as a result of the following:
  - Protection of on-street works from damage by contractors, sub-contractors and suppliers;
  - Repairs to on-street works resulting from damage caused by contractors, subcontractors and suppliers;
  - Protection and repair of existing Council services (i.e. sewerage connections, water connections etc);
  - Non-compliance with the approved Erosion and Sediment Control Plan during construction;
  - Failure to provide adequately for traffic; and
  - Urgent action required by Council to resolve unsafe construction or emergency repairs required to protect persons and/or property from consequential damages.
5. Any costs incurred by Council in responding to the above circumstances will be recovered from the Security Bond.
6. At the completion of the works and the commencement of the Defects Liability period, the construction security bond shall be returned to the developer or may be substituted for the defects liability bond.

#### **COMMENCEMENT OF WORK**

1. A Notice of Intention to Commence Works is to be issued to Council by facsimile or email seven (7) days prior to the intended date for commencement of the works. No works will be permitted to commence until the following information is provided:
  - Name, address and telephone number (including after-hours contact) of the Consulting Engineer for the works;
  - Name, address and telephone number (including after-hours contact) of the Contractor(s) and major sub-contractor(s) for the works;
  - Name and telephone number of the person to be contacted in regard to any matter arising from the construction of the works;
  - Intended date of commencement of works, and contract period;
  - An invitation to the relevant Council Representative to attend the pre-start meeting and confirmed by phone or email a minimum of 24 hours prior;
  - A request to Council to confirm that environmentally significant areas and/or trees which are to be preserved in accordance with any Tree Preservation Declaration, have been identified and adequately protected;
  - Location of Project Sign (if required); and
  - Inspection and Test Plan (refer CP1.16).

This submission will form notification of the date of the "Pre-Start" meeting.

#### **DOCUMENTATION TO BE PROVIDED PRIOR TO PRE-START MEETING**

1. The following documents (to a standard acceptable to Council) are required to be submitted and accepted by Council prior to pre-start meeting:
  - Evidence of Public Liability Insurance;
  - Proof of payment of Portable Long Service Leave Levy (PLSL);
  - Contractors Erosion and Sediment Control Plan;
  - Traffic Management Plan;
  - Construction Security Bond;
  - Safety Plan;
  - Evidence that all fees and charges have been paid; and

- Cultural Heritage Management Plan (if applicable).
2. A Site Safety Induction is to be undertaken for each Council representative at initial attendance on-site (prior to initial inspection);
  3. Evidence of Concurrence Agency, Service Authority or adjoining landowner consents/approvals is to be provided to Council prior to commencing. any elements of works affecting/involving those parties;
  4. The project specific inspection and Test Plans endorsed by the RPEQ.

## **PRE-START MEETING**

1. A pre-start meeting is to be held prior to the commencement of works. The meeting is to be attended by Consulting Engineer, the Contractor's Representative, any relevant Specialist Consultants and Councils representative.
2. Items to be considered at this meeting will include but not be limited to the following:
  - Review of relevant conditions of development approval and discussion of any issues including conditions of the Development Permit and Operational Works approvals that are considered important and relevant to the attending parties;
  - Review of Council's construction requirements;
  - Discuss the Contractor's Erosion and Sediment Control Plan approved by the Consulting Engineer;
  - A review of the processes for, monitoring, compliance assessment and auditing of the ESCP;
  - Inspection and identification of parks and environmentally significant areas and/or trees for preservation;
  - Site access conditions;
  - Identification of areas to be left undisturbed;
  - Evidence of compliance with the Workplace Health and Safety Act; including site safety inductions, site safety plans, notifications;
  - Review of Inspection and Test Plan including a notice of nominated Hold / Witness points;
  - Relevant provisions of any other Acts;
  - Traffic Management Plan;
  - Location of Project Sign (if required);
  - Sewerage and Water Pump Station Commissioning Plan (if applicable to the project); and
  - Issued plans for construction are the latest approved plans.
3. The pre-start meeting is a Hold Point and works may not proceed until the meeting is held and any further requirements identified during the conduct of the meeting are satisfied.
4. Council may require that subdivisions in difficult terrain or environmentally sensitive areas to have all road centrelines pegged prior to the pre-start meeting. This is to occur at least two weeks prior to any construction activity taking place so Council can visit the site with Engineers and Contractors representatives to view first hand ramifications of such construction activities as stormwater drainage points, proposed earthworks areas, clearing etc. Council reserves the right to amend the design in consultation with Engineers should any problems arise as a result of the inspection. This preliminary site visit should be arranged prior to or in conjunction with the pre-start meeting.

## REQUIREMENTS DURING CONSTRUCTION

### GENERAL REQUIREMENTS

1. The general requirements during the construction of the project are as follows:
  - Work may only proceed subsequent to Council being issued with all the relevant documentation set out in CP 1.09;
  - No work shall commence on any existing road open to the public unless specifically approved by Council;
  - No work may be carried out on nor machinery driven above or near existing water and sewerage pipes without a Work Method Statement being submitted by the Contractor and approved by Council;
  - Any damage to existing services under the control of Council or another Authority must be notified immediately and made good by the relevant Authority at the Contractor/Developer's expense prior to acceptance of the works.;
  - Use of Council services, (e.g. water from existing mains), is subject to approval by Council and payment of appropriate fees;
  - Work involving the use of machinery of any description shall only be carried out on the site 6.30 am to 6.30 pm, Monday to Saturday, with no work to be carried out on Sundays or Public holidays. (In certain circumstances Council may approve works outside these hours. All applications for changes to working hours must be in writing). For emergent or complaint response issues, dust suppression and sedimentation control may occur outside these hours. Council is to be notified as soon as possible in this instance; and
  - Pumping stations, electrical switchboards, access covers, compounds and associated equipment installed during construction shall be padlocked when left unattended.
2. The Developer, Contractor and Consulting Engineer shall take all necessary steps, in accordance with the provisions of the Workplace Health and Safety Act, to ensure safety of the public in regard to construction activities. In particular, work on roadways shall be signed in accordance with Queensland Department of Transport and Main Roads Manual of Uniform Traffic Control Devices. Council will require submission of plans indicating traffic control proposals and a program of work for sites involving the travelling public.
3. No public road may be closed, traffic diverted from public roads, or traffic diverted elsewhere without the prior approval of the Council, the District Superintendent of Traffic (if required) and public advertising of the proposed diversion must be carried out. Proposals to divert traffic shall include full details of the alternative route and proposed signing.
4. Works shall not be undertaken on any adjoining private properties without the prior written consent of the relevant registered proprietor. A written acceptance (by the registered proprietor) of the completed works shall be submitted to Council upon finalisation of the works.
5. If connections or alterations to Council mains are required, the Council Engineer shall be given a minimum of ten (10) working days' notice of the Contractor's requirements. (Council's notification requirements are to be noted on the Project Drawings / Specification).

## **PUBLIC NOTICES / PROJECT SIGNAGE**

1. Where as a condition of approval, Council requires a project sign(s) to be erected on the sites' frontages to constructed roads and any other location as required. The sign shall contain the following information:
  - An overall concept plan of the development showing the stage or works about to commence construction;
  - Name of Developer;
  - Name of the Project;
  - Street address of the site;
  - Project Manager's name and contact number;
  - Consulting Engineer's name and contact number;
  - Contractor's name and contact number' and
  - Other Specialist Consultants (geotechnical, landscaping, architects, hydraulics etc) names and contact numbers.
2. Material and size of the sign shall be as follows:
  - Made of a weatherproof material; and
  - Not less than 1200mm x 900mm.
3. Position of the sign on the land:
  - The sign must be place on, or within 1.5m of, the road frontage of the land;
  - The sign must be mounted at least 300mm above ground level; and
  - The sign must be positioned so that it is visible from the road.
4. The lettering on the sign:
  - Each item listed above must start on a new line; and
  - The minimum lettering height shall be 50mm in height.

## **DOCUMENT CONTROL**

1. A copy of the approved Project Drawings, Specification and Operational Works Approval shall be kept on the job site at all times during construction.
2. Should amendments be required to Engineering Plans and/or Specifications during construction, the Consulting Engineer shall ensure that Council and any other person or organisation who has previously been issued a set of plans that maybe affected by this amendment (e.g. Registered Surveyor, public service authority) is in receipt of a copy of all amended drawings and/or specifications. When approved, Council shall stamp these plans for approval as operational works plans. Any amended drawings and/or specifications shall be submitted with an accompanying letter outlining the amendment together with any supporting information.
3. Submissions with a full complement of supporting documentation will expedite Council's approval time frame.
4. All amendments shall be issued to Council for approval prior to the works being undertaken.

## **EROSION AND SEDIMENT CONTROL**

1. The Consulting Engineer shall ensure that the construction contract contains provisions requiring the Contractor to implement the approved Erosion and Sediment Control Strategy and to prepare and implement an Erosion and Sediment Control Plan complying with the approved Strategy.
2. The Contractor shall ensure that all reasonable measures are taken to protect nearby properties from dust pollution erosion, siltation or sediment transport.
3. Council reserves the right to order whatever action deemed necessary and appropriate at the time to prevent environmental harm, including ordering temporary cessation of work in extreme cases.
4. As Erosion and Sediment Control is also an issue of public amenity and safety, the developer shall be responsible for any costs arising from dust or water pollution generated by its development.

## **NOISE**

1. The requirements of the Environmental Protection Act 1994 regarding nuisance noise (if applicable) shall apply to the development works.

## **PARKS & ENVIRONMENTALLY SIGNIFICANT AREAS**

1. In cases where the subject land or the adjacent land is an existing or proposed Park, Bushland Reserve, or area otherwise declared by Council as environmentally significant, the following general precautions shall be mandatory:
  - The areas shall be clearly pegged, flagged, (and fenced if ordered by Council) inspected and approved by Council Officers; and
  - The approved design, or Certificate of Approval for tree clearing issued pursuant to Tree Preservation By-laws (if applicable) shall have identified any unavoidable intrusion into such areas and nominated work practices such as maximum widths of disturbance, nominated access routes, methods and timing of rehabilitation, which shall be strictly adhered to.
2. Council shall be notified immediately the Consulting Engineer is aware of any damage or disturbance beyond the approved limits. Rehabilitation of this damage or disturbance shall be to the satisfaction of Council.

## **INSPECTION AND TESTING**

1. During the construction phase, the Consulting Engineer shall be responsible for undertaking the minimum number of required inspections and tests in accordance with the approved Inspection Test Plan (ITP).
2. There are a number of major inspections that are mandatory Hold Points (H) for the Consulting Engineer and Hold Points or Witness Points for Council. These will be included in the ITP and can be found in **Appendix A, Appendix B, C and D** contain Inspection and Test Plan Templates. The contractor's ITP is to be based on these templates and updated with project specific testing requirements.
3. Any proposed changes to the ITP must be notified to and accepted by Council prior to the

affected works commencing.

4. The submitted Inspection and Test Plan is to be implemented by the Consulting Engineer. The test results and the certification that the plan has been followed are to be submitted with the "As Constructed" documentation.
5. Council will, on a random basis, call upon the Consulting Engineer to provide evidence of conformance with the approved ITP in the form of diary records, site visit reports etc.
6. During construction, Council reserves the right to conduct audit inspections of any or all of the works without prior notification. These inspections do not release the Consulting Engineer from his responsibility to check the Contractor's work.
7. For the RPEQ's test inspections and Hold/Witness points, a "Certificate of Inspection" will record the inspections. If requested, a copy is to be provided to Council for each Hold Point / witness point inspection.
8. For Council Hold/Witness points, the RPEQ's information will include as a minimum the details contained within **Appendix F**.

#### **APPLICATION FOR COUNCIL TO COMPLETE PRIVATE WORKS\**

1. Unless otherwise approved, Council requires any connections and alterations to Council's live sewer or water mains associated with developments to be completed by the Developer at the Developer's expense subject to Council's approval and supervision.
2. Sewer and water mains are considered to be live once the Defects Liability period has been commenced. All work on live sewers and water mains must be carried out by the Contractor with Council approval and subsequent supervision.
3. Alterations and connections to existing Council sewer and water mains, resulting from the development (including cutting in of new sewer property connections) are to be completed prior to commencement of the Defects Liability period. In these cases, separate applications should be made for the alterations and the connections.
4. The standard conditions and procedures for connection to Council infrastructure are detailed in **Appendix O**.
5. Contractors are not permitted to operate Council's infrastructure unless written approval has been obtained from Council. The placement and removal of plugs within live sewers must be done under direct supervision of Council's Inspector.
6. Council reserves the right, on the advice of its Inspector, to stop, or take over a connection being undertaken by a Contractor, if in the Inspector's opinion the Contractor is incapable of completing the connection work in a reasonable time without causing damage to Council's infrastructure or undue inconvenience to the public. Any work carried out by council will be at the contractor's cost.

#### **APPLICATION FOR APPROVAL TO DRAW WATER FROM COUNCIL MAINS**

1. The drawing of construction water from Council's mains must be approved and the relevant fees paid in advance. Application for approval should be made, on the prescribed form. The attached form shall include Council's endorsements on the form that the relevant fee has been paid.

2. Permission to draw water shall be subject to the following conditions:
  - Backflow prevention;
  - Water may only be taken between the hours of 8.00am and 4.30pm;
  - Must be through a metered connection or metered standpipe;
  - The approval shall be limited to the days and dates nominated in Council's notice of approval;
  - Water may only be taken from the approved hydrant point;
  - A copy of this approval is to be held by the driver of any vehicle taking water covered by this approval;
  - Council may withdraw this approval at any time, such notice shall be in writing and will become effective immediately; and
  - The applicant is responsible for the cost of the reinstatement of damages to Council property caused by the taking of water covered by this permit.

## ACCEPTANCE OF WORKS

### INTRODUCTION

1. For works requiring Council approval a "Defects Liability" period is a period of twelve months minimum after the works have been accepted as complete by Council. During the Defects Liability Period, it is the responsibility of the Developer to rectify any works found to be defective due to design faults or found to exhibit faults attributed to the performance of the construction activities in terms of quality and conformance with the design and specifications.
2. The following are required to be completed prior to Council acceptance of works:
  - Completed "As Constructed" submission lodged with Council a minimum five (5) days prior to the "Works Acceptance" Inspection or early plan sealing inspection for bonding or uncompleted works and being to Council satisfaction;
  - Satisfactory "Works Acceptance" Inspection;
  - All documentation outlined in section CP1.25(2) submitted to and accepted by Council;
  - All appropriate documentation to be completed by the Consulting Engineer and retained for records purposes. This consists of the "Works Acceptance Inspection Checklist" (**Appendix G**), the certified "Inspection and Testing Plan" and all test results and records for the works;
  - Approval has been given by Council or private certifier for construction of any buildings forming part of the operational works approval; and
  - Satisfactory commissioning and acceptance of any water pump station, reservoir or sewerage pump station.
3. Following the satisfactory completion of all of the above matters, the Consulting Engineer shall make a written request for acceptance of the works and commencement of the "Defects Liability" period and release of any uncompleted works bond held.
4. The date of the works acceptance shall be the date of issue of the Works Acceptance Certificate and shall be taken as the date all documentation outlined in CP1.25 has been approved and conditions of the operational works and development approval have been met. Works acceptance will not be backdated to the date of the works acceptance inspection. The assets will become Council's at the date on the works acceptance certificate.
5. Prior to making application for works acceptance the Consulting Engineer must confirm that all non-compliant work is rectified by the Contractor. Any non-compliances found by Council




must be rectified prior to Council's issue of a Works Acceptance Certificate. It is the responsibility of the consultant to monitor the contractors work to the extent necessary such that any deviations from the design are approved prior to making application for works acceptance, alternatively the consultant instruct the Contractor to rectify the work.

## **DEFECTS LIABILITY BOND**

1. Council requires a bond, in an amount of 5% of the value of the works, which is kept for the period of twelve months or until the works are finally accepted.
2. The bond is to be submitted with Council's Security Lodgement Form (**Appendix E**) clearly identifying the purpose of the bond together with the Consulting Engineer's certification of the value of the works.
3. The Construction Security Bond lodged prior to construction may be used for the purposes of the Defects Liability bond subject to Council's approval.

## **"AS CONSTRUCTED" SUBMISSION**

1. "As Constructed" documentation serves two distinct functions:
  - Evidence that "As Constructed" works have been checked against the approved design, to support certification by the Consulting Engineer responsible for the design that design philosophies and criteria have been achieved; and
  - Recording: To provide an accurate record of the "As Constructed" services.
2. Information required for the checking function must be presented in a form which allows ready comparison between design and "As Constructed" data by experienced engineering staff, whereas information required for the recording function must be presented in a form which allows ready and unambiguous interpretation and understanding by a wide range of users including engineers, maintenance and tradespersons, and the general public.
3. "As Constructed" documentation in accordance with these requirements is essential in order to achieve acceptance of development works and commencement of the "Defects Liability" period and is required to be forwarded to Council a minimum of five (5) days prior to the "Works Acceptance " inspection or early plan sealing inspection for bonding of uncompleted works.
4. The following items must be submitted as part of the "As Constructed" submission:
  - Electronic copy of the updated Management Plans, Operation and Maintenance Manuals, and Environmental Management Plans where these have been amended or not previously provided to Council (where applicable);
  - Asset valuation report in a format acceptable to council and certified by an RPEQ;
  - An electronic copy of the Council Approved Final Engineering Drawings in the same electronic format as the As Constructed data – PDF is suitable;
  - Where applicable, Pump Station RTU number and pump station identifier to be obtained from Council;
  - Electronic copy of the Council Approved Landscaping and Parks

- 
- embellishments drawings;
- Electronic copy of park / landscaping irrigation system drawings;
  - Electronic copy of design plans for building/structure and copy of Structural Certificate;
  - "As Constructed" digital data and drawings of services and infrastructure including works completed by Council for the Contractor under a Private Works Agreement;
  - Digital Ground Model data to the requirements of council in an appropriate format (e.g. DWG or as nominated by the Council);
  - Any necessary information required for Council's asset management records;
  - Certification of installed playground equipment to relevant Australian Standards; and
  - Works carried out on mains, whether or not they are a part of the original project design or for a future stage.

## CP1.22 COMPLIANCE CERTIFICATIONS

1. With the implementation of these minimum standards, it is Council's intention to expedite the approval and checking process by reducing the level of checking from rigorous detailed checking to checking on an audit basis. In doing so, Council requires that the "As Constructed" documentation be supported by appropriate certifications in accordance with the requirements noted herein.
2. All "As Constructed" works including the Sewerage Property Connection branches, must be surveyed by a Registered Surveyor, who shall certify the details upon completion of the project. The certification must note that the "As Constructed" survey data represents the true and accurate location of the relevant construction element presented in the data, relative to all appropriate survey datums. (i.e. the exact location in space of each construction element/entity). The Registered Surveyor's certification must accompany the "As Constructed" submission to Council. An example of an acceptable Registered Surveyor's (Consulting) Certification is attached. (**Appendix K**).
3. All "As Constructed" works must also be certified by the Consulting Engineer responsible for the works. The certification must note that the design intent and function of the proposed works have not been compromised by the constructed works. To this extent, the Consulting Engineer will be responsible for determining whether the "As Constructed" details that exceed the tolerances for construction does not compromise the design intent and/or operational effectiveness of the infrastructure.
4. It is recognised that in some circumstances, the tolerances for construction are exceeded. In these instances, the Consulting Engineer will be responsible for performing confirmation design calculations to ensure that the original design intent and function are not compromised.
5. Further, should the "As Constructed" details indicate a change to the design intent or function of the works, revised design calculations shall be provided by the Consulting Engineer to indicate the acceptability of the proposed change relative to Council's requirements. Council's approval of the change is required prior to the formal acceptance of the works.
6. The Consulting Engineer shall be responsible for the completion of the "Statement of Compliance – As Constructed works, which satisfies the requirements for Certification. (**Appendix J**).

## CP1.23 MANAGEMENT PLANS, OPERATION AND MAINTENANCE MANUALS

1. Where works comprise pump stations, reservoirs, treatment plants etc., Operations and Maintenance Manuals for all components of the works shall be provided. Operating and Maintenance Manuals shall include spare parts lists, electrical documentation and any other relevant information. Maintenance Manuals and procedures are also required for drainage structures which incorporate Gross Pollutant Traps, interceptor devices etc. The Maintenance procedures should indicate recommended frequencies for maintenance/cleaning functions in wet and dry seasons.
2. Management plans are necessary for where there is any future maintenance required to ensure sustainability of that feature, i.e. waterways, bio retention basins etc.

## CP1.24 “AS CONSTRUCTED” DIGITAL DATA AND DRAWINGS

1. This section of the manual covers the four main elements that will comprise the total submission of the “Digital Data and Drawings” component of the “As Constructed” submission for the “Acceptance of Works”. The four main components are:
  - Survey Datum;
  - “As Constructed” Digital Ground Survey;
  - “As Constructed” Drawings; and
  - “As Constructed” Attribute Information.

The submission will also be accompanied with the relevant Consulting Engineer’s Certification or Registered Surveyor’s Certification and the “As Constructed” Data Submission Form.

Requirements for Digital Data and Drawings are contained within **Appendix N**

## CP1.25 PROJECT DOCUMENTATION

1. Development works will not be accepted until construction records have been certified as being completed by the Consulting Engineer and accepted by Council.
2. A complete copy of the following documents shall be provided to Council for acceptance prior to the “Works Acceptance”:
  - Inspection and Test Plan certified by the Consulting Engineer;
  - “Works Acceptance” Inspection Checklist;
  - “As Constructed” Submission in accordance with 1.21;
  - Compliance Certifications in accordance with 1.22;
  - Management Plans, Operation & Maintenance Manuals in accordance with 1.23;
  - “As Constructed” Digital Data and Drawings in accordance with 1.24;
  - Water and sewerage inspection certificates including pump station and reservoir commissioning certificate; and
  - Digital copy of CCTV survey for Sewer and Stormwater with Engineering Report and Certification.
3. Copies of all test results required to confirm compliance with Council’s Standard Specifications shall be assembled and retained as a part of the project documentation within the Consulting Engineer’s record storage facilities. While not a complete listing, the following details some major records to be included:
  - Fill compaction test results;
  - Subgrade CBRs;
  - Subgrade replacement material quality, thickness and locations;\*
  - Subgrade replacement material compaction test results;\*
  - Subsoil drain filter media quality statements (or gradings where required);
  - Subbase course and base course material quality statements and thicknesses;
  - Subbase course and base course compaction test results;
  - Prime or primer seal spray and application rates;
  - AC core test results;
  - Sewer pressure test records;
  - Grading to sewer bedding quality statements;
  - Grading to water main bedding quality statements;
  - Water main pressure test records;
  - Pump Station commissioning and test certification by Council (sewer

- and water) including wet-well, pumps and switchboard;\*
- Any concrete testing required by the technical specifications;
- Pipework material quality statements for all pipework material (water, sewer, stormwater, etc.);
- Geofabric material quality statements;
- Digital copy of CCTV survey for Sewer and Stormwater with Engineering Report and Certification;
- Any other testing results or statements required to conform with this manual; and
- Any other job specific testing carried out or ordered by the Consulting Engineer, if used.

\* Where required to be used.

4. The Consultant should prepare a letter to Council requesting acceptance of a pump station for the purpose of achieving “Works Acceptance” for the subdivision. The letter should include / enclose:
  - The pump station allotment number, as it appears on the survey plan;
  - The name of the pump station and RTU number;
  - Copy of approved design drawings;
  - Copy of as-constructed drawings (can be preliminary);
  - Copy of completed pre-commissioning checklist;
  - Details of any non-conformances and uncompleted works;
  - Rectification plan if required;
  - Copy of Inspection and Test Plan;
  - Certification by the Consultant for structural design, buoyancy and compliance with design drawings and WRC Development Manual;
  - Request that Council make application to Ergon for connection of power accompanied with a locality plan with street names showing the PS location to attach to the application; and
  - Evidence that an application for commissioning a sewerage pump station has been lodged.
5. The information to be provided to Council shall include as a minimum the requirements of the Pump Station Commissioning Checklist (**CP1 Appendix D**). The following pump information shall also be provided to Council:
  - Pump Manufacturer, Model, Type, and Impeller diameter (as a cut sheet);
  - Rating of the motor;
  - Weight of the pump and motor;
  - Manufacturer’s Performance curve as a cut sheet;
  - Curves with at least four points plotted of the actual performance established in the field, or similar supervised works certificate plotted with the manufacturer’s pump curve;
  - KWH/1000 litres pumped;
  - Complete wiring diagrams and details (if not Council standard);
  - Mechanical details and parts list of pump and motor;
  - Maintenance catalogue showing also daily, weekly, monthly and annual maintenance requirements; and
  - A complete set of the manufacturers recommended spares delivered to Council.
6. Should any of the above test results fail to meet specification the Consulting Engineer shall include in the record, details of retesting/rectification carried out.

7. The construction record should be retained in a logically assembled and bound document including a table of contents confirming completeness and presented to Council on completion of the works.
8. Site specific as-constructed drawings for pump stations and reservoirs must be prepared and included with the works acceptance documentation. The drawings must be prepared in accordance with the requirements set out in **Appendix N**.

#### **CP1.26 "WORKS ACCEPTANCE" INSPECTION**

1. The "Works Acceptance " inspection requires attendance by:
  - The Consulting Engineer for the project;
  - The Contractor; and
  - Council's nominee/s.
2. It is the responsibility of the Contractor and the Consulting Engineer to ensure the necessary requirements of the works are to an acceptable standard (as defined in approved design and construction documentation) prior to the conduct of a "Works Acceptance" inspection.
3. The general requirements to be met prior to Council's "Works Acceptance" inspection of the works are as follows:
  - The site is clean, tidy, free of rubbish, rocks, sticks, unauthorised stockpiles, etc;
  - Allotment earthworks and site grading to be free draining and in accordance with the approved Design;
  - Relevant Erosion and Sediment Control measures are in place;
  - Integrity of environmentally significant areas is maintained;
  - All Sewers flushed and gravity sewers inspected by CCTV; and
  - Valve boxes and manhole tops visually located and not covered.
4. Prior to requesting a "Works Acceptance" inspection, the Consulting Engineer is responsible for confirming:
  - That the approved works have been completed;
  - Any non-compliant issues or defects noted during the construction process, have been rectified to Council satisfaction;
  - The above listed items are in accordance with the approved drawings, Council's technical specifications and accepted engineering and landscaping practice; and
  - Project documentation listed in CP1.25 has been submitted. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.
5. Further to the above, and prior to the "Works Acceptance" inspection, the Consulting Engineer shall be responsible for the completion of the "Works Acceptance" Inspection Checklist (**Appendix G**) as appropriate to the works being constructed.
6. The completed checklist shall be presented to the relevant Council Officer prior to the "Works Acceptance" inspection. Council Officer will not undertake a detailed check of all items raised in the checklist, but will examine some aspects of the works on an audit basis. The original of the completed checklist shall be retained with the records for the project upon completion of the works.

#### **CP1.27 BONDING OF UNCOMPLETED WORKS**

1. For subdivision works Council may, at its discretion, approve the bonding of uncompleted

works to enable early sealing of survey plans. If Council does consent to the early sealing of survey plans, the developer must disclose to prospective purchasers that all services may not be available until the outstanding works are completed. Council will only consider early plan sealing for the full stage of the development as defined in the Operational Works Approval. Parts of a stage will not be considered for early plan sealing.

2. Prior to the submission of any bond or plans for sealing, the following matters must be completed to the satisfaction of Council:
  - Engineering plans have been approved;
  - All survey pegs placed;
  
  - All allotment preparation work and earthworks on allotments have been completed in accordance with the requirements of this manual, with finished surface levels, the degree of compaction achieved and geotechnical assessments required on any of the allotments submitted and approved by Council;
  - Roads have been constructed to subbase level;
  - All stormwater systems including kerb and channel constructed;
  - Sewer systems to be installed tested, operational and 'As Constructed' Plans lodged and accepted. (Bonding of pump stations could be accepted);
  - Water supply system to be installed, tested, commissioned and 'As Constructed' plans lodged and accepted;
  - Satisfactory evidence is to be provided to Council of a negotiated agreement with Service providers for telecommunications, cabling, reticulation of electricity and the provision of street lighting and gas service providers for provision of gas (if applicable);
  - All outstanding rates are paid;
  - All works within allotments are fully completed and no further disturbance required on the allotments;
  - Appropriate erosion and sediment control measures are in place for all disturbed areas;
  - All other bonded works (or works under agreement) are included in a bone-fide contract between the developer and a contractor to be completed within 90 days;
  - All contributions required by the conditions of approval shall be paid prior to sealing of survey plans (Headworks, Drainage and Traffic Contributions to Council, Contributions to service providers, Department of Main Roads Contributions, etc);
  - "As Constructed" information provided for all completed works and accepted by Council;
  - Submission of CCTV survey of completed sewers and stormwater drainage systems; and
  - Building approval for all buildings/structures.
  
3. When the above matters have been completed, the Applicant or Consulting Engineer shall submit the following to Council:
  - Security Lodgement Form (**Appendix E**) to be completed clearly indicating that the purpose of the bond is for uncompleted works;
  - Fully priced schedule of outstanding works including the cost of preparation of the "As Constructed" submission;
  - Unconditional Bank Guarantee to the value of 1.5 times the estimated value of the uncompleted works as certified by the Consulting Engineer. A bank guarantee should include:
    - A binding contractual relationship between Council and the guaranteeing bank;
    - Specific requirements for renunciation of the guarantee; and

- Require adequate notice of renunciation.
  - Certification from the Consulting Engineer, that the works on each allotment have reached a stage acceptable to Council and that the outstanding works are programmed for completion within 90 days. The outstanding construction works programme must be Council approved;
  - All bonds submitted shall be clearly identified as to the particulars of the site and, the purpose of the bond; and
  - "Contribution Payment" Form clearly noting all required contributions associated with the Development.
4. Subject to its discretion Council may require an Uncompleted Works inspection to ensure that the on allotment works and all associated documentation have been completed to Council's satisfaction. Should an inspection be required Council will require five (5) days' notice and payment of the required inspection fee in advance of any inspection.

### **CP1.28 SEALING OF PLAN OF SURVEY**

1. Where operational works are associated with the reconfiguration of land or creation of new titles the Applicant is required to submit plan of survey which accords with the proposal plan approved by Council, suitable for deposit in the office of the Registrar of Titles and duly certified by a Registered Surveyor (Consulting Cadastral), together with 4 copies of the plan, and a completed application form for sealing of survey plans, building units, or group titles plan within 2 years from the date of approval of engineering drawings and specifications for subdivisions involving works.
2. Where the survey plans differ from the approved proposed plan, details of any changes are to be provided with the application.
3. The application form and plans, certificate(s) of compliance for any water, sewer reticulation and stormwater drainage system (including CCTV survey), together with the relevant fee are to be lodged with Council.
4. Upon being satisfied that the Plan of Survey conforms with the approval granted, and all required works have been carried out, or adequate security in accordance with Council's policy for bonding of uncompleted works is provided and all outstanding rates, contributions and charges have been paid, Council will note its approval under seal on the plan of survey and return the plan of survey to the Applicant for lodgement in the Titles Office.
5. The Applicant is required to submit the plan of survey to the Titles Office within 6 months of Council sealing the plan. Failure to do so will require the plan of survey to be resubmitted to Council for resealing.

### **FINAL ACCEPTANCE OF WORKS**

#### **"FINAL ACCEPTANCE" INSPECTION**

1. The "Final Acceptance" inspection will generally confirm the matters raised in the "Final Acceptance" Inspection checklist (**Appendix H**) and any other matters outstanding relevant to the works. The Checklist is to be completed by the Consulting Engineer prior to the conduct of the "Final Acceptance" Inspection. Failure to do so may result in cancellation of the inspection and/or the incurring of a reinspection fee.



## GENERAL REQUIREMENTS

1. During the defects liability period, it is the responsibility of the Developer to rectify any works found to be defective or found to exhibit faults attributed to the design of the works and/or the performance of the construction activities in terms of quality and conformance with the design and specifications.
2. Once a period of twelve month's minimum has elapsed from Council's acceptance of the works "Works Acceptance", a "Final Acceptance" inspection is to be arranged with Council. Payment of an appropriate Inspection Fee may be required.
3. The "Final Acceptance" inspection is to be attended by:
  - Council's nominee/s;
  - The Consulting Engineer for the project; and
  - The Contractor.
4. The Consulting Engineer for the works shall be responsible for ensuring that Council's requirements for acceptance of the works are satisfied prior to requesting a Final Acceptance inspection.
5. Council's requirements for final acceptance of the works comprise the following:
  - No outstanding payments are due to Council or other Authorities from the development;
  - Completion of the "Final Acceptance" Inspection Checklist (**Appendix H**);
  - Satisfactory "Final Acceptance" Inspection by relevant Council Officers; and
  - All conditions of the approvals for as constructed drawings, works acceptance and plan sealing have been completed to the satisfaction of Council.
6. Following a satisfactory Final Acceptance inspection, the Consulting Engineer shall submit a written request to Council for Final Acceptance of the works and release of the Defects Liability bond. Council will, upon confirmation that no outstanding payments arising from the development are due to Council, confirm acceptance of the works, and arrange for the release of the Defects Liability bond.



# **APPENDIX A**

## **INSPECTION AND TEST REQUIREMENTS**

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
<b>Clearing and Grubbing</b> Location	<b>HOLD POINT</b> upon completion of survey, inspect defined limits of clearing.	<b>WITNESS POINT</b> Joint inspection of defined limits and tree removal if considered warranted.
<b>Allotment Filling</b> Quality of Material Compaction Alignment	Examine and assess all test results. Examine and assess all test results.	Visit site for random audit inspections if considered warranted. Visit site for random audit inspections if considered warranted. Visit site for random audit inspections if considered warranted.
<b>Subgrade</b> Compaction CBR Tests (if ordered) Horizontal & Vertical Alignments Profile Embankments	Routinely visit site. <b>HOLD POINT</b> Attend during proof rolling. Examine and assess all test results. Routinely visit site. Examine and assess all test results and cross section geometry. Routinely visit site. <b>HOLD POINT</b> Attend during completion of trimming and removal of soft spots. Routinely visit site. <b>HOLD POINT</b> Attend during placement of fill.	Visit site for random audit inspections. <b>HOLD POINT</b> Joint inspections during proof rolling. Assess all test results Visit site for random audit inspections. Assess all test results and cross section geometry. Visit site for random audit inspections. <b>HOLD POINT</b> Joint inspections during trimming and removal of soft spots. <b>WITNESS POINT</b> Visit site for random audit inspections if considered warranted.
<b>Subgrade Replacement</b> Material Quality Compaction (a) For on site material (b) For graded material Profile & Depth	<b>HOLD POINT</b> Make sufficient routine visits to assess quality of materials. <b>HOLD POINT</b> Examine and assess all test results. <b>HOLD POINT</b> Make sufficient routine visits to assess that operations will achieve a sound compacted layer. <b>HOLD POINT</b> Examine and assess all test results. <b>HOLD POINT</b> Examine and assess all test results.	<b>WITNESS POINT</b> Visit site for random audit inspections if considered warranted. <b>WITNESS POINT</b> Visit site for random audit inspections if considered warranted. <b>WITNESS POINT</b> Visit site for random audit inspections if considered warranted.
<b>Sub-base Layer</b> Material Quality Compaction Profile & Depth	Routinely visit site. Examine and assess all test results. Routinely visit site. <b>HOLD POINT</b> Attend during proof rolling. Examine and assess all test results. Routinely visit site. <b>HOLD POINT</b> Attend at completion of final preparation. Examine and assess all test results and cross section geometry.	<b>WITNESS POINT</b> Visit site for random inspections if considered warranted. <b>WITNESS POINT</b> Visit site for random inspections if considered warranted. <b>HOLD POINT</b> Joint inspection on completion of final preparation.

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
<p><b>Base layer</b></p> <p>Material Quality</p> <p>Compaction</p> <p>Horizontal and vertical alignment (a) With no Kerb &amp; Channelling (b) With Kerb &amp; Channeling</p> <p>Profile</p>	<p>Routinely visit site.</p> <p>Routinely visit site.</p> <p><b>HOLD POINT</b> Attend during proof rolling.</p> <p>Examine and assess all test results and cross section geometry.</p> <p>Routinely visit site.</p> <p>Examine and assess all test results and cross section geometry.</p> <p>Routinely visit site.</p> <p><b>HOLD POINT</b> Attend at completion of final preparation</p>	<p>Visit site for random audit inspections.</p> <p>Visit site for random audit inspections.</p> <p><b>HOLD POINT</b> Joint inspection on completion of final preparation.</p> <p>Visit site for random audit inspections.</p> <p>Visit site for random audit inspections.</p> <p><b>HOLD POINT</b> Joint inspection on completion of final preparation.</p>
<p><b>Surfacing</b></p> <p>Material Quality</p> <p>Compaction &amp; Thickness</p> <p>Horizontal &amp; Vertical Alignments</p> <p>Profile</p>	<p><b>HOLD POINT</b> Undertake a Pre-seal Inspection.</p>	<p><b>WITNESS POINT</b> Visit site for random inspections if considered warranted.</p> <p><b>WITNESS POINT</b> Visit site for random inspections if considered warranted.</p> <p><b>WITNESS POINT</b> Visit site for random inspections if considered warranted.</p> <p><b>HOLD POINT</b> Undertake a Pre-seal Inspection.</p>
<p><b>Sub-soil Drains</b></p> <p>Pipe</p> <p>Filler Material</p> <p>Cleaning Joints and Markers</p> <p>Geofabric</p>	<p>Routine inspections of Contractor's Performance and progress of works.</p> <p>Routine inspections of Contractor's Performance and progress of works.</p> <p>Routine inspections of Contractor's Performance and progress of works.</p> <p>Routine inspections of Contractor's Performance and progress of works.</p>	<p>Visit site for random inspections if considered warranted.</p> <p>Visit site for random inspections if considered warranted.</p> <p>Visit site for random inspections if considered warranted.</p> <p>Visit site for random inspections if considered warranted.</p>
<p><b>Kerb &amp; Channel</b></p> <p>Material Quality</p> <p>Horizontal &amp; Vertical Alignments</p>	<p><b>HOLD POINT</b> Inspect foundations prior to kerb placement</p> <p>Inspect completed kerb.</p> <p>Water test where appropriate.</p>	<p><b>HOLD POINT</b> Visit site for inspection</p> <p><b>HOLD POINT</b> Visit site for inspection</p>
<p><b>Road Crossing Conduits</b></p> <p>Location</p> <p>Markers</p>	<p>Routine inspections of Contractor's Performance and progress of works.</p> <p>Routine inspections of Contractor's Performance and progress of works.</p>	<p>Visit site for random inspections if considered warranted.</p> <p>Visit site for random inspections if considered warranted.</p>
<p><b>Building / Structures</b></p>	<p>Ensure Council Approval of all building / structures.</p>	<p>Inspect and ensure compliance.</p>

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
<p><b>Stormwater Drainage</b></p> <p>Location of Structures</p> <p>SL &amp; IL at Structures</p> <p>Material Quality (Bedding, Concrete, Pipes)</p> <p>Manholes</p> <p>Drain Lines</p> <p>Backfilling</p> <p>'Cast Insitu' Reinforced Concrete Work</p>	<p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Visual inspection prior to placement of structure/s after bedding sand.</p> <p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Sufficient visits to assess compliance and to view progress and works.</p> <p><b>HOLD POINT</b> Inspect reinforcement and formwork prior to concrete pour.</p>	<p><b>WITNESS POINT</b> Visit site for inspection prior to laying of pipe and bedding.</p> <p><b>HOLD POINT</b> Visit site for inspection prior to backfilling.</p> <p><b>HOLD POINT</b> Inspect reinforcement and formwork prior to concrete pour.</p>
<p><b>Landscaping</b></p> <p>Grass Establishment</p> <p>Tree Planting</p> <p>Irrigation</p> <p>(a) Pipelines</p> <p>(b) Pressure Testing Pipelines</p> <p>(c) Performance Testing</p>	<p>Routine inspections of Contractor's Performance.</p> <p>Routine inspections of Contractor's Performance.</p> <p>Confirm all affected areas are topsoiled, grassed and maintained.</p> <p><b>WITNESS POINT</b> Witness and approve pressure and performance test.</p>	<p>Visit site for check at defects liability inspection.</p>
<p><b>Soil &amp; Water Quality</b></p>	<p><b>HOLD POINT</b> Examine and approve contractors ESCP for compliance with ESCS.</p> <p>ESC Measures for works area are in place prior to works commencing on this section or stage.</p> <p>Randomly audit and inspect ESC measures for compliance with contractors ESCP.</p>	<p><b>WITNESS POINT</b> Visit site for inspection if considered warranted.</p>

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
<b>Sewerage Reticulation</b>		
Location MH's & HC's	Routine inspections.	
IL at MH & HC's	Routine inspections and review of field information.	
Backfilling	Routine inspections of Contractor's Performance .	<b>WITNESS POINT</b> Visual inspection after excavation prior to bedding.
	<b>HOLD POINT</b> Visual inspection after excavation prior to bedding.	Visual inspection of lines prior to backfill.
SP Boundary Set Out	Routine inspections of Contractor's Performance.	
	Review of field measurements.	
Material Quality (Bedding, Concrete, Pipes)	Assess all test results.	
Manholes, Maintenance Shafts & Benching	Routine inspections.	
Hydrostatic Testing of Manholes	<b>HOLD POINT</b> Witness hydrostatic testing of manholes.	<b>WITNESS POINT</b> Witness hydrostatic testing of manholes.
Pipelines	<b>HOLD POINT</b> Witness pressure test of lines.	<b>HOLD POINT</b> Visual inspection after excavation prior to bedding.
		<b>HOLD POINT</b> Witness pressure test of lines.
Thrust/anchor blocks	<b>HOLD POINT</b> Visual site inspection of anchor/thrust blocks prior to concrete pour.	<b>WITNESS POINT</b> Visual site inspection of anchor/thrust blocks prior to backfill.
Trunk Infrastructure	<b>HOLD POINT</b> Pre-connection visual inspection of trunk lines.	<b>HOLD POINT</b> Pre-connection visual inspection of trunk lines.
<b>Pump Stations and Valve Chambers</b>		
Excavation	Routine inspections of Contractor's performance.	
Foundation Inspection	<b>WITNESS POINT</b> . Confirm water table level and founding condition.	<b>WITNESS POINT</b> Inspect foundation prior to placing formwork / reinforcement.
	<b>WITNESS POINT</b> Inspect foundation prior to placing formwork / reinforcement.	
Base slab reinforcement, formwork and water stop	<b>HOLD POINT</b> Inspect reinforcement, water stop and formwork prior to concrete pour.	Visual inspection of reinforcement, water stop and formwork prior to concrete base pour.
Reinforcement and formwork	<b>HOLD POINT</b> Inspect reinforcement and formwork prior to concrete pour.	Visual inspection of reinforcement and formwork prior to concrete pour.
		<b>WITNESS POINT</b> Visual inspection of concrete prior to stripping of formwork.
Materials testing	Assess all test results.	<b>WITNESS POINT</b> Review materials testing.
Hydrostatic Testing	<b>HOLD POINT</b> Witness hydrostatic test.	<b>HOLD POINT</b> Witness hydrostatic test.
Electrical and SCADA equipment	<b>WITNESS POINT</b> . Review switchboard test certification. Inspect installation.	<b>WITNESS POINT</b> Review certification of switchboards prior to delivery to site.
		<b>WITNESS POINT</b> Review certification of telemetry (SCADA) prior to delivery to site.
Lifting chain	<b>WITNESS POINT</b> Review certification of lifting chain.	<b>WITNESS POINT</b> Review certification of lifting chain.
Pump testing and Station Commissioning	<b>HOLD POINT</b> Witness pressure and draw down testing of pumps.	<b>HOLD POINT</b> Witness pressure and draw down testing of pumps.
	<b>HOLD POINT</b> Inspection against commissioning checklist.	<b>HOLD POINT</b> Inspection against commissioning checklist.

Elements of Work	Consulting Engineer's Responsibility	Council's Responsibility
<p><b>Water Reticulation</b></p> <p>Location</p> <p>SP Boundary Set Out</p> <p>Valves, Hydrants, Scours, Bends</p> <p>Depth</p> <p>Material Quality (Bedding, Concrete, Pipes) Pipelines</p> <p>Thrust/anchor blocks</p> <p>Backfilling</p>	<p>Routine inspections of Contractor's Performance.</p> <p>Review of field measurements.</p> <p>Routine inspections of Contractor's Performance.</p> <p>Review of field measurements.</p> <p>Routine inspections of Contractor's Performance.</p> <p>Review of field measurements.</p> <p>Routine inspections of Contractor's Performance.</p> <p>Review of field measurements.</p> <p>Assess all test results.</p> <p><b>HOLD POINT</b> Visual inspection after excavation prior to bedding.</p> <p><b>HOLD POINT</b> Witness pressure test of lines.</p> <p><b>HOLD POINT</b> Witness chlorine swabbing of lines – pre-amalgamation DSC area.</p> <p><b>WITNESS POINT</b> Disinfection / flush of pipeline.</p> <p><b>HOLD POINT</b> Visual site inspection of anchor/thrust blocks prior to concrete pour.</p> <p>Routine inspections of Contractor's Performance</p> <p><b>HOLD POINT</b> Visual site inspection prior to backfill.</p>	<p><b>HOLD POINT</b> Visual inspection after excavation prior to bedding.</p> <p><b>HOLD POINT</b> Witness pressure test of lines.</p> <p><b>WITNESS POINT</b> Disinfection / flush of pipeline.</p> <p><b>HOLD POINT</b> Visual site inspection of anchor/thrust blocks prior to concrete pour.</p> <p>Visual inspection of lines prior to backfill.</p> <p><b>WITNESS POINT</b> Visual site inspection prior to backfill.</p>
<p>Prior to Acceptance of works for "Defects Liability Period"</p>	<p><b>Forward As Constructed submission to Council with Registered Surveyor's and Consulting Engineer's certification attached.</b></p>	<p><b>Council to accept and conduct Audit checks of As Constructed Drawings and advise any requirements.</b></p>
	<p><b>Finalise all other Documentation in accordance with Construction Procedures.</b></p>	<p><b>Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.</b></p>
	<p><b>Complete "Defects Liability" Inspection Checklist prior to joint inspection with Council.</b></p>	<p><b>When completed advise in writing of acceptance of works for commencement of "Defects Liability Period".</b></p>
<p>During "Defects Liability Period"</p>	<p><b>Consulting Engineer to confirm all minor omissions and defects have received suitable attention and to examine and approve site prior or asking for "Final Acceptance of works" Inspection.</b></p>	<p><b>Council to advise Consulting Engineer of any defects.</b></p>
<p>Prior to Final Acceptance of works</p>	<p><b>Consulting Engineer to accompany Council Inspector and to note any requirements.</b></p>	<p><b>Council Inspector to accompany Consulting Engineer and Contractor and to advise any requirements.</b></p>
		<p><b>When completed advise in writing of final acceptance of works.</b></p>

## TEST REQUIREMENTS

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests
	Description	Test Required			
<b>SEWER MAIN CONSTRUCTION</b>					
Embedment	Compaction		WSA02-2014 19		
Trench Fill	Compaction		WSA02-2014 20.1		
Gravity Pipes	Air Pressure and Vacuum		Table S6.2, Operational Works Specification S6 "Sewerage Reticulation", WRC Development Manual		
	Deflection		WSA02-2014 20.1.4		
	CCTV Inspection		WSA02-2014		
Manholes	Vacuum or Hydrostatic		Clause S6.26, Operational Works Specification S6 "Sewerage Reticulation", WRC Development Manual		
<b>SEWER PUMP STATION CONSTRUCTION</b>					
Embedment	Compaction		WSA04-2005 36.3		
Backfilling	Compaction		WSA04-2005 36.3		
Switchboards	Electrical Testing		WSA04-2005 36.9		
<b>WATER MAIN CONSTRUCTION</b>					
Embedment	Compaction		WSA03-2011 16		
Trench Fill	Compaction		WSA03-2011 17.1		
Pipes	Pressure		Clause S5.28, Operational Works Specification S5 "Water Reticulation", WRC Development Manual		
Disinfection	Bacteriological		WSA03-2011 20		
<b>STORMWATER DRAINAGE CONSTRUCTION</b>					
Excavation	Compaction	RDD	Q111A/B/C or	1/50m <sup>2</sup>	95% SRDD
			AS 1289.5.4.1 or		
			AS 1289.5.7.1		
		MDD	Q110A or		
AS 1289.5.1.1 or					
AS 1289.5.7.1					



Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests		
	Description	Test Required					
<b>STORMWATER DRAINAGE CONSTRUCTION (cont'd)</b>							
Bedding/Haunch (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.6, MTRS04	n/a	
		Linear Shrinkage	Q106 or AS 1289.3.4.1				
	Compaction (Cohesive)	RDD	Q111A/B/C or AS 1289.5.4.1	Under trafficable area 1/side/50m  Elsewhere 1/side/100m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	2	
			MDD	Q110A or Q132A			1/material type
	Compaction (Cohesionless)	Density Index	Q132B or AS 1289.5.6.1	Under trafficable area 1/side/50m  Elsewhere 1/side/100m		2	
			Min/Max Dry Density	AS 1289.5.1.1 or AS 1289.5.5.1		1/material type	n/a
	Backfill (RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	Table 19.2.3, MRTS04	n/a
			Linear Shrinkage	Q106 or AS 1289.3.4.1			
		Compaction (Design Trench Width ≤ 4m)	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	Under trafficable area 1/300mm lift/50m  Elsewhere 1/900mm lift/100m	Table S4.1, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual	1 (between structures)
				MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1		
				1/RDD			

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests	
	Description	Test Required				
<b>STORMWATER DRAINAGE CONSTRUCTION (cont'd)</b>						
Backfill (RCP, RCBC or similar)  (cont'd)	Compaction (Design Trench Width > 4m)	RDD	Q111A/B/C or	Under trafficable area 1/300mm lift/200m <sup>2</sup>  Elsewhere 1/900mm lift/400m <sup>2</sup>	1 (between structures)	
			AS 1289.5.4.1 or			
			AS 1289.5.7.1			
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/material type 1/RDD		n/a
Backfill (In-Place Structures other than RCP, RCBC or similar)	Material Quality	Grading	Q103A or AS 1289.3.6.1	1/material type	100% < 50mm	
			Plasticity index		Q105 or AS 1289.3.3.1	2 ≤ IP ≤ 12
		Compaction			RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1
	MDD		Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/material type  1/RDD		n/a
			Backfill (Stabilised Sand)	Material Quality	Stabilised sand shall comprise sand meeting the requirements of Table 19 MRS11.04 in an intimate mixture of 12 parts sand and 1 part of either Type GP or GB cement	
	Bedding/Haunch/Backfill/Overlay (Buried Metal Corrugated Structures)	Material Quality	All materials shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records.		As per manufacturer's recommendations.	
Installation		Installation shall be in accordance with the manufacturer's recommendations. Evidence of these recommendations and subsequent compliance shall be incorporated with the Contractor's quality records		As per manufacturer's recommendations.		

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests	
	Description	Test Required				
<b>STORMWATER DRAINAGE CONSTRUCTION (cont'd)</b>						
Stormwater Drainage System	CCTV Inspection	Appendix A, Operational Works Specification S4 "Stormwater Drainage", WRC Development Manual				
<b>ROAD CONSTRUCTION</b>						
Ground Surface Treatment	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/2500m <sup>2</sup>	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Road)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/200mm lift/2500m <sup>2</sup> or 1/500m <sup>3</sup>	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a
Embankment (Concentrated Operations – Gullies etc)	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/200mm lift/500m <sup>2</sup> or 1/100m <sup>3</sup>	>0.3m below pavement subgrade - 95% SRDD	3
		MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	<0.3m below pavement subgrade - 97% SRDD	n/a

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests				
	Description	Test Required							
<b>ROAD CONSTRUCTION (cont'd)</b>									
Subgrade (General)	Material Quality	CBR	Q113C (soaked)	Representative each material and 1 test per 500m carriageway or part thereof	97% MDD 100% OMC	n/a			
	Compaction	RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/1000m <sup>2</sup>	97% SRDD	3			
			MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.7.1		1/RDD	n/a		
		Subgrade (Turnouts and Entrances)		Compaction		RDD	Q111A/B/C or AS 1289.5.4.1 or AS 1289.5.7.1	1/100m <sup>2</sup>	97% SRDD
			MDD			Q110A or AS 1289.5.1.1 or AS 1289.5.7.1	1/RDD	n/a	
Pavement Layers (General)	Material Quality	All materials shall be sourced from a Quality Assured material supplier and the results of the manufacturer's testing to assure quality of the product shall be incorporated with the Contractor's quality records		MRTS05 Section 7.2 "Type 2 Unbound Material"					
	Compaction	RDD	Q111A/B/C or Q112 or AS 1289.5.4.1	1/500m <sup>2</sup> 2/500m <sup>2</sup> 1/500m <sup>2</sup> (2/500m <sup>2</sup> if using AS1289.5.8.1)	100% SRDD	4 8 4 (8)			
			MDD	Q110A or AS 1289.5.1.1 or AS 1289.5.4.2		1/material type/5000m <sup>2</sup> as required	n/a		

Construction Activity	Verification Requirement		Minimum Test Frequency	Specification Requirement	Minimum No. of Tests	
	Description	Test Required				
<b>ROAD CONSTRUCTION (cont'd)</b>						
Pavement Layers (Turnouts and Entrances)	Compaction	RDD	Q111A/B/C or	1/100m <sup>2</sup>	100% SRDD	1
			Q112 or	2/100m <sup>2</sup>		
			AS 1289.5.4.1	1/100m <sup>2</sup> (2/100m <sup>2</sup> if using AS1289.5.8.1)		
		MDD	Q110A or	1/material type		n/a
			AS 1289.5.1.1 or AS 1289.5.4.2	as required		
Structural Concrete	Compressive Strength		AS 1012.1	1 sample of 2 cylinders for each 15m <sup>3</sup> or part thereof placed in an essentially continuous manner	Table S7.1, "Concrete Classes", WRC Development Manual	1 sample per casting day
			AS 1012.3.1			
			AS 1012.8.1			
			AS 1012.9			
			AS 1012.12.1			

**Table 19.2.3 - Select Backfill Properties**

**MRTS04**

AS SIEVE SIZE (mm)	Percent (by mass) Passing Sieve	
	Gravel *	Loam
37.5	100	100
9.5	60 – 85	100
2.36	25 - 70	70 – 100
0.425	10 – 40	10 – 40
0.075	3 - 30	3 - 30
Other Properties Linear Shrinkage	8 maximum	6 maximum

\* Material of size greater than 2.36mm shall be stone

**Table 19.2.5 - Sand Properties**

**MRTS04**

Property	Natural Sand	Blended and Manufactured Sand
Percent passing 6.7mm AS sieve	100	100
Percent passing 0.075mm AS sieve (maximum)	5	20
Plasticity Index (maximum)	5	10

**Table 19.2.6 – Grading Limits for Bedding Material**

**MRTS04**

AS SIEVE SIZE (mm)	% Passing By Mass
19	100
2.36	30 – 100
0.425	15 – 70
0.075	Mar-30
Other Properties Linear Shrinkage	6 maximum



# **APPENDIX B**

# **SEWER MAINS INSPECTION AND TEST PLAN TEMPLATE**

## INSPECTION AND TEST PLAN – SEWER MAIN LAYING

ITP to be completed by Consulting Engineer

<b>Developer:</b>		<b>Consultant Engineer:</b>		<b>Consultant Engineer Representative:</b>						
<b>Project:</b>		<b>Contractor:</b>		<b>Contractor Site Representative:</b>						
<b>Description:</b>		<b>Sub-contractor:</b>		<b>Witness, Hold &amp; Surveillance points added to ITP</b>						
		<b>Field Tester:</b>								
<b>Location:</b>		<b>ITP Prepared by:</b>		<b>Reviewed by:</b>		<b>Council Representative:</b>				
		Date / /		Date / /			Date / /			
No	Construction/Inspection Activity	Inspection Procedure & Acceptance Criteria				Contractor	Consulting Engineer	Council*	Record	Comment
1	Pre start/Site establish	Pre-Start Meeting Checklist. Site establishment visual check. Checklist completed. (S1)				I	H	H	Checklist S1	
2	Approved materials on Site and delivered	Visual check approved materials. Quantity and condition. Checklist completed (S2)				I	I	S	Checklist S2	
3	Excavation and pipe laying	Visual and dimensional check to WRC Standards. Checklist completed. (S3)				I	H	W	Checklist S3	
4	Maintenance Shafts	Visual and dimensional check to WRC Standards. Checklist completed (S4)				I	H	S	Checklist S4	
5	Survey of main in easement	Survey of pipe location before backfill				I	I	S		
6	Anchor/Thrust Blocks	Visual and dimensional check to WRC Standards. Checklist completed.				I	H	H		
7	Embedment and Trench Fill	Visual check and compaction testing to WRC Standards				I	H	W	Compaction test results	
8	Surface fittings	Visual and dimension check to WRC Standards (S5)				I	I	S	Checklist S5	
9	Testing	Pressure, deflection and compaction tests to WRC Standards				I	H	W	Test Results	
10	Pre-Connection Inspection	Visual inspection to all party's standards (S6) Flow Management procedures as per Job Specific Schedule Letter				H	H	H	Checklist S6	
12	Restoration	Visual inspection against photographs. Clearance letter from Council/property owner				I	W	S	Clearance letter	
Symbol	Legend	No	Amendment			Date	Reviewed	Validation		
I	Inspection							I certify that the works have been constructed in accordance with WRC Standards and the Inspection and Test Plan  ..... Consulting Engineer Date / /		
H	Mandatory Hold Point									
W	Witness Point									
S	Surveillance									

\* Council reserves the right to vary these requirements at any time    \*\* Council's written approval MUST be obtained prior to varying these requirements



**SEWER CHECKLIST S1  
PRE-START AND SITE ESTABLISHMENT**

PROJECT:								CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
		<b>SITE</b>						DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>				<b>SIGNATURES</b>	
1.1	Plan current and on site														
1.2	Pre construct report inc. photographs														
1.3	Road opening requirements														
	Fees paid							Council Requirements							
	Traffic mgt plan implemented														
1.4	Environmental Management Plan on site and implemented														
1.5	Safe Work Plan on site and implemented														
1.6	Receiving sewer located														
1.7	Property entry agreement														
1.8	Main laying Specification on site														
1.9	Footways to finished levels							If laying in road reserve							
1.10	Survey pegs in place							Registered surveyor							
1.11	Job set out/level sheets														
1.12	All services located							'Dial Before You Dig', Services							
1.13	All services marked							Search, and Relevant Authorities							
1.14	Main layer holding relevant accreditation on site														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**SEWER CHECKLIST S2**  
APPROVED MATERIALS ON SITE AND DELIVERED

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
				<b>DAY</b>				DATE:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
2.1	Delivery Inspection														
2.2	Pipe type and size to current plan							Current Plan							
2.3	Bedding material														
2.4	Trench fill														
2.5	Fittings														
2.6	Surface Fittings														
2.7	Pre Cast chambers														
2.8	Mortar / Plaster														
2.9	Pipe laying accessories														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**SEWER CHECKLIST S3 – PAGE 1 OF 2**  
**EXCAVATION AND PIPELAYING**

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
							<b>DAY</b>		DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
3.1	Environmental Management Plan on site and implemented														
3.2	WH&S Plan on site and implemented														
3.3	Services exposed														
3.4	Clearance from Services														
3.5	Trench width ..... mm														
3.6	Trench depth to design level														
3.7	Trench shoring/Plating														
3.8	Trench drainage														
3.9	Pipe Embedment														
	Compaction														
	Bedding ..... mm														
	Surrounds/sides ..... mm														
3.10	Pipe laid to grade														
3.11	Jointing to Standards														
3.12	Concrete														
	Trench stops in place														
	Bulkheads in place														
3.13	Property Connection Sewers to Standard														
	Identification tape														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**SEWER CHECKLIST S3 – PAGE 2 OF 2**  
EXCAVATION AND PIPELAYING

PROJECT:							CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:				
		<b>DAY</b>						DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>	
3.14	Trench Fill													
	Material													
	Compaction													
	Compaction test							NATA Certified Lab						
3.15	Terminal Maintenance Shaft to Standard													
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>						
<b>COMMENT:</b>														

**SEWER CHECKLIST S4  
MAINTENANCE SHAFTS**

PROJECT:							CONSULTING ENGINEER:						
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:						
<b>CHAMBER</b>							DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD		COMMENT		SIGNATURES	
4.1	Finished Surface Levels Supplied												
4.2	Drainage requirements												
4.3	Base												
	Placement												
	Channels												
	First shaft section												
4.4	Pre cast chamber												
	Shaft assembled in correct order												
	Step iron location and spacing												
	Sealing												
	Offset cone located correctly												
	Minimum one make up ring												
	Cover and frame												
4.5	In-situ chamber												
	Reinforcement							Plan Specification					
	Cover												
	Concrete type to Specification												
	Step iron location and spacing												
	Dimension check												
	Cover and frame												
4.6	Plastering/rendering												
4.7	Benching												
<b>VARIATIONS AND CHANGES:</b>							<b>SITE INSTRUCTIONS:</b>						
<b>COMMENT:</b>													

**SEWER CHECKLIST S5  
SURFACE FITTINGS**

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
		<b>SITE</b>						DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
5.1	Surface boxes and surrounds to finished levels														
5.2	Surface box lids hinged in direction of traffic flow														
5.3	Shroud pipes assembled to Standards														
5.4	Fitting bolts protected to Standards														
5.5	Correct depth to Spindle tops														
5.6	Correct depth to Hydrant lugs														
5.7	Spindle retaining disc in place														
5.8	Indicator plates in place														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**SEWER CHECKLIST S6  
PRE-CONNECTION INSPECTION**

PROJECT:								CONSULTING ENGINEER:													
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:											
								<b>SITE</b>						DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
								1	2	3	4	5	6			MINIMUM STANDARD		COMMENT			SIGNATURES
6.1	WAC compiled																				
6.2	Compaction and concrete tests																				
6.3	Pressure test results																				
6.4	Deflection Test Results																				
6.5	CCTV Inspection																				
6.6	Junction tracer tape in place																				
6.7	Surface boxes and surrounds level																				
6.8	Terminal Mtce Shaft/Rodding Points to Standard																				
6.9	Chambers sized to Standard																				
6.10	Cover and frame to Standard																				
6.11	Minimum one make up ring																				
6.12	Chamber step irons to Standard																				
6.13	First shaft section																				
6.14	Channels to Standard																				
6.15	Benching to Standard																				
6.17	Sealing to Standard																				
6.18	Site restored satisfactorily																				
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>													
<b>COMMENT:</b>																					



# **APPENDIX C**

# **WATER MAIN INSPECTION AND TEST PLAN TEMPLATE**



## INSPECTION AND TEST PLAN – WATER / RECYCLED WATER MAIN LAYING

ITP to be completed by Consulting Engineer

<b>Developer:</b>		<b>Consultant Engineer:</b>		<b>Consultant Engineer Representative:</b>		
<b>Project:</b>		<b>Contractor:</b>		<b>Contractor Site Representative:</b>		
<b>Description:</b>		<b>Sub-contractor:</b>		<b>Witness, Hold &amp; Surveillance points added to ITP</b>		
		<b>Field Tester:</b>				
<b>Location:</b>		<b>ITP Prepared by:</b>		<b>Council Representative</b>		
		<b>Date / /</b>	<b>Reviewed by:</b>			

No	Construction/Inspection Activity	Inspection Procedure & Acceptance Criteria	Contractor	Consult. Engineer	Council*	Record	Comment
1	Pre-start/Site establish	Pre-Start Meeting Checklist. Site establishment visual check. Checklist completed. (W1)	I	H	H	Checklist W1	
2	Approved materials on Site/delivered	Visual check approved materials. Quantity and condition. Checklist completed (W2)	I	I	S	Checklist W2	
3	Excavation & Pipe Laying	Visual and dimensional check to WRC Standards. Checklist completed. (W3)	I	H	W	Checklist W3	
4	Chambers	Visual and dimensional check to WRC Standards. Checklist completed (W4)	I	I	S	Checklist W4	
5	Survey of main in easement	Survey of pipe location before backfill	I	I	S		
6	Anchor/Thrust Blocks	Visual and dimensional check to WRC Standards. Checklist completed.	I	H	W		
7	Embedment and Trench Fill	Visual check and compaction to WRC Standards	I	H	W	Compaction test results	
8	Surface fittings	Visual and dimension check to WRC Standards. Checklist completed (W5)	I	I	S	Checklist W5	
9	Disinfection	Disinfection to WRC Standards	I	H	W	Test Results	
10	Testing	Pressure test and Compaction test to WRC Standards	I	H	H	Test Results	
11	Pre-connection inspection	Visual inspection to WRC Standards. Checklist completed (W6, W7) Isolation procedure as per Job Specific Letter	H	H	H	Checklist W6, W7	
12	Dual water flow test property service/s (main to meter)	Flow test of drinking water system. Lock and tag meter ball valve. Flow test of recycled water system. Lock and tag meter ball valve.	I	W	H	Test results	
13	Restoration	Visual inspection against photographs. Clearance letter from Council/property owner	I	W	S	Clearance letter	

Symbol	Legend	No	Amendment	Date	Reviewed	Validation
I	Inspection					I certify that the works have been constructed in accordance with FNQROC Standards and the Inspection and Test Plan  ..... Consulting Engineer Date / /
H	Mandatory Hold Point					
W	Witness Point					
S	Surveillance					

\* Council reserves the right to vary these requirements at any time

\*\* Council's written approval MUST be obtained prior to varying these requirements

**WATER CHECKLIST W1  
PRE-START AND SITE ESTABLISHMENT**

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
				<b>SITE</b>				DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
1.1	Plan current and on site														
1.2	Pre construct report inc. photographs														
1.3	Property Entry Agreement														
1.4	Road opening requirements														
	Fees paid														
	Traffic mgt plan implemented														
1.5	Environmental Management Plan on site and implemented														
1.6	Wh&S Plan on site and implemented														
1.7	Main laying Specification on site														
1.8	Footways to finished levels														
1.9	Survey pegs in place							Registered Surveyor							
1.10	Job set out														
1.11	All services located							'Dial Before You Dig', services search and Relevant Authorities							
1.12	All services marked														
1.13	Main layer holding relevant accreditation on site														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**WATER CHECKLIST W2**  
**APPROVED MATERIALS ON SITE AND DELIVERED**

PROJECT:							CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:				
				<b>SITE</b>				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD		COMMENT		SIGNATURES		
2.1	Delivery Inspection													
2.2	Pipe type and size to current plan													
2.3	Polyethylene sleeving & accessories													
2.4	Marking tape													
2.5	Bedding material													
2.6	Trench fill													
2.7	Fittings													
2.8	Surface Fittings													
2.9	Pre Cast chambers													
2.10	Pipe laying accessories													
<b>VARIATIONS AND CHANGES:</b>							<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>														

**WATER CHECKLIST W3 – PAGE 1 OF 2**  
**EXCAVATION AND PIPE LAYING**

PROJECT:							CONSULTING ENGINEER:									
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:						
										DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>				<b>COMMENT</b>		<b>SIGNATURES</b>		
3.1	Environmental Management Plan on site and implemented															
3.2	Traffic Management Plan on site and implemented															
3.3	Services exposed															
3.4	Clearance from Services															
3.5	Trench width ..... mm															
3.6	Trench depth ..... mm															
3.7	Trench shoring															
3.8	Excavation prior to placement of backfill															
3.9	Sleeving															
	Pipe and/or Fitting clean															
	Sleeving overlapped & sealed															
	Sleeving Ends sealed															
3.10	Laying															
3.11	Pipe Embedment															
	Compaction															
	Bedding															
	Surround															
	Overlay															
	Testing															
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>								
<b>COMMENT:</b>																

**WATER CHECKLIST W3 – PAGE 2 OF 2**  
**EXCAVATION AND PIPE LAYING**

PROJECT:							CONSULTING ENGINEER:									
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:						
										DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
ITEM	DESCRIPTION	DAY						MINIMUM STANDARD	COMMENT	SIGNATURES						
		1	2	3	4	5	6									
3.12	Pipe joints															
	Witness mark															
	Deflection limits															
	Restrained joints															
3.13	Valves, Hydrants & Surface fittings installed															
	Shroud assembly															
	Valve anchorage															
3.14	Marking tape															
	Correct location															
	Connected to fittings															
3.15	Concrete															
	Trench stops in place															
	Bulkheads in place															
	Thrust blocks in place															
	Embedment & Encasement in place															
3.16	Trench fill															
	Material															
	Compaction															
	Compaction Testing							NATA Certified Lab								
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>								
<b>COMMENT:</b>																

## WATER CHECKLIST W4 CHAMBERS

PROJECT:							CONSULTING ENGINEER:						
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:						
				<b>CHAMBER</b>			DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>		<b>SIGNATURES</b>	
4.1	In-Situ Chamber												
	Formwork – correct sizing												
	Formwork – correct levels												
	Reinforcement												
	Conduits												
4.2	Pre Cast Chamber												
	Size to Standards												
	Base slab to Standards												
	Base levelled												
4.3	Reduced Size Chamber												
4.4	Scour Chamber												
4.5	Ladders / handrails / step irons												
4.6	Puddle Flanges												
4.7	Sealing							Manufacturer Specification					
4.8	Drainage												
4.9	Metal access cover												
4.10	Operational access												
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>					
<b>COMMENT:</b>													

## WATER CHECKLIST W5 SURFACE FITTINGS

PROJECT:							CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:				
				<b>SITE</b>				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD	COMMENT	SIGNATURES				
5.1	Surface boxes and surrounds to finished levels													
5.2	Surface box lids hinged in direction of traffic flow													
5.3	Shroud pipes assembled to Standards													
5.4	Fitting bolts protected to Standards													
5.5	Correct depth to Spindle tops													
5.6	Correct depth to Hydrant lugs													
5.7	Spindle retaining disc in place													
5.8	Indicator plates in place													
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>						
<b>COMMENT:</b>														

**WATER CHECKLIST W6**  
**PROPERTY SERVICE INSTALLATION**

PROJECT:					CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:					
		<b>SITE</b>				DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>	<b>COMMENT</b>		<b>SIGNATURES</b>	
6.1	Plumber holding relevant accreditation on site							AS/NZS3500				
6.2	Install property service (main to meter) - Drinking Water							AS/NZS3500				
6.3	Install property service (main to meter) - Recycled Water							AS/NZS3500				
6.4	Drinking water riser is plain copper							AS/NZS3500				
6.5	Recycled water riser is coloured lilac							AS/NZS3500				
6.6	Drinking water riser has correct ball valve							AS/NZS3500				
6.7	Recycled water riser has correct ball valve							AS/NZS3500				
6.8	Risers are a minimum 300mm apart							Meter Fit Policy				
6.9	Drinking Water non-return valve fitted							AS/NZS3500				
6.10	Termination of property service as per standard							AS/NZS3500				
6.11	Embedment and trench fill – Drinking water property services							AS/NZS3500				
6.12	Embedment and trench fill – Recycled water property services							AS/NZS3500				
6.13	Clearances from other services							AS/NZS3500				
6.14	Plumbers Compliance Certificate supplied for drinking water property service/s							AS/NZS3500				
6.15	Plumbers Compliance Certificate supplied for recycled water property service/s							AS/NZS3500				
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>				
<b>COMMENT:</b>												



**WATER CHECKLIST W7  
PRE-CONNECTION INSPECTION**

PROJECT:								CONSULTING ENGINEER:													
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:											
								<b>SITE</b>						DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD				COMMENT				SIGNATURES					
7.1	WAC compiled																				
7.2	Compaction and concrete tests																				
7.3	Pressure test results																				
7.4	Marking tape in place & tested																				
7.5	Surface boxes and surrounds level																				
7.6	Indicator plates in place																				
7.7	Fitting box lids positioned correctly																				
7.8	Hydrant lugs positioned correctly																				
7.9	Fitting bolts protected to Standard																				
7.10	Min 100mm max 200mm to hydrant lugs																				
7.11	Shroud assembly to Standard																				
7.12	Min 100mm max 350mm to top spindle																				
7.13	Extension spindle in place (if req.)																				
7.14	Spindle retaining disc in place (if req.)																				
7.15	Chambers sized to Standards																				
7.16	Chamber ladder or step irons to Standards																				
7.17	Chamber drainage adequate & to Standards																				
7.18	Scour outlet protected from erosion																				
7.19	Site restored satisfactorily																				
7.20	Chemical Analysis report																				
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>													
<b>COMMENT:</b>																					



# **APPENDIX D**

# **PUMP STATION INSPECTION AND TEST PLAN TEMPLATE**

**INSPECTION AND TEST PLAN – WATER/SEWAGE PUMP STATION**  
ITP to be completed by Consulting Engineer

<b>Developer:</b>		<b>Consultant Engineer:</b>		<b>Consultant Engineer Representative:</b>	
<b>Project:</b>		<b>Contractor:</b>		<b>Contractor Site Representative:</b>	
<b>Description:</b>		<b>Sub-contractor:</b>		<b>Witness, Hold &amp; Surveillance points added to ITP</b>	
<b>Location:</b>		<b>Field Tester:</b>			
		<b>ITP Prepared by:</b>	<b>Reviewed by:</b>	<b>Council Representative</b>	
		<b>Date / /</b>	<b>Date / /</b>	<b>Date / /</b>	

No	Construction/Inspection Activity	Inspection Procedure & Acceptance Criteria	Contractor	Consult. Engineer	Council*	Record	Comment
1	Pre-start/Site establish	Pre-Start Meeting Checklist. Site establishment visual check. Checklist completed. (PS1)	I	H	H	Checklist PS1	
2	Approved materials on Site/delivered	Visual check approved materials. Quantity and condition. Checklist completed (PS2)	I	I	S	Checklist PS2	
3	Excavation	Visual inspection to FNQROC Standards. Checklist completed. (PS3)	I	I	S	Checklist PS3	
4	Foundations	Visual and dimensional check to FNQROC Standards.	I	W	W	Checklist PS4	
5	Base slab	Visual inspection to FNQROC Standards.	I	H	I	Checklist PS4	
6	Reinforcement and formwork	Visual inspection to FNQROC Standards.	I	H	W	Checklist PS4	
7	Anchor/Thrust Blocks	Visual and dimensional check to FNQROC Standards.	I	H	H		
8	Embedment and Backfill	Visual check and compaction to FNQROC Standards	I	H	H	Compaction test results	
9	Electrical/Scada	Review certification and visually check installation to FNQROC standards.	I	W	I	Certification	
10	Lifting Chain	Review certification.	I	I	I	Certification	
11	Surface fittings	Visual and dimension check to FNQROC Standards. Checklist completed (PS6)	I	I	S	Checklist PS5	
12	Disinfection	Disinfection to FNQROC Standards	I	H	H	Test Results	
13	Testing	Pressure test and Compaction test to FNQROC Standards	I	H	H	Test Results	
14	Pre-connection inspection	Visual inspection to FNQROC Standards. Checklist completed (PS6) Isolation procedure as per Job Specific Letter	H	H	H	Checklist PS6	
15	Commissioning of System	Visual and dimensional check to FNQROC Standards and, where required, removal of RPZD.	I	H	H	PS Commiss. Checklist	

Symbol	Legend	No	Amendment	Date	Reviewed	Validation
I	Inspection					I certify that the works have been constructed in accordance with FNQROC Standards and the Inspection and Test Plan  ..... Consulting Engineer   Date / /
H	Mandatory Hold Point					
W	Witness Point					
S	Surveillance					

\* Council reserves the right to vary these requirements at any time      \*\* Council's written approval MUST be obtained prior to varying these requirements

**PUMP STATION CHECKLIST PS1  
PRE-START AND SITE ESTABLISHMENT**

PROJECT:							CONSULTING ENGINEER:						
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:						
							<b>SITE</b>						
							DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>	<b>COMMENT</b>			<b>SIGNATURES</b>	
1.1	Plan current and on site												
1.2	Pre construct report inc. photographs												
1.3	Property Entry Agreement												
1.4	Road opening requirements												
	Fees paid												
	Traffic mgt plan implemented												
1.5	Environmental Management Plan on site and implemented												
1.6	WH&S Plan on site and implemented												
1.7	Receiving sewer located												
1.8	Specification on site												
1.9	Footways to finished levels												
1.10	Survey pegs in place							Registered Surveyor					
1.11	Job set out												
1.12	All services located							'Dial Before You Dig', services search and Relevant Authorities					
1.13	All services marked												
1.14	Contractors holding relevant accreditation on site												
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>					
<b>COMMENT:</b>													

**PUMP STATION CHECKLIST PS2**  
**APPROVED MATERIALS ON SITE AND DELIVERED**

PROJECT:								CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
		<b>SITE</b>						DATE:		SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
2.1	Delivery Inspection														
2.2	Types and sizes to current plan														
2.3	Marking tape														
2.4	Bedding material														
2.5	Trench fill														
2.6	Fittings														
2.7	Surface Fittings														
2.8	Pre Cast chambers														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**PUMP STATION CHECKLIST PS3 – PAGE 1 OF 2**  
EXCAVATION

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
		<b>DAY</b>						DATE:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
3.1	Environmental Management Plan on site and implemented														
3.2	Traffic Management Plan on site and implemented														
3.3	Services exposed														
3.4	Clearance from Services														
3.5	Trench width ..... mm														
3.6	Trench depth ..... mm														
3.7	Trench shoring														
3.8	Excavation prior to placement of backfill														
3.9	Embedment														
	Compaction														
	Bedding														
	Surround														
	Overlay														
	Testing														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**PUMP STATION CHECKLIST PS3 – PAGE 2 OF 2**  
**EXCAVATION AND PIPE LAYING**

PROJECT:							CONSULTING ENGINEER:						
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:						
				<b>DAY</b>			DATE:	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>		<b>SIGNATURES</b>	
3.10	Valves, Hydrants & Surface fittings installed												
	Shroud assembly												
	Valve anchorage												
3.11	Marking tape												
	Correct location												
	Connected to fittings												
3.12	Concrete												
	Trench stops in place												
	Bulkheads in place												
	Thrust blocks in place												
	Embedment & Encasement in place												
3.13	Trench fill												
	Material												
	Compaction												
	Compaction Testing												
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>					
<b>COMMENT:</b>													

**PUMP STATION CHECKLIST PS4 – PAGE 1 OF 2  
CHAMBERS**

PROJECT:							CONSULTING ENGINEER:					
Date from:		to:		PIPE TYPE:	SIZE:	CLASS:	CONTRACTOR:					
							<b>CHAMBER</b>					
							DATE:	CH 1	CH 2	CH 3	CH 4	CH 5
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD	COMMENT	SIGNATURES		
4.1	Finished Surface Levels Supplied											
4.2	Base											
	Placement											
	Channels											
	First shaft section											
4.3	In-situ chamber											
	Formwork – correct sizing											
	Formwork – correct levels											
	Reinforcement											
	Cover											
	Concrete type to Specification											
	Step iron location and spacing											
	Dimension check											
	Cover and frame											
	Conduits							Plan Specification				
4.4	Pre cast chamber											
	Shaft assembled in correct order											
	Step iron location and spacing											
	Sealing											
	Offset cone located correctly											
	Minimum one make up ring											
	Cover and frame											
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>				
<b>COMMENT:</b>												



**PUMP STATION CHECKLIST PS4 – PAGE 2 OF 2**  
**CHAMBERS**

PROJECT:							CONSULTING ENGINEER:							
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:				
<b>CHAMBER</b>							DATE:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	
ITEM	DESCRIPTION	1	2	3	4	5	6	MINIMUM STANDARD		COMMENT		SIGNATURES		
4.5	Ladders / handrails / step irons													
4.6	Sealing							Manufacturer Specification						
4.7	Drainage													
4.8	Security Grate lid													
4.9	Plastering/rendering													
4.10	Benching													
4.11	Operational access													
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>						
<b>COMMENT:</b>														

**PUMP STATION CHECKLIST PS5  
SURFACE FITTINGS**

PROJECT:							CONSULTING ENGINEER:								
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:					
										SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
				<b>SITE</b>				DATE:							
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>			<b>SIGNATURES</b>		
5.1	Surface boxes and surrounds to finished levels														
5.2	Surface box lids hinged in direction of traffic flow														
5.3	Shroud pipes assembled to Standards														
5.4	Fitting bolts protected to Standards														
5.5	Correct depth to Spindle tops														
5.6	Correct depth to Hydrant lugs														
5.7	Spindle retaining disc in place														
5.8	Indicator plates in place														
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>							
<b>COMMENT:</b>															

**PUMP STATION CHECKLIST PS6  
PRE-CONNECTION INSPECTION**

PROJECT:					CONSULTING ENGINEER:									
Date from:		to:		PIPE TYPE:		SIZE:		CLASS:		CONTRACTOR:				
		<b>SITE</b>						DATE:	SITE 1	SITE 2	SITE 3	SITE 4	SITE 5	SITE 6
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>MINIMUM STANDARD</b>		<b>COMMENT</b>		<b>SIGNATURES</b>		
6.1	WAC compiled													
6.2	Compaction and concrete tests													
6.3	Pressure test results													
6.4	Deflection Test Results													
6.5	CCTV Inspection													
6.6	Marking tape in place & tested													
6.7	Surface boxes and surrounds level													
6.8	Indicator plates in place													
6.9	Chambers sized to Standard													
6.10	Chamber ladder or step irons to Standards													
6.11	Chamber drainage adequate & to Standards													
6.12	Benching to Standard													
6.13	Sealing to Standard													
6.14	Scour outlet protected from erosion													
6.15	Site restored satisfactorily													
<b>VARIATIONS AND CHANGES:</b>								<b>SITE INSTRUCTIONS:</b>						
<b>COMMENT:</b>														



# **APPENDIX E**

# **SECURITY LODGEMENT FORM**

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**SECURITY LODGEMENT FORM**

This sheet must be completed prior to the acceptance of any bond by Council.

Development Name: .....

Stage: ..... File No.: .....

Applicant: .....

Consultant: .....

Purpose of Bond:

Construction Security      Uncompleted Works      Defects Liability

.....  
.....

**Uncompleted Works Bond Assessment**

Estimated time to complete bond works (not greater than 90 days) ..... days

Current Contract Completion date .....

Anticipated Completion date .....

Consulting Engineer's estimated value of uncompleted works \$ .....

Bond Value (apply Factor 1.50) \$ .....

**Construction/Defects Liability Bond Assessment**

Consulting Engineer's estimated value of completed works \$ .....

Construction/Maintenance Bond Value (apply Factor 0.05)(min \$500.00) \$ .....

Council shall retain any interest accrued on cash monies paid to Council and held in trust fund by Council, including monies paid pursuant to Section 6.3 of the *Local Government (Planning and Environment) Act 1990*.

Consulting Engineer: .....

Signature: ..... RPEQ No.: .....

Date: .....



# **APPENDIX F**

## **INSPECTION CERTIFICATE FOR WITNESS / HOLD POINT**

**WHITSUNDAY REGIONAL COUNCIL**

**DEVELOPMENT MANUAL**

**INSPECTION CERTIFICATE FOR WITNESS/HOLD POINT**

This certificate registers evidence that the works as noted herein have been inspected by the Council officer noted below and were found to be satisfactory.

Development Name: ..... File No: .....

Development Location: .....

Consulting Engineer: .....

Contractor: .....

Works being Inspected / Tested / Witnessed:

.....  
.....  
.....  
.....

Defaults/Corrective Action Required:

.....  
.....  
.....  
.....  
.....

Defaults Corrected:      Y                      N                      N/A

Council Inspector Signature: .....

Name of Inspector: .....

Date of Inspection: .....



# **APPENDIX G**

## **WORKS ACCEPTANCE INSPECTION CHECKLIST**



**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

**DEVELOPMENT NAME:** ..... **File No:** .....

**DEVELOPMENT LOCATION:** .....

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
<b>ALLOTMENT DRAINAGE</b>		
The works have been finally inspected and:		
1. Concrete catch drains constructed in approved location and to a satisfactory standard.		
2. Field Inlets constructed in approved location and to a satisfactory standard.		
3. Overland flow path constructed to correct profile.		
4. Pipework has been visually inspected and is satisfactory ie.: <ul style="list-style-type: none"> <li>• alignment and grade;</li> <li>• free of debris and siltation;</li> <li>• no visual sign of trench subsidence; and</li> <li>• outlets are satisfactory.</li> </ul>		
5. Lots not provided with Allotment Drainage can be drained to the kerb and channel.		
<b>STORMWATER DRAINAGE SYSTEM</b>		
The works have been finally inspected and:		
1. Pipe layout is as per plan or approved amendments with respect to pipe size, levels and location.		
2. Pipework has been visually inspected and is satisfactory, ie.: <ul style="list-style-type: none"> <li>• alignment and grade;</li> <li>• free of debris and siltation;</li> <li>• pipe joints satisfactory;</li> <li>• lifting plug holes sealed;</li> <li>• no visible sign of trench subsidence; and</li> <li>• no damaged pipes.</li> </ul>		
3. Gully pits and manholes have been constructed to the correct standards, ie.: <ul style="list-style-type: none"> <li>• correct type of grate or cover;</li> <li>• lintels;</li> <li>• side entry slots;</li> <li>• benching (no water ponding);</li> <li>• grates are satisfactorily seated in frames;</li> <li>• weepholes provided to bedding material;</li> <li>• no damaged structures;</li> <li>• converter slabs/sections mortar bedded;</li> <li>• correct drops through gullies/manholes; and</li> <li>• all lids/grates finished to match surface level.</li> </ul>		
4. All density tests to backfill are available and satisfactory.		
5. Material gradings are available for bedding material and satisfactory.		
6. Outlet/Inlet structures are satisfactorily constructed and are free from scour or siltation.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

<b>ITEM</b>	<b>VERIFICATION (Yes / No / NA)</b>	<b>COMMENT</b>
7. All manhole and gully pit pipe connections are mortared flush with the walls and no pipe reinforcement is exposed.		
8. Open cut channels have been finally inspected are satisfactory, ie.: <ul style="list-style-type: none"> <li>• cut to design profiles; and</li> <li>• lining of channel is to the required thickness and reinforcement, with appropriate weepholes</li> </ul>		
9. Overland flow, the works have been finally inspected and appropriate flow paths are provided and clear of obstruction.		
10. Outlets and outfalls have been constructed to control discharge flow in accordance with the plans.		
11. Subsoil drainage discharges to gullies or other approved points of discharge.		
12. All grassing requirements to channels, swales, outlets, inlets etc have been completed.		
13. CCTV inspections of stormwater pipes		
<b>WATER QUALITY</b>		
The works have been finally inspected and:		
1. Water Quality structures have been constructed in accordance with approved engineering drawings		
2. Structures are free of debris and sediment		
<b>EROSION AND SEDIMENT CONTROL</b>		
The works have been finally inspected and:		
1. Control structures required until the site is stabilised in accordance with the Contractor's ESCP are in place		
2. Structures are free of debris and sediment		
<b>EARTHWORKS</b>		
The works have been finally inspected and:		
1. Toe of batters not on Council road reserve except as approved		
2. Retaining walls clear of road reserve except as approved		
3. Retaining walls constructed in accordance with drawings		
4. Batter slopes constructed in accordance with drawings		
5. Batter slopes stabilised against erosion		
6. Interim drainage constructed in accordance with drawings		
7. All areas disturbed by the works have been rehabilitated		
8. Allotment levels are as per the design plans		
9. Verge levels are as per the design plans		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
<b>SEWER RETICULATION</b> The works have been finally inspected and:		
1. Pipe layout is as per the plan or approved amendments with respect to pipe size, levels, and location.		
2. Pipework has been visually inspected and is satisfactory, ie.: <ul style="list-style-type: none"> <li>• pipework flush with internal walls of manhole;</li> <li>• alignment and grade;</li> <li>• flexible joints;</li> <li>• line flushed and clean;</li> <li>• no visible sign of trench subsidence;</li> <li>• A density test of backfill are available and satisfactory; and</li> <li>• CCTV survey results submitted and satisfactory.</li> </ul>		
3. Manholes and Maintenance Shafts have been constructed to the correct standards, ie.: <ul style="list-style-type: none"> <li>• cast in situ;</li> <li>• benching;</li> <li>• curvature satisfactory;</li> <li>• no ponding;</li> <li>• profile satisfactory;</li> <li>• no weeps (free of infiltration);</li> <li>• concrete work;</li> <li>• no honey combing;</li> <li>• covers;</li> <li>• covers checked to be gas tight;</li> <li>• correct type;</li> <li>• imprint in accordance with standards;</li> <li>• depth of cover surround;</li> <li>• depth of top slab;</li> <li>• location;</li> <li>• relative to lot boundaries; and</li> <li>• 50-75mm proud of finished surface level.</li> </ul>		
4. Material gradings for bedding material are available and satisfactory.		
5. Pressure test results are available and satisfactory.		
6. Manhole hydrostatic test all satisfactory.		
7. Sewerage connection Private Works fees paid.		
8. On site Sewer Report provided (if applicable).		
9. PUMP STATION – refer separate PS Checklist.		
<b>WATER RETICULATION</b> The works have been finally inspected and:		
1. Pipe layout and services fixtures (valves and hydrants) are as per the plan or approved amendments with respect to pipe size and location.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
2. Pipework has been pressure tested in accordance with Council's requirements and test results are available and satisfactory.		
3. Pipework has been chlorinated in accordance with Council's requirements.		
4. There are no visible signs of trench subsidence or leaks.		
5. Valves and hydrants have been inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• location</li> <li>• setts and surrounds correctly installed to prevent ingress of soil, etc.;</li> <li>• mortar packing to boxes correctly completed;</li> <li>• depth to top of hydrant or valve stem within limits;</li> <li>• dust caps to hydrants;</li> <li>• colour of marker plate correct;</li> <li>• direction of flow indicated;</li> <li>• marking plates correctly installed; and</li> <li>• size of plate correct.</li> </ul>		
6. Material gradings for bedding material are available and satisfactory.		
7. Water supply connection Private works fees paid.		
8. PUMP STATION – refer separate checklist		
<b>ROAD PAVEMENTS</b>		
The works have been finally inspected and:		
1. Plan layout and geometry of road system is in accordance with the drawings.		
2. Finished levels at crown and channel are at design levels.		
3. Crossfalls are to the approved plan.		
4. AC is satisfactory with regard to finish and thickness.		
5. Joints in the seal (especially where various development stages apply) are flush.		
6. The sealed surface is free of blemishes.		
7. All compaction test, material quality (CBR), material grading, AC core tests are satisfactory and available.		
8. Ponding of stormwater does not occur.		
<b>SEGMENTAL PAVERS (Where constructed)</b>		
The works have been finally inspected and:		
1. All pavers have been correctly laid to pattern, within allowable tolerance, compacted, and the joints filled.		
2. Bedding sand for pavers drains to subsoil drainage.		
3. Pavers adjacent to concrete kerb and channel, edge restraints etc have been cut and laid in accordance with all relevant requirements.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
<b>CONCRETE WORKS</b>		
The works have been finally inspected and:		
1. The correct type has been used to all locations in accordance with drawings.		
2. Ponding of stormwater does not occur.		
3. Transitions and connection to existing construction are smooth and to a satisfactory standard of workmanship.		
4. Service conduit markers have been placed to kerb face.		
5. Lip and back of kerb are flush with the roadway and footpath respectively.		
6. All channelisation works and medians have been satisfactorily completed.		
7. Infill treatment of medians has been inspected and found satisfactory. Any landscaping has been completed to standard.		
8. Subsoil drains have been provided (including under medians).		
9. Appropriate expansion and contraction joints provided		
10. Subsurface finish is to approved design and within tolerances		
<b>FOOTPATHS</b>		
The works have been finally inspected and:		
1. Profiles are as per plan.		
2. Footpath has been topsoiled and satisfactory.		
3. Footpaths have been stabilized / turfed.		
4. All service fixtures (such as valves etc.) 25mm above the surrounding footpath.		
5. Concrete footpaths have been constructed to Council requirements.		
6. Pram ramps constructed as required.		
7. Footpaths to be free of rock and loose stones.		
<b>BIKEWAYS</b>		
The works have been finally inspected and:		
1. Location and width are as per the drawings.		
2. Kerb ramps and crossings are constructed.		
3. Safety rails and signs have been installed where required.		
<b>LIGHTING</b>		
The works have been finally inspected and:		
1. Lighting has been installed and is operating as per approved design.		
2. If lighting is yet to be installed, or made operational, copy of service agreement has been provided from the lighting/energy provider and all uncompleted works have been adequately guarded.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

ITEM	VERIFICATION (Yes / No /NA)	COMMENT
<b>FENCING AND FEATURES</b>		
The works have been finally inspected and:		
1. All fences including approved entrance features have been constructed within allotments. Survey pegs are visible.		
2. Specifically approved entrance features are constructed in accordance with the drawings.		
3. Entrance features and fences have satisfied Building Approvals (if required).		
4. Sound attenuation fences and/or mounds are constructed on private property and in accordance with the drawings where required.		
<b>BUILDING/STRUCTURE</b>		
The works have been finally inspected and:		
1. Council approval for building/		
2. Building/Structure		
<b>OTHER</b>		
1. Approvals for completed works received from applicable referral agencies		
2. Street name signs, traffic signs and pavement marking have been installed.		
3. Works have not resulted in problems on neighbouring properties. Clearance letters from property owners are available where applicable.		
4. All boundaries of Subdivision/Development have been inspected to ensure works as constructed will not affect adjoining properties.		
5. All necessary testing to ensure the quality of the work has been carried out and results are available.		
6. Consulting Engineer's compliance certificate is completed (refer AP1 – Appendix A)		
7. "As Constructed" submission has been provided to Council and is to Councils satisfaction		
8. All allotment boundaries, easements etc, have been pegged.		
9. All test results and records have been compiled and stored in the Record Storage facilities of the Consulting Engineer's office and a copy forwarded to Council.		
10. All operating Manuals, maintenance procedures, mechanical warranties etc have been submitted to Council.		
11. Parkland is in a mowable condition where practical and free of rock and loose stones.		
12. Irrigation systems have been provided, are operating as designed and "As Constructed" drawings provided.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**WORKS ACCEPTANCE INSPECTION CHECKLIST**

INSPECTOR'S NAME: .....	
SIGNATURE: .....	DATE: ...../...../.....
CONSULTING ENGINEER: .....	RPEQ No: .....
SIGNATURE: .....	DATE: ...../...../.....



## **APPENDIX H**

# **FINAL ACCEPTANCE INSPECTION CHECKLIST**



**WHITSUNDAY REGIONAL COUNCIL**

**DEVELOPMENT MANUAL**

**FINAL ACCEPTANCE INSPECTION CHECKLIST**

**DEVELOPMENT NAME:** ..... **File No:** .....

**DEVELOPMENT LOCATION:** .....

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
<b>STORMWATER DRAINAGE SYSTEM</b>		
a) Pipework has been visually inspected and is satisfactory, ie.: <ul style="list-style-type: none"> <li>• free of debris and siltation;</li> <li>• pipe joints satisfactory with no deflection or movement;</li> <li>• no visible sign of trench subsidence; and</li> <li>• no exposed reinforcing steel to cut pipe ends.</li> </ul>		
b) Gully pits and manholes have been visually inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• no ponding;</li> <li>• no excessive cracking or distress of reinforced concrete works;</li> <li>• clear of silt and debris;</li> <li>• all mortar is in place, no excessive spalling, flaking or cracking; and</li> <li>• no visible sign of subsidence.</li> </ul>		
c) Overland flow paths clear		
<b>WATER QUALITY</b>		
a) Water Quality Structures have been visually inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• free of debris and siltation;</li> <li>• no cracking or distress of concrete at fixing points;</li> <li>• fasteners are secure;</li> <li>• structures have not misaligned due to excessive loads; and</li> <li>• no corrosion at any location evident.</li> </ul>		
<b>ALLOTMENT DRAINAGE</b>		
a) Concrete catch drains have been visually inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• clear of silt and debris;</li> <li>• no damage or cracking; and</li> <li>• overland flow path profile maintained.</li> </ul>		
<b>EARTHWORKS/SITE WORKS</b>		
a) All batter slopes stable and no distress exhibited.		
<b>EROSION AND SEDIMENT CONTROL</b>		
a) Site has been visually inspected and has no obvious signs of erosion or sediment deposits and has achieved 80% grass cover		
b) Erosion and sediment control measures no longer required have been removed and rehabilitation works completed.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**FINAL ACCEPTANCE INSPECTION CHECKLIST**

ITEM	VERIFICATION (Yes / No / NA)	COMMENT
<b>WATER RETICULATION</b>		
a) No visible signs of trench subsidence.		
b) Valves and hydrants have been inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• no leaks;</li> <li>• valve and hydrant markings; and</li> <li>• no damage.</li> </ul>		
<b>SEWERAGE RETICULATION</b>		
a) No visible signs of trench subsidence.		
b) Pipework has been visibly inspected and is satisfactory, ie.: <ul style="list-style-type: none"> <li>• alignment satisfactory;</li> <li>• clear of silt and debris (flushed);</li> <li>• no ponding; and</li> <li>• pipework not oval or compressed.</li> </ul>		
c) Manholes/structures have been visually inspected and are satisfactory, ie.: <ul style="list-style-type: none"> <li>• benching no signs of cracking, spalling ok;</li> <li>• no weeping or infiltration; and</li> <li>• no ponding or disposition of solids.</li> </ul>		
<b>ROADWORKS</b>		
a) Road pavement has been visually inspected and satisfactory, ie.: <ul style="list-style-type: none"> <li>• no damage to Wearing Course;</li> <li>• no ponding; and</li> <li>• clear of siltation and debris.</li> </ul>		
b) Kerb and channel has been visually inspected and is satisfactory, ie.: <ul style="list-style-type: none"> <li>• no excessive cracking or distress to concrete works;</li> <li>• no ponding;</li> <li>• service conduit markers ok; and</li> <li>• no differential settlement or dislocation of pavement surface and concrete kerb and channel.</li> </ul>		
c) Linemarking and road signage satisfactory.		
<b>BUILDING/STRUCTURE</b>		
a) Building/Structure Inspected		
<b>MISCELLANEOUS</b>		
a) Footpaths and concrete works satisfactory.		
b) Bikeways and associated works satisfactory.		
c) Street name signage satisfactory.		
d) Alternative pavement surfacing (eg. pavers, stamped concrete) is satisfactory.		
e) Street lighting has been installed and is operating as per the approved design.		
f) Landscaping has been provided for a minimum 13 week period and is in an acceptable condition for handover to Council.		
<b>OTHER MATTERS</b>		
a) Specific matters in relation to the site.		

**WHITSUNDAY REGIONAL COUNCIL  
DEVELOPMENT MANUAL**

**FINAL ACCEPTANCE INSPECTION CHECKLIST**

INSPECTOR'S NAME: .....	
SIGNATURE: .....	DATE: ...../...../.....
CONSULTING ENGINEER: .....	RPEQ No: .....
SIGNATURE: .....	DATE: ...../...../.....



# **APPENDIX I**

# **SEWERAGE AND WATER PUMP STATION COMMISSIONING CHECKLISTS**

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

**REQUIREMENTS BY CONTRACTORS**

The following checklist is required to be fully completed, signed and returned to Council before a joint commissioning is considered. Please note, in the event of a commissioning being abandoned due to works not completed or operational, Council will recover costs incurred.

**STATION NAME:** \_\_\_\_\_ **STATION NO:** \_\_\_\_\_

Ergon Power available	Yes	No
Provision of sufficient water for all testing purposes	Yes	No
Fresh water discharge flushing system operating as per design	Yes	No
Ancillaries (GPO's, lighting, etc) tested and working correctly	Yes	No
Pre- Commission switchboard test completed	Yes	No
Station telemetry points list supplied	Yes	No
Established telemetry communications and verified inputs locally	Yes	No

**VERIFICATION OF AS CONSTRUCTED LEVELS AND OPERATION**

Note: Levels taken from top of well cover down

Setting / Alarm	Measurement	Operational function (Contractor to verify correct operation)	
		Yes	No
Spill Alarm	m	Yes	No
H/L back up pump 2 start	m	Yes	No
H/L back up pump 1 start	m	Yes	No
Probe high level alarm	m	Yes	No
H/L pump cut out / Transfer	m	Yes	No
Duty pump cut-in	m	Yes	No
Duty pump cut-out	m	Yes	No
Probe low level alarm (indication only)	m	Yes	No
Level settings according to design	m	Yes	No



**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

1. QUICK CHECK OF PUMP GENERAL CONDITION – HEAD TH1 (AT VALVE CLOSED)

- L1 and L2 – operating levels;
- Run pump for one (1) minute with the delivery valve open;
- Close the valve;
- Read L1 in meters at the beginning of one (1) minute;
- Read L2 in meters at the end of this minute;
- Read AMP meter;
- Read pressure gauge (HD) in meters at the end of one (1) minute;
- Record:
  - L1 L1 = \_\_\_\_\_m
  - L2 L2 = \_\_\_\_\_m
  - Delivery gauge reading HD height HD = \_\_\_\_\_m
  - Correction HC = L2 – L3 Total HC = \_\_\_\_\_m
  - Head TH1 = HD + HC TH1= \_\_\_\_\_m
- Check TH1 against the pump curve at no flow condition; and
- Check AMPs on pump curve.

2. QUICK CHECK OF INFLOW Q1 (IF INFLOW BLOCKED OFF – GO TO (C))

- L1 and L2 – operating levels;
- Switch off the pump and keep the delivery valve closed;
- Read L1 in meters at the beginning of one (1) minute;
- Read L2 in meters at the end of this minute; and
- Record:
  - L1 L1 = \_\_\_\_\_m
  - L2 L2 = \_\_\_\_\_m
- Calculate flowrate Q1 during this minute.
  - Q1 Q1 = \_\_\_\_\_l/s

3. NORMAL FLOWRATE Q2 TEST (VALVE OPEN)

- L1 and L2 – operating levels;
- Run pump for one (1) minute with the delivery valve open;
- Read L1 in meters at the beginning of one minute;
- Read L2 in meters at the end of this minute;
- Read AMP meter;
- Read HD in meters at the end of this minute;
- Record:
  - L1 L1 = \_\_\_\_\_m
  - L2 L2 = \_\_\_\_\_m
  - Delivery gauge reading HD HD = \_\_\_\_\_m
  - Height correction HC = L2 – L3HC = \_\_\_\_\_m
  - Total head TH2 = HD + HC TH2 = \_\_\_\_\_m
- Calculate flowrate Q2 during this minute; and
  - Q2 Q2 = \_\_\_\_\_l/s
- Check AMPs on pump curve.

4. QUICK CHECK OF INFLOW AGAIN Q2 (IF INFLOW BLOCKED OFF GO TO (E))

- L1 and L2 – operating levels;
- Switch off the pump and keep the delivery valve closed;
- Read L1 in meters at the beginning of one (1) minute;
- Read L2 in meters at the end of this minute; and
  - L1 L1 = \_\_\_\_\_m
  - L2 L2 = \_\_\_\_\_m
- Calculate flowrate Q3 during this minute.
  - Q3 Q3 = \_\_\_\_\_m

5. SUMMARY

- If inlet is blocked off for the time of test the duty head H and duty flowrate Q should be similar to TH2 and Q2; and
- If inlet is not blocked off for the time of the test the duty head should be similar to TH2 and duty flowrate should be similar to:
  - $QD = Q2 = (Q1 + Q3) / 2$

**End of testing of pumps.**

Pressure gauges calibrated according to QA requirements:	Yes	No
Pump performance satisfactory:	Yes	No
Test performed by: _____		
Pump performance results as compared to tender offer satisfactory	Yes	No





**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

All information has been supplied and verified at Contractor Pre-commissioning

\_\_\_\_\_  
Signed (Council )                        /  /    
Date

\_\_\_\_\_  
Print name

## Commissioning of Civil Works

Item	Complete	Date / Initials	Council Audit
<b>Management</b>			
1. Verify that consultant has provided all documentation (as constructed details, operating manuals, test results etc).			
<b>If NO then close audit.</b>			
<b>Concrete</b>			
1. Verify that the concrete slab is 150mm above the finished surface level.			
2. Verify that the pump station concrete works is as designed e.g. Cast in-situ.			
3. Verify that there is no damage to any exposed concrete surface.			
4. Verify that drainage of the site is away from the Pump Station.			
5. Verify that the surface dimensions of the top slab are in accordance with the design drawings.			
6. Verify that the below ground concrete structures are dimensionally correct and in accordance with the design drawings.			
7. Verify no seepage through the concrete structure.			
8. Verify the verticality of the structure is within tolerance in accordance with SEWL specifications.			
9. Verify that all chamfers are provided in accordance with the design drawings.			
10. Verify that the pump well benching has been provided in accordance with design drawings.			
11. Verify that the specified coating to the internal walls has been applied in accordance with the WRC Development Manual.			
12. Thickness of internal coating tested ( $\mu\text{m}$ )			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

<b>Item</b>	<b>Complete</b>	<b>Date / Initials</b>	<b>Council Audit</b>
<b>OH&amp;S</b>			
1. Verify that ladder access to dry wells only, meets OH&S requirements.			
2. Verify that ladder access to valve chamber meets OH&S requirements.			
3. Verify that all ladders are provided with the extension above the FSL.			
4. Verify that the ladders have non-slip treads.			
5. Have safety cages been specified in accordance with Australian Standards.			
6. Verify that safety cages have been installed in accordance with the design drawings.			
7. Verify that adequate distance between wet well opening and switchboard is in accordance with OH&S requirements and the WRC Development Manual.			
8. Verify that adequate set down areas for the covers has been provided in accordance with OH&S requirements.			
9. Verify that no overhead cables restrict access via crane trucks.			
10. Verify Full Risk Assessment has been performed and permanent operational/ maintenance risks identified.			
11. Verify that all signage pertaining to those risks is in place.			
12. Facility Name and contacts signage.			
13. Standby Emergency Generator – cover, refueling, manuals.			
14. Adequate access, maneuver and parking for maintenance vehicles.			
<b>Products &amp; Materials</b>			
1. Verify that all products incorporated on the project are included on the list of approved products for Council.			
2. Verify that all markings as required by Council specification are visible on the covers.			
3. Verify that the covers and frames are greased in accordance with the manufacturer's requirements.			
4. Verify that the covers are gas tight.			
5. Verify that the interchangeable multi part covers have lifting lugs on the beams for removal and covers have clockwise lifting key holes.			
6. Verify that council approved penstock stuffing box is installed.			
7. Wet well covers are to be in accordance with the WRC Development Manual.			
8. Wet well covers are to be lockable.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

Item	Complete	Date / Initials	Council Audit
<b>Pipes and Fittings</b>			
1. Verify that the valves are anticlockwise closing.			
2. Verify that there is only one inlet pipe to the pump station.			
3. Verify that pumps are clear of all inlet pipework.			
4. Verify that adequate supports have been provided for the valves.			
5. Are valve extension spindles required.(includes penstock).	N/A		
6. Verify that there is sufficient clearance for maintenance.			
7. Are adequate supports provided in accordance with Council standard drawings.	N/A		
8. Verify that DICL pipe work has been provided to correct nominal diameter DN.			
9. Verify that adequate supports for vertical pipe work has been provided in accordance with WRC Development Manual (i.e. vibration not noticeable when pumps operating).			
10. Verify that all gate valves operate through the full range and are left in the open position.			
11. Verify that a flap valve has been installed on the valve chamber drain if required by the design e.g. when overflow levels higher than valve pit base.			
12. Verify that bleeders have been installed on the NRV's and NRV's have counterweights.			
13. Verify that probe stilling tube has been installed as per Council standard			
14. Verify that the Council specified coating for all valves has been applied.			
15. Verify that the Council specified coating for the pipe work has been applied.			
16. Verify that the pipe work for the incoming sewer is in accordance with the design drawings including dropper pipe.			
17. Verify that the specified bolting system on the flanges has been used			
18. Verify that all valves can be removed through the available cover opening			
19. Verify that a flanged dismantling joint has been provided to allow ease of removal of valves in accordance with standard drawings.			
20. Has the consultant submitted completed project ITP containing all signatures.			
21. Verify all steel metalwork has been Hot Dipped Galvanized.			
22. Verify all bolts are 316 stainless steel with 308 nuts.			
23. Verify that the emergency pump out pipework has been installed.			
24. Verify that either rising main air releases or scours are provided at the pump station.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

<b>Item</b>	<b>Complete</b>	<b>Date / Initials</b>	<b>Council Audit</b>
<b>Other Services</b>			
1. Verify that the water service has been fitted with an approved back flow prevention device.			
2. Verify that a 25mm water service has been provided.			
3. Verify that all conduits through the walls have been sealed to prevent odour escaping.			
4. Verify that electricity is below ground, not above.			
5. Verify that the sealed access track is in accordance with the design drawings and the WRC Development Manual.			
6. Verify that adequate site drainage has been provided.			
7. Verify that wet well washers have gate valves and regulators fitted if fitted.			
<b>Restoration</b>			
1. Verify that the site restoration has been completed.			
<b>Testing</b>			
1. Verify that pump well infiltration test passed.			
2. Verify that pump draw down tests passed.			
3. Verify rising main has been tested.			
4. If pump station has been constructed as open cut, verify compaction standard under pipes.			
<b>Mechanical Equipment</b>			
1. Verify that the guide rails comply with the standard drawings.			
2. Verify that the lifting chain complies with Council specification.			
3. Verify that the Pump footstool has been secured to wet well floor with appropriate chemical anchors & have 316 S/S bolts.			
4. Are wet well washers specified on design drawings?			
5. Verify wet well washers meet the Council specified requirement.			
6. Verify that pumps can be fully removed from pump station without disconnecting the guide rails.			
<b>Electrical Equipment</b>			
1. Verify that the Station Identification plate has been fitted to the electrical cabinet.			
2. Verify that the telemetry antenna has adequate protection in accordance with Council specification.			
3. Verify that lighting within the switchboard has been provided.			
4. Verify that the Council locks fitted to switchboard and operational.			
5. Verify that quick link generator connectors provided.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**SEWERAGE PUMP STATIONS**

Item	Complete	Date / Initials	Council Audit
<b>Security</b>			
1. Verify that the security fencing has been installed in accordance with the design drawings.			
2. Verify that Council keyed locks installed.			
3. Verify that the switchboard meter cabinet has been fitted with Ergon Locks.			
Have all NCR items been resolved (including any raised as a result of <i>this</i> audit)?			
<b>If YES Issue Acceptance of Works., and close audit.</b>			
Would outstanding NCR items impact on the ability to operate the pump?			
<b>If YES then close audit (wait for NCRs to be resolved).</b>			
Has Operations authorized the pumps to remain on?			
<b>If YES record the name of the person who authorized this. NAME.....</b>			
<b>Lift Station</b>			
1. Has discharge pit been lined in accordance with the WRC Development Manual?			
2. Has benching been completed?			
<b>Overflow</b>			
1. Verify overflow has been constructed to design drawings and WRC Development Manuals including levels.			
2. Verify flap valves are in place and operational.			
3. Verify covers are in place and are to class specified.			
4. Verify Overflow can be accessed for maintenance.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**WATER SITES**

**REQUIREMENTS BY CONTRACTOR**

The following checklist is required to be fully completed, signed and returned to Council before a joint commissioning is considered. Please note: in the event of a commissioning being abandoned due to works not completed or operational, Council will recover costs incurred.

**SITE NAME RESERVOIR:** \_\_\_\_\_ **SITE NAME P/S:** \_\_\_\_\_

Ergon Power available	Yes	No
Provision of sufficient water for all testing purposes	Yes	No
Fresh water discharge flushing system operating as per design	Yes	No
Ancillaries (GPO's, lighting etc) tested and working correctly	Yes	No
Pre commission switchboard test completed	Yes	No
Station telemetry points list supplied	Yes	No
Established telemetry communications and verified inputs locally	Yes	No

**VERIFICATION OF AS CONSTRUCTED LEVELS AND OPERATION.**

Note: Levels taken from floor level

<b>Setting/Alarm</b>	<b>Measurement</b>	<b>Operational function (contractor to verify correct operation)</b>	
Overflow level	m		
High Level alarm	m	Yes	No
Fill stop level	m	Yes	No
Fill request level	m	Yes	No
Low level alarm	m	Yes	No
Very Low Level Alarm	m	Yes	No
Level settings according to design	Yes	No	N/A



**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**WATER SITES**

**Commissioning of Civil Works**

<b>Item</b>	<b>Complete</b>	<b>Date / Initials</b>	<b>Council Audit</b>
<b>Management</b>			
1. Verify that consultant has provided all documentation. (as constructed details, operating manuals, test results etc).			
2. Consultants have supplied O&M manuals incorporating all drawing both electrical & mechanical.			
3. Consultants have supplied test results including performance pump curves.			
<b>If NO then close audit.</b>			
<b>Concrete</b>			
1. Verify that there is no damage to any exposed concrete surface.			
2. Verify that drainage of the site is away from the structures.			
3. Verify that the below ground concrete structures are dimensionally correct and in accordance with the design drawings.			
4. Verify no seepage through the concrete structure.			
5. Verify the verticality of the structure is within tolerance in accordance with SEWL specifications.			
6. Verify that all chamfers are provided in accordance with the design drawings.			
7. Verify that the specified coating to the internal walls has been applied in accordance with the WRC Development Manual.			
8. Thickness of internal coating tested (µm)			
<b>OH&amp;S</b>			
1. Verify that ladder access meets OH&S requirements.			
2. Verify that access to valve chamber meets OH&S requirements.			
3. Verify that all ladders are provided with the extension above the FSL.			
4. Verify that the ladders have non-slip treads.			
5. Have safety cages been specified in accordance with Australian Standards?			
6. Verify that safety cages have been installed in accordance with the design drawings.			
7. Verify that adequate set down areas for the covers has been provided in accordance with OH&S requirements.			
8. Verify that no overhead cables restrict access via crane trucks.			
9. Verify Full Risk Assessment has been performed and permanent operational/maintenance risks identified,			
10. Verify that all signage pertaining to those risks is in place.			
11. Facility Name and contacts signage.			
12. Standby Emergency Generator – cover, refueling, manuals.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**WATER SITES**

<b>Item</b>	<b>Complete</b>	<b>Date / Initials</b>	<b>Council Audit</b>
13. Adequate access, maneuver and parking for maintenance vehicles.			
14. Switchboard access and clearance meets requirements under Electrical Safety Act.			
15. Personnel/maintenance access ring install in side wall of reservoir.			
<b>Products &amp; Materials</b>			
1. Verify that all products incorporated on the project are included on the list of approved products for council.			
2. Verify that all markings as required by Council specification are visible on the covers.			
3. Verify that the covers and frames are greased in accordance with the manufacturer's requirements.			
4. Verify that the interchangeable multi part covers have lifting lugs on the beams for removal and covers have clockwise lifting key holes.			
5. Verify that internal ladders are stainless steel.			
<b>Pipes &amp; Fittings</b>			
1. Verify that the valves are anticlockwise closing.			
2. Verify that adequate supports have been provided for the valves.			
3. Are valve extension spindles required?			
4. Verify that there is sufficient clearance for maintenance.			
5. Are adequate supports provided in accordance with standard drawings?			
6. Verify that DICL pipe work has been provided to correct nominal diameter DN.			
7. Verify that adequate supports for vertical pipe work has been provided in accordance with WRC Development Manual.			
8. Verify that all gate valves operate through the full range and are left in the open position.			
9. Verify that a flap valve has been installed on the valve chamber drain if required by the design.			
10. Verify that the specified coating for all valves has been applied.			
11. Verify that the specified coating for the pipe work has been applied.			
12. Verify that the specified bolting system on the flanges has been used.			
13. Verify that all valves can be removed through the available cover opening.			
14. Verify that a flanged dismantling joint has been provided to allow ease of removal of valves in accordance with standard drawings.			
15. Has the consultant submitted completed project ITP containing all signatures.			
16. Verify all steel metalwork has been Hot Dipped Galvanized.			
17. Verify all bolts are 316 stainless steel with 308 nuts.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**WATER SITES**

<b>Item</b>	<b>Complete</b>	<b>Date / Initials</b>	<b>Council Audit</b>
<b>Other Services</b>			
1. Verify that the water service has been fitted with an approved back flow prevention device.			
2. Verify that all conduits through the walls have been sealed.			
3. Verify that electricity is below ground, not above.			
4. Verify that the sealed access track is in accordance with the design drawings and the WRC Development Manual.			
5. Verify that adequate site drainage has been provided.			
<b>Restoration</b>			
1. Verify that the site restoration has been completed.			
<b>Electrical Equipment</b>			
1. Verify identification plates have been fitted to the electrical cabinet.			
2. Verify that the telemetry antenna has adequate protection in accordance with specification.			
3. All wiring is installed, terminated and tagged as per drawings.			
4. All Earthing systems are installed & tested to Australian standards.			
5. Switchboard testing - Fault protection, Breakers & cable insulation tests have been carried out. <b>Results Attached.</b>			
6. Verify that lighting within the switchboard has been provided.			
7. Verify that the Council locks fitted to switchboard and operational.			
8. Verify that quick link generator connectors provided if applicable.			
<b>Security</b>			
1. Verify that the security fencing has been installed in accordance with the design drawings.			
2. Verify that council keyed locks installed.			
3. Verify that the switchboard meter cabinet has been fitted with Ergon Locks.			

**PRE-COMMISSIONING CHECKLIST FOR NEW ASSETS**  
**WATER SITES**

Item	Complete	Date / Initials	Council Audit
Have all NCR items been resolved (including any raised as a result of <i>this</i> audit)?			
<b>If YES Issue Acceptance of Works, and close audit.</b>			
Would outstanding NCR items impact on the ability to operate the pump?			
<b>If YES then close audit (wait for NCRs to be resolved).</b>			
Has Council authorised the pumps to remain on?			
<b>If YES, details of the person who authorised this.</b>			
NAME..... SIGNATURE:..... POSITION:..... DATE:.....			



## **APPENDIX J**

# **STATEMENT OF COMPLIANCE “AS CONSTRUCTED”**

**STATEMENT OF COMPLIANCE  
“AS CONSTRUCTED” DOCUMENTATION**

**Name of Development:** .....

**Location of Development:** .....

**Applicant:** .....

**Consulting Engineer:** .....

**Registered Surveyor:** .....

It is hereby certified that the “As Constructed” drawings submitted herewith have been prepared, checked and amended in accordance with the requirements of the WRC Development Manual and that the completed works comply with the requirements therein.

Certification by Registered Surveyor (Consulting) attached Yes / No

**(Note: Certification is to be in accordance with the Development Manual).**

<b>Compliance with the manual Design Intent and Function not compromised by the “As Constructed” Works.</b>	<b>Compliance Yes / No</b>	<b>Non-Compliance refer to attached redesign of works to ensure satisfactory performance</b>
Earthworks		
Roadworks		
Stormwater Drainage		
Flow System and Structures		
Major Flow System and Structures		
Water Reticulation		
Sewerage Reticulation		
“As Constructed” Documentation		

Conscientiously believing the above statements to be true and correct:

**Consulting Engineer:** .....

**Name in Full:** ..... **RPEQ No:** .....

**Signature:** .....

**Date:** .....



## **APPENDIX K**

# **EXAMPLE OF SURVEYOR'S CERTIFICATION OF “AS CONSTRUCTED” WORKS**







# **APPENDIX L**

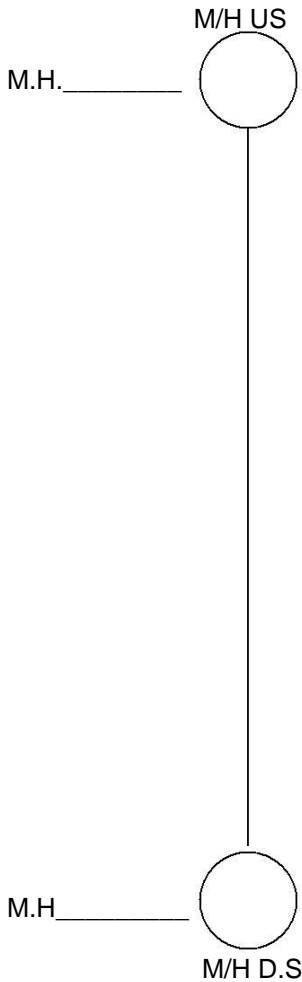
## **AS CONSTRUCTED DATA SEWER PROPERTY CONNECTION BRANCHES**

**AS CONSTRUCTED DATA  
SEWER HOUSE CONNECTION BRANCHES**

Development Name: ..... Date: .....

Contractor: ..... By: .....

Stage: .....



Φ	D/S IL	U/S IL	Grade	Length

**PROPERTY CONNECTIONS**

	D/S Mh No.	U/S Mh No.	Total	Lot. No.
Ch				
IL				
SL				
Ch				
IL				
SL				
Ch				
IL				
SL				
Ch				
IL				
SL				
Ch				
IL				
SL				

U/S	M/H
TOP RL _____	

NOTES:  
.....  
.....

Certified as True and Correct location:

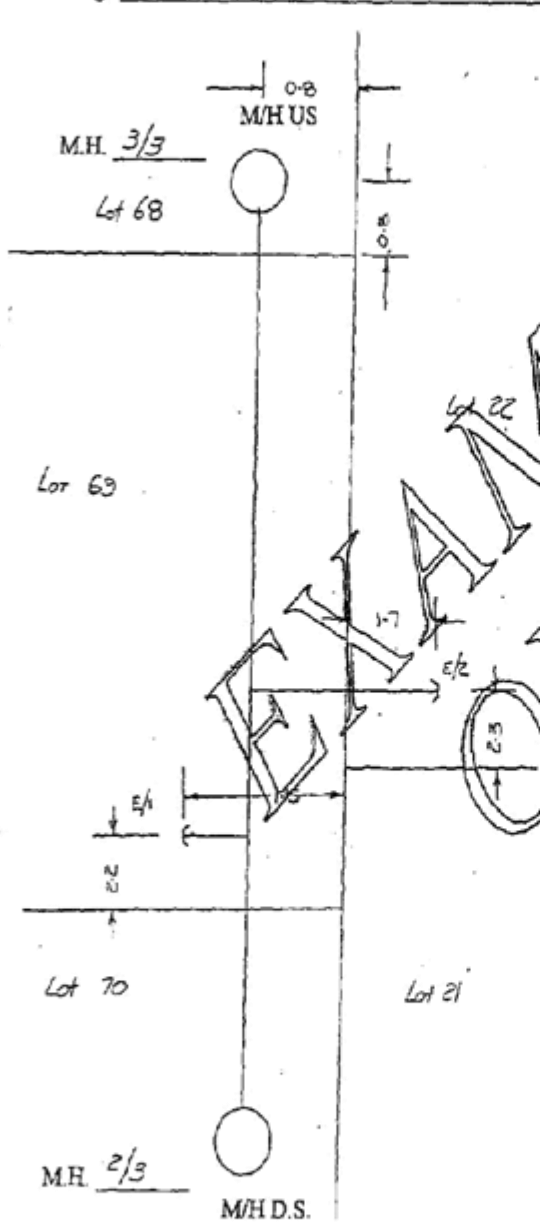
Registered Surveyor: .....  
Signature: .....  
Date: .....

**AS-CONSTRUCTED DATA**  
SEWER HOUSE CONNECTION BRANCHES

Development Name Stillson Estate Date 16-5-96

Contractor Digwell Constructions By KLM

Stage 2



Ø	D/S IL	U/S IL	Grade	Length
0.150	8.190	8.601	1:150	61.45

HOUSE CONNECTIONS				
	D/S Mh No.	U/S Mh No.	Total	Lot No.
Ch	12.2	14.26	61.45	69
IL	9.539	9.542		
SL	10.852	10.863		
Ch	15.32	16.12	61.44	22
IL	9.335	9.336		
SL	10.378	10.384		
Ch				
IL				
SL				
Ch				
IL				
SL				
Ch				
IL				
SL				

U/S M/H  
TOP RL 11.23

NOTES:

Certified as True and Correct on Behalf of the Contractor: Name: John Treadwell

Signature: J Treadwell

Date: 18/5/96



# **APPENDIX M**

## **AS CONSTRUCTED DATA SUBMISSION FORM**

**AS CONSTRUCTED DATA SUBMISSION FORM**  
**For Consulting Engineers' or Registered Surveyors' Submission**  
**Of "As Constructed" Data**

Applicant Details	Development Name (Title on approved Engineering Drawing)					
	File Number		Stage Number			
Property Address	Real Property Description					
	Address					
	Company Name					
	Address					
Phone Number		email				
As Constructed Documentation Submitted			Hardcopy	Electronic Copy	Amendment #(A,B,C....)	
	Survey Datum		<input type="checkbox"/>	<input type="checkbox"/>		
	Water		<input type="checkbox"/>	<input type="checkbox"/>		
	Sewer		<input type="checkbox"/>	<input type="checkbox"/>		
	Drainage		<input type="checkbox"/>	<input type="checkbox"/>		
	Road		<input type="checkbox"/>	<input type="checkbox"/>		
	Parks / Landscape / Structures		<input type="checkbox"/>	<input type="checkbox"/>		
	Utilities		<input type="checkbox"/>	<input type="checkbox"/>		
	Contours		<input type="checkbox"/>	<input type="checkbox"/>		
Digital field survey data, ASCII		<input type="checkbox"/>	<input type="checkbox"/>			
Other Documentation Submitted			Previously Submitted	Attached	N/A	Amendment #
	Engineering drawings in electronic format (AUTOCAD)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Landscaping and park embellishments in electronic format (AUTOCAD)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Building / Structural Certification		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Subgrade CBR results		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Maintenance Manuals		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Office Use Only	Date Received		DISK Number			
	Officer Checked		Document Number			



## **APPENDIX N**

# **“AS CONSTRUCTED” DIGITAL DATA AND DRAWING STANDARDS**

## **1. SURVEY DATUM**

Survey Datum is the framework of all geospatial information and provides the starting reference that not only supports the accuracy and integrity of survey data, but also provides the geospatial correlation of assets with other data sets. The following publications, or their successors, are to be used in conjunction with this section:

*Standards and Practices for Control Surveys (SP1)* - Inter-governmental advisory Committee on Surveying and Mapping (ICSM) publication. Available in .PDF format from the ICSM website. <http://www.icsm.gov.au/icsm/publications/sp1/sp1v1-6.pdf>

GDA Technical Manual - Inter-governmental advisory Committee on Surveying and Mapping (ICSM) publication. Available in .PDF format from the ICSM website. <http://www.icsm.gov.au/icsm/gda/gdatm/index.html>

*Cadastral Survey Requirements* – Refer to the relevant State Government website e.g. in 2012 this is [www.derm.qld.gov.au/services\\_resources/item\\_details.php?item\\_id=32574](http://www.derm.qld.gov.au/services_resources/item_details.php?item_id=32574) publication available in PDF format.

### **1.1 Datum Recorded**

The datum adopted must be recorded, allowing full traceability back to the origin. As the Department of Natural Resource and Water carry out periodic adjustments on both the coordinate and level networks, information to be included as part of the “As Constructed” submission must include a copy of the basic elements of traceability that include but not restricted to:

- Starting point of Datum;
- State the type, material and condition of marks used;
- Show all calculations relating to datum establishment i.e. copy of traverse and levelling details;
- Table of adjusted coordinates, coordinate system, datum and zone;
- Baseline closure details from processing software;
- Report on adjustment (generated from software);
- Network map (A3 .pdf); and
- Permanent Survey Mark Reports (pdf).

This information is necessary to allow subsequent re-computation of the datum’s for any future corrections made to the network.

### **1.2 Co-ordinate Datum**

Co-ordinate Datum may be:

- Assumed (arbitrary) plane co-ordinates – No previous co-ordinates and no correlation required. Used only for where work is undertaken in an already proclaimed survey area or for subdivisions of five (5) lots or less;
- MGA co-ordinates – grid co-ordinates from the adjustment of a survey traverse to a minimum of two (2) but preferably three (3) or more appropriate survey marks with MGA coordinates. Appropriate survey marks will meet or exceed Class B Order 2 specifications as set out in the ICSM Standards and Practices for Control Surveys (SP1). Used for new survey areas to be proclaimed or for subdivision development of greater than five (5) lots (subject to negotiation where MGA is not practical); and

- Where no suitable control exists in the form of co-ordinated permanent survey marks, Council will provide coordinates of Class B Order 2 within two (2) weeks of receiving a formal request, at a set fee. Refer Appendix N for Request Form.

### 1.3 Height Datum

All height information will be on either Australian Height Datum or Australian Height Datum (Derived) and to a minimum standard of Third Order Levelling. Third order levelling is retained because of traditional acceptance. (Refer to Class C Differential Levelling (LC) as defined in the ICSM Standards and Practices for Control Surveys (SP1))

### 1.4 Meridian Datum

The meridian datum may be one of the following:

- For MGA co-ordinates:
  - The meridian is derived from the adjusted survey traverse between the coordinated survey marks.
- For Assumed co-ordinates;
  - Azimuth of the current Australian Mapping Grid;
  - County Arbitrary Meridian; and
  - Meridian from an original survey or adjoining survey.

## 2. “AS CONSTRUCTED” DIGITAL GROUND SURVEY

A digital ground survey is required to produce the three-dimensional model of the changes to the natural surface and the location of all artificial features, pursuant to an approved operational works development permit. The Digital Ground Survey will comprise of:

- Sufficient measurements to both topographical features and constructed assets, to ensure that all points and strings in the digital model accurately reflect their true geometric shape and location on the earth’s surface; and
- Spacing between points will ensure that a tolerance for the length of triangle sides in the triangulation model do not exceed 25m on pavement and 50m outside of pavement.

Data provided to Council as part of the “As Constructed” submission shall include the export of the processed survey data in either an ASCII format or in an appropriate format that is requested by Council.

## 3. “AS CONSTRUCTED” DRAWINGS

Council requires "As Constructed" Drawings to be produced using "AutoCAD" Software and submitted in DWG format only. Consultants shall ensure that when lodging AutoCAD drawing files that they are compatible with the current version of AutoCAD being used by the relevant member Council. No drawing sheets or title blocks shall be used on the file:

- Specific features are represented by blocks and certain line styles and such require specific definition and attribute details recorded. These features, their definitions and attribute data requirements are covered in the following sections of this document;
- Service plans shall be submitted in Gray scale “PDF” format, digitally certified or with the certification (**Appendix K**) as per Section CP1.22 sub-section 2 and with two (2) additional B & W hard copy paper prints,



produced for each service on the consultants drawing sheets. Both PDF and hardcopy plans must be legible. The plans shall be prepared according to the following scales and sheet sizes:

- Stormwater Drainage 1:500 (A1 sheets)
  - Sewerage 1:500 (A1 sheets)
  - Water 1:500 (A1 sheets)
  - Reservoir Sites 1:200 (A1 sheets)
  - Pump Stations 1:200 (A1 sheets)
  - Treatment Plants 1:200 (A1 sheets)
- 
- Electronic Data shall be supplied on CD's or DVD;
  - The "As Constructed" drawing may be prepared by either the Consulting Engineer or the Registered Surveyor but must comply with the requirements presented herein;
  - Survey accuracy to be meters to three decimal points; and
  - The AutoCAD drawing shall be a single drawing containing seven (7) main elements:
    - Cadastral Base – showing property boundaries, easements and Permanent Survey Marks and Survey Control;
    - Topographical Features – including kerbing / edge of seal, top and toe of batters, change of grades, retaining wall, watercourses, structures, landscaping and park embellishments, contours at 0.5m intervals, etc.;
    - Water – showing existing infrastructure and the connection details for new infrastructure, offsets from boundary, connection points, main size, valves, hydrant locations to property boundaries, etc. together with the location of any irrigation pipes and associated fittings, and details of any water infrastructure abandoned or removed as a result of the new works;
    - Sewerage – showing existing infrastructure and the connection details for new infrastructure, pipe invert levels, pipe diameter and grades, cover levels, location to property boundary, distance from downstream manhole to PCB's, PCB's levels and type, and details of any sewerage infrastructure abandoned or removed as a result of the new works;
    - Stormwater Drainage – showing pipe invert levels, pipe diameter and grades, pipe material, finished surface levels, drainage structure description, catch drains, open drains / swales, etc.;
    - Roads – showing centre of road carriageway, kerbing / edge of seal; and
    - Pump and lift stations Specifications as listed in "Drafting Requirements" – Sewerage Pump Stations.

#### **4. DRAFTING REQUIREMENTS ("AS CONSTRUCTED")**

The general drafting requirements for the preparation of "AutoCAD" drawings shall be as detailed in this section. Any elements encountered in the preparation of these drawings not specifically covered by this manual shall be confirmed with Council's Asset Management Section prior to submission of drawing file.

- The orientation of the drawing must be set to AutoCAD's default (ie 90 at 12 o'clock, and anticlockwise measured angles);
- 1 Drawing unit = 1 metre;
- All symbols and line types to be as specified within this section. A digital file of Councils linestyles, layers and blocks will be made available;
  - All colours are to be by layer (except internal block linework);
  - All line types are to be by layer;
  - AutoCAD layer names shall be in accordance with Table CP1.2 or as specified within this section; and
  - All lines are to be 2D poly lines and all blocks are to have a z value (level value).

**Table CP1.2 Layering Standards**

Description of Layer	Annotation	AutoCAD Layer	AutoCAD Linetype	AutoCAD Colour Index
2.0 mm high text	2.0 mm	020_TXT	Continuous	254 (light grey)
2.5 mm high text	2.5 mm	025_TXT	Continuous	7 (white)
3.5 mm high text	3.5 mm	035_TXT	Continuous	2 (yellow)
5.0 mm high text	5.0 mm	050_TXT	Continuous	1 (red)
7.0 mm high text	7.0 mm	070_TXT	Continuous	5 (blue)
10.0 mm high text	10.0 mm	100_TXT	Continuous	30 (Orange)
Contours	N/A	CONTOUR	Continuous	252 (dark grey)
Contour heights	2.0 mm	CONTOUR_HEIGHT	Continuous	254 (light grey)
As Constructed Above Ground Electricity	N/A	ELECTRIC_ABOVE	- E - E -	220
As Constructed Underground Electricity	N/A	ELECTRIC_UNDER	- E - - - E -	220
As Constructed Aboveground Telecommunication	N/A	TELECOM_ABOVE	- T - T -	133
As Constructed Underground Telecommunications	N/A	TELECOM_UNDER	- T - - - T -	133
As Constructed Above ground Optical Fibre	N/A	OPTIC_ABOVE	- OF - OF -	133
As Constructed Underground Optical Fibre	N/A	OPTIC_UNDER	- OF - - - OF -	133
As Constructed Fuel Line	N/A	FUEL_LINE	- F - - - F -	44
As Constructed Gas Line	N/A	GAS_LINE	- G - - - G -	23
Electricity text	2.5 mm	ELECTRIC_TXT	Continuous	7 (white)
Telecom Text	2.5 mm	TELECOM_TXT	Continuous	7 (white)
Optical Fibre Text	2.5 mm	OPTIC_TXT	Continuous	7 (white)
Fuel Line Text	2.5 mm	FUEL_LINE_TXT	Continuous	7 (white)
Gas Line Text	2.5 mm	GAS_LINE_TXT	Continuous	7 (white)

## 5. LINEWORK

- It should be noted that Pen Size Colours are as follows:
  - 0.15                      132
  - 0.25                      8        (Grey)
  - 0.25                      4        (Cyan)
  - 0.35                      7        (White)
  - 0.35                      200    (Purple)
  - 0.50                      2        (Yellow)
  - 0.50                      3        (Green)
  - 0.70                      5        (Blue)
  - 0.50                      6        (Magenta)
  - 1.00                      1        (Red)
  - 1.00                      30      (Orange)
- Linetype scale shall be = 10; and
- All line types shall be taken from the Department of Main Roads – ‘Drafting and Design Presentation Standards’.

## 6. TEXT STYLES

- Text styles to be used on all Drawings shall be specified as below:

Text Style Name	Font Name	Height	Width	Oblique Angle	Backwards	Upside Down	Vertical
RS	Romans	0.0	1.0	0d'0'0"	N	N	N
RSO	Romans	0.0	1.0	15d'0'0"	N	N	N

## 7. BLOCKS

- Council supplied blocks shall be used at all times and XREF blocks shall not be used. Many of these blocks will have numerous attributes (visible and hidden) attached to them. It is the responsibility of the Consultant preparing the “As Constructed” Digital Submission to complete all attributes as identified in the block attributes tables. The remaining attributes are for Council's use. Blocks must be inserted at and must remain at a scale of 1:1.

## 8. ACCURACY REQUIREMENTS

- Dimensions shall be used to accurately define the location of the service entities in the as-constructed data (the dimension requirements are described below). However, to ensure the clarity of the utility plans, Council requires that consultants separate the entities to enable them to be easily identifiable at the appropriate scale. Relativity among the entities and in relation to other features must be maintained (eg if an entity is to the east of a boundary it must be shown on the plan to be east of that boundary).

Location:

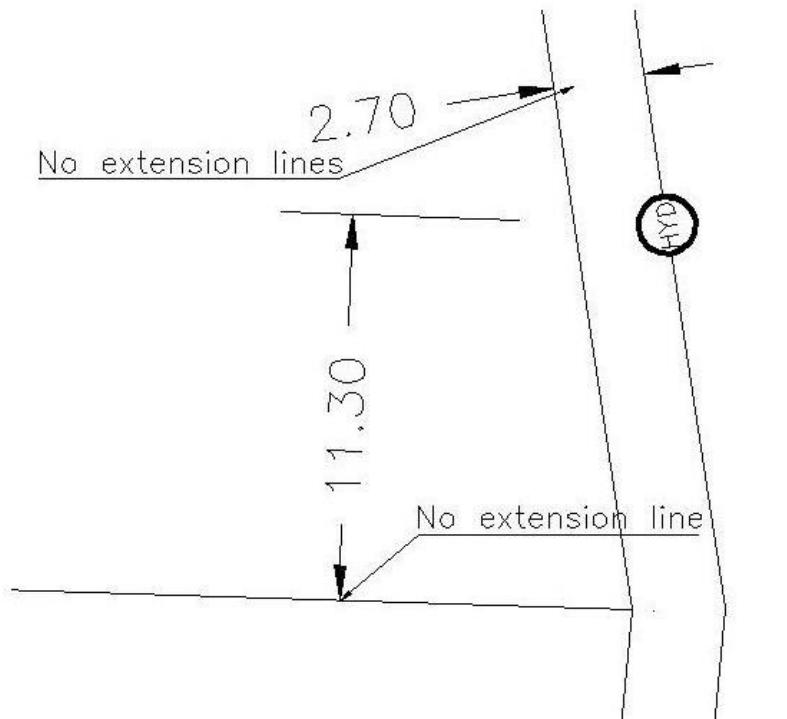
- Dimensions shall be shown to two decimal place; and
- Pipe lengths shall be shown to two decimal place.

Level:

- PCB Invert Levels shall be shown to two decimal places;
- Pipeline Invert Levels shall be shown to two decimal places;
- RL Manhole Lid levels shall be shown to two decimal places;
- All depths shall be shown to two decimal places;
- Finished Surface Levels shall be shown to two decimal places; and
- Pipe Grades shall be expressed as a ratio (eg 1:150) determined from full survey accuracy.

## 9. DIMENSIONING

- Council requires the Dimensioning of “As-Constructed” services to conform to the following criteria:
  - There must be sufficient dimensions to define the location of the service without ambiguity. Pipelines must be dimensioned sufficiently to show their alignment in relation to the cadastre. Service entities (valves, hydrants, manholes, PCB's, etc) must be located in relation to the nearest cadastral corner. PCB's must be located in relation to the nearest cadastral corner of the lot it services. If PCB's have been installed to service a future stage of development, then PCB details relevant to the future stage lots are to be presented on the as-constructed drawing for that stage. Note: in areas containing a number of service entities clustered together, dimensioning is to be sufficient to locate the main elements of the cluster only (eg every service entity is not required to be fully dimensioned). Service entities located opposite cadastral boundary intersections do not require dimensioning;
  - The dimensioning of the utilities is to be in accordance with the Council's dimensioning styles. These styles are set in the prototype drawing that can be obtained from Councils Asset Management Section upon request. Council has developed a style for use with each of the utilities (water, sewerage and drainage). The appropriate style to use is listed with the individual utilities' requirements;
  - Dimension extension lines must be created manually in the appropriate dimension's layer. Extension lines are not to be created that cover other linework (pipelines, property boundaries etc). See diagram below. Note: the dimension styles supplied by Council have the extension lines set to none as a default. Do not reset;
  - Dimension text is to be outside of the extension lines and clear of the roadways. See diagram below; and
  - Dimensions are to be layered separately for each utility. Please refer to the relevant utilities requirements for the appropriate layer.



## 10. SURVEY CONTROL

The Survey Control entity requirements are as follows:

- Line work

Description	Layer	Colour (by layer)	Line Type (by layer)
Survey Traverse	AC_SURVEY_TRAVERSE	Dark Green (96)	Continuous

- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Permanent Survey Mark	AC_SURVEY_PSM	Dark Red (12)	RS	1.25
Survey Instrument Station	AC_SURVEY_IS	Dark Red (12)	RS	1.25
Survey Traverse details	AC_SURVEY_TRAVERSE	Dark Green (96)	RS	1.25

- Blocks

Block	Name	Description	Layer	Colour
	SURVEY_PSM	Permanent Survey Mark	AC_SURVEY_PSM	Dark Red (12)
	SURVEY_INST	Instrument Station	AC_SURVEY_INST	Dark Red (12)

- Bearings and Distances shall be recorded against all sections of the traverse line in the AC\_SURVEY\_TRAVERSE layer.

## 11. CADASTRAL BASE

The Cadastral Base entity requirements are as follows:

- Line work

Description	Layer	Colour (by layer)	Line Type (by layer)
Property Boundary	AC_CADASTRE_PROPBDY	4 (Cyan)	Continuous
Easements	AC_CADASTRE_EASE	4 (Cyan)	Dashed (0.0 wide)
Existing Boundary	AC_CADASTRE_EXBDY	8 (Grey)	Continuous
Existing Easement	AC_CADASTRE_EXEASE	8 (Grey)	Dashed (0.0 wide)
Future Boundary	AC_CADASTRE_FUTBDY	8 (Grey)	Continuous
Future Easement	AC_CADASTRE_FUTEASE	8 (Grey)	Dashed (0.0 wide)
Major Contours	AC_MAJOR_CONTOURS	252 (Dark Grey)	Contour Major
Minor Contours	AC_MINOR_CONTOURS	254 (Light Grey)	Contour Minor
Note: Contour information will be for internal Council use only. Not required on plotted hard copies.			

- Property boundary line work shall not be broken when crossed by text. All text is to be located clear of line work whenever possible. Refer to the Table above;
- All boundaries between allotments and road reserve will be placed in the AC\_CADASTRE\_PROPBDY layer; and
- Each parcel to be an individual close polyline.

- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Permanent Survey Mark	AC_CADASTRE_PSM	4 (Cyan)	RS	1.25
Lot No.	AC_CADASTRE_LOTNO	2 (Yellow)	RS	1.25
Registered Plan No.	AC_CADASTRE_RPNO	3 (Green)	RSO	2.0
Drainage Reserve Text	AC_CADASTRE_DRTEXT	4 (Cyan)	RS	1.25
Contour Text	AC_CONTOURS	252 (Dark Grey)	RS	1.0

- Allotment numbers are to be located in the centre of the boundary opposite the sewer line and inside the allotment (eg. If the sewer line is along the rear boundary, numbers should be placed centrally along the front boundary) or close by in a clear position; and
- All text shown on a plan, other than acceptable abbreviations, shall be in uppercase.

## 12. WATER RETICULATION

The Water entity requirements are as follows:

- Linework

Description	Layer	Colour (by layer)	Line Type (by Layer)
Water Main > 50 dia	Refer below	2 (Yellow)	Continuous Polyline (0.0 wide)
Water Main =< 50 dia	Refer below	4 (Cyan)	Continuous Polyline (0.0 wide)
Trunk Main	Refer below	2 (Yellow)	Dashed Polyline (0.0 wide)
Private Service	Refer below	4 (Cyan)	Continuous Polyline (0.0 wide)
Reclaimed Water Main	Refer below	200 (Purple)	Continuous Polyline (0.0 wide)
Service to Park or Landscaping	Refer below	7 (White)	Continuous Polyline (0.0 wide)
Existing Water Features	AC_WATER_EXIST	8 (Grey)	Dashed (0.0 wide)

- Layer Names for water mains shall be in the format shown below:

*Denotes Water Reticulation Type: WM – Water Main, WT – Trunk Main, WP – Private Main, WI – Irrigation and WR – Reclaimed Water*

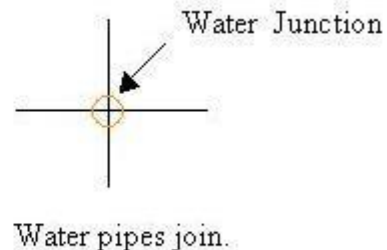
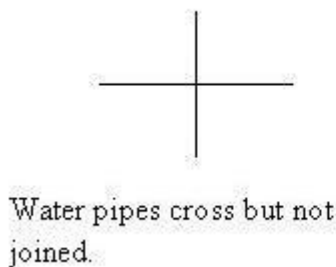
Year Installed

AC\_WATER\_WM\_150\_PVC\_2006

Pipe Diameter

Pipe Material

- Crossing and connecting water pipes are to be shown as below. Connecting water pipes are to be represented by the Water Junction block.




















- Water mains and irrigation pipes are to be one continuous 2D Polyline, broken only at pipe junctions and valves.





- Water Block Details

Block	Name	Description	Layer	Colour
	Water_Air	Air Valve	AC_WATER_AV	2 (Yellow)
	Water_Chlorin	Chlorination Plant	AC_WATER_WC	4 (Cyan)
	Water_Elec	Electrical Controls	AC_WATER_EC	4 (Cyan)
	Water_End	Endcap for pipes	AC_WATER_END	2 (Yellow)
	Water_Float	Float Valve	AC_WATER_FV	2 (Yellow)
	Water_Hydraulic	Hydraulic / Control Valve	AC_WATER_HV	2 (Yellow)
	Water_Hydrant	Fire Hydrant	AC_WATER_HYD	2 (Yellow)
	Water_Junction	Junction of Water Pipes	AC_WATER_JUNC	30 (Orange)
	Water_Pressure	Pressure reducing Valve	AC_WATER_PRV	2 (Yellow)
	Water_Reducer	Reducer	AC_WATER_RED	2 (Yellow)
	Water_Reflux	Reflux Valve	AC_WATER_RFV	2 (Yellow)
	Water_Res	Reservoir	AC_WATER_RES	2 (Yellow)
	Water_Scour	Scour Valve	AC_WATER_SCRV	2 (Yellow)
	Water_Stop	Stop Valve	AC_WATER_SV	2 (Yellow)
	Water_VPit	Valve Pit	AC_WATER_VP	4 (Cyan)
	Water_Meter	Water Meter	AC_WATER_WM	4 (Cyan)
	Water_PStn	Water Pump Station	AC_WATER_PS	4 (Cyan)

### 13. SEWERAGE RETICULATION

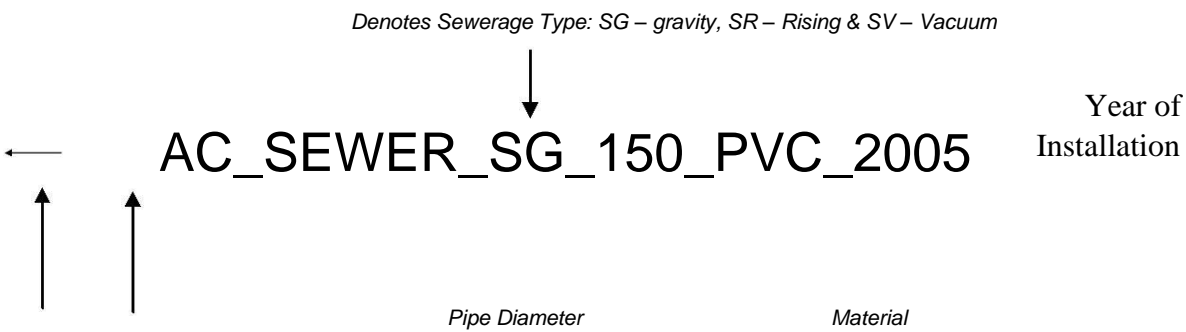
The Sewer entity requirements are as follows:

- Line work

Description	Layer	Colour (by layer)	Line Type (by layer)
Pressure (Rising) Main	Refer below	6 (Magenta)	P main (assign line type to object)
Gravity Mains	Refer below	6 (Magenta)	Continuous
Vacuum Mains	Refer below	6 (Magenta)	V main (assign line type to object)
Existing Features	AC_SEWER_EXIST	8 (Grey)	Dashed (0.0 wide)
*PCB's	AC_SEWER_PCB	1 (Red)	Continuous

\* Refers to all PCB's, which are to service new lots created by the development to which the as-constructed drawing relates, regardless of whether or not the PCB's were installed in a previous construction or installed on an existing sewer. (Where existing PCB's have been obtained from a third party, it is recognised that they cannot be certified and in such cases need to be noted.)

- Connections to existing sewer features in Council controlled land are required and are to be placed in the AC\_SEWER\_EXIST layer.
- Sewer pipes are to be one continuous 2D polyline between manholes / valves / pump or lift stations.
- Layer Names for Mains shall be in the format shown below:

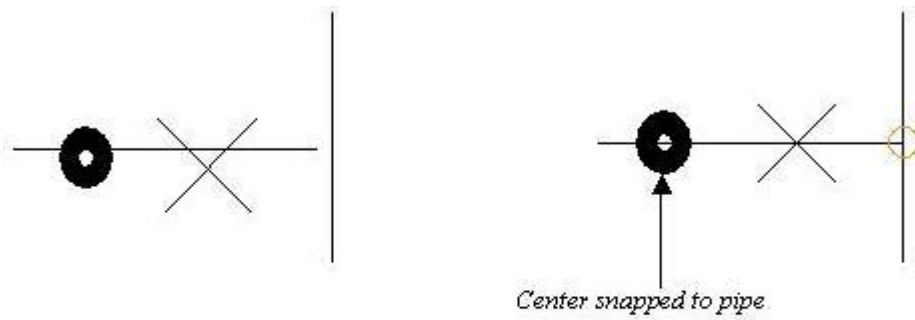


- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Pipe dia, Material, Length, grade & Invert levels	AC_SEWER_PIPE	4 (Cyan)	RS	1.25
PCB Details	AC_SEWER_PCB	4 (Cyan)	RSO	1.0

- All text other than acceptable abbreviations shall be in uppercase.

- Ensure that all pipes / junctions / valves are snapped to the centre / end of the object.

















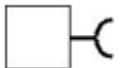


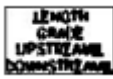


Incorrect

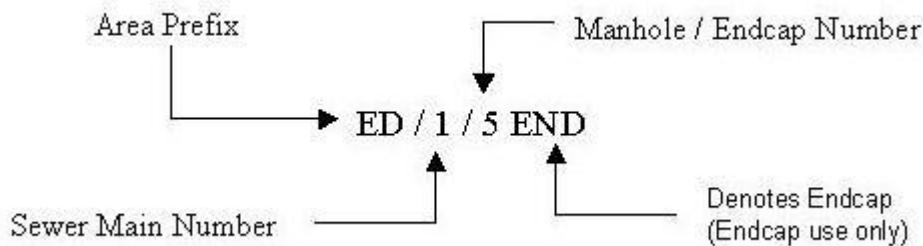
Correct

- Dimensioning
  - Dimension Style – SEWER
  - Dimension Layer – AC\_SEWER\_DIM

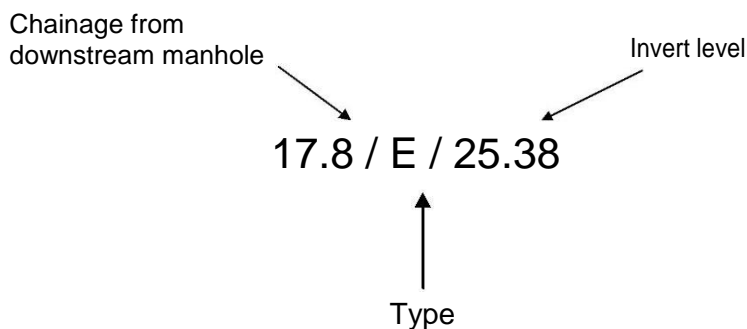
- Sewer Block Details

Block	Name	Description	Layer	Colour
	Sewer_Air	Air Valve	AC_SEWER_AV	3 (Green)
	Sewer_End	Endcap for Pipes	AC_SEWER_END	6 (Magenta)
	Sewer_FSL	Finished Surface Level	AC_SEWER_FSL	4 (Cyan)
	Sewer_PCB	Property Connection	AC_SEWER_PCB	6 (Magenta)
	Sewer_Reflux	Reflux Valve	AC_SEWER_RFV	3 (Green)
	Sewer_Scour	Scour Valve	AC_SEWER_SCRV	3 (Green)
	Sewer_IO	Inspection Openings	AC_SEWER_IO	4 (Cyan)
	Sewer_MS	Sewer Maintenance Shaft	AC_SEWER_MH	4 (Cyan)
	Sewer-MH	Sewer Manhole	AC_SEWER_MH	4 (Cyan)
	Sewer_ScMH	Sewer Scour Manhole	AC_SEWER_MH	4 (Cyan)
	Sewer_PStn	Sewer Pump Station	AC_SEWER_PS	6 (Magenta)
	Sewer_Stop	Sewer Stop Valve	AC_SEWER_SV	3 (Green)
	Sewer_Elec	Electrical Controls	AC_SEWER_EC	4 (Cyan)
	Sewer_VPit	Valve Pit	AC_SEWER_VP	4 (Cyan)
	Sewer_VacStn	Vacuum Pump Station	AC_SEWER_VACPS	3 (Green)
	Sewer_Store	Storage Tank	AC_SEWER_ST	4 (Cyan)
	Sewer_Oflow	Overflow Pit	AC_SEWER_OP	4 (Cyan)
	Sewer_VacPit	Vacuum Pit	AC_SEWER_VACPT	4 (Cyan)
	Sewer_Reducer	Reducer	AC_SEWER_RED	3 (Green)
	Sewer_Pipe	Pipe attribute detail	AC_SEWER_PIPE	4 (Cyan)

- The preferred method of denoting pipe invert levels for all sewer pipes is via the use of Sewer\_Pipe Block.
- Manhole



- Endcaps and rodding points use a very similar format. Endcaps must have the work “END” included after the endcap number (eg. ED/26/6 END) and rodding points must have the letters “RP” included as part of the rodding number (eg. ED/26/RP6).
- Area prefix numbers are listed in the Local Government Specific section.
- Property Connection Branches shall be described using the following format. Refer to Standard drawing S3005 for different PCB types.



Note: For Type A, the invert level will be taken as the invert level of the IO pipe of the branch (refer S3005). All other types are invert level of the sewer main at the PCB.

- Finished Surface Levels
  - Finished surface levels are required at all cadastral corners. The Sewer\_FSL block must be used for all finished surface level information. The surface level data at cadastral corners must be placed in the layer AC\_SEWER\_FSL.
- Pipe Invert Levels
  - Gravity Mains - Invert levels must be provided for all gravity mains. The pipe invert levels are to be recorded in the Sewer Pipe Block; and
  - Pressure (Rising) Mains - Invert level information is required along all pressure (rising) mains. They must be shown at valves, in the pump station and at discharge points. The pipe invert levels are to be recorded in the Sewer Pipe Block.
- For pump and lift stations, all relevant details are to be recorded in the relevant pump station block. Refer to block for required data.

## 14. SEWERAGE PUMP STATIONS

- The pump / lift station number shall be provided by Council.
- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Pipe Dia, Material, Length, Grade & Invert Levels	SEWERAGE_SPS	4 (Cyan)	RS	1.25
Misc. text descriptions	AC_SEWER_TEXT	4 (Cyan)	RSO	1.0

## 15. STORMWATER DRAINAGE SYSTEM

The Stormwater entity requirements are as follows:

- Line work

Description	Layer	Colour (by layer)	Linetype (by layer)
RC Pipes	Refer below	1 (Red)	RCP (Polyline 0.5 wide)
PVC Pipes	Refer below	1 (Red)	Continuous (Polyline 0.25 wide)
Box Culverts	Refer below	7 (White)	RCBC (Polyline 0.5 wide)
Catch Drain	Refer below	1 (Red)	CDP (Polyline 0.5 wide)
Sub Surface Drains	AC_DRAINAGE_SSURF	3 (Green)	SSD (Polyline 0.0 wide)
Retaining Walls	AC_DRAINAGE_RETWALL	132	Continuous (Polyline 1.0 wide)
Existing Features	AC_DRAINAGE_EXIST	8 (Grey)	Dashed (0.0 wide)

- Connections to existing stormwater features in Council controlled land are required and are to be placed in the AC\_DRAINAGE\_EXIST layer.
- Layer names for stormwater lines shall be in the format shown below:

*Denotes Stormwater Drainage*

Year of Installation

AC\_DRAINAGE\_375\_RCP\_2006

Pipe Diameter





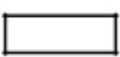











Material

- Catch Drain polylines are to be a 2D polyline and based on the centre of the constructed drain.
- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Catch Drain Levels	AC_DRAINAGE_TEXT	4 (Cyan)	RS	1.0
RCP Diameter, Material, Length and Invert Levels	AC_DRAINAGE_TEXT	4 (Cyan)	RS	1.0
Box Culvert, Size, Material Length & Invert Levels	AC_DRAINAGE_TEXT	4 (Cyan)	RS	1.0
Sub Surface Drain Text	AC_DRAINAGE_TEXT	4 (Cyan)	RS	1.0
Kerb Inlet Type & RL Top	AC_DRAINAGE_KERB	4 (Cyan)	RS	1.0
Manhole & RL Top	AC_DRAINAGE_MH	4 (Cyan)	RS	1.0
Endwalls	AC_DRAINAGE_HDWALL	4 (Cyan)	RS	1.0
Field Inlet Pit	AC_DRAINAGE_PIT	4 (Cyan)	RS	1.0
Finished Surface Level	AC_DRAINAGE_FSL	132	RS	1.0

- Dimensioning
  - Dimension Style - DRAINAGE
  - Dimension Layer – AC\_DRAINAGE\_DIM
- Finished Surface Levels.
  - Finished surface levels are required at all cadastral corners and at changes of grade. The AC\_DRAINAGE\_\_FSL block must be used for all finished surface level information and placed in the layer AC\_DRAINAGE\_FSL.
  - Both above ground and underground drainage details are to be recorded in the AC\_DRAINAGE\_TEXT layer.

- Drainage Blocks

Block	Name	Description	Layer	Colour
	Drain_Culvert	Culvert Text Box	AC_DRAINAGE_CULVERT	4 (Cyan)
	Drain_FSL	Finished Surface Level	AC_DRAINAGE_FSL	4 (Cyan)
	Drain_GPT	Gross Pollutant Trap	AC_DRAINAGE_GPT	4 (Cyan)
	Drain_IO	Inspection Opening	AC_DRAINAGE_IO	4 (Cyan)
	Drain_HW	Headwall	AC_DRAINAGE_HDWALL	4 (Cyan)
	Drain_EWW	Head and Wingwalls	AC_DRAINAGE_HDWALL	4 (Cyan)
	Drain_RKerb	Kerb Inlet Pit / Gate located RHS	AC_DRAINAGE_KERB	4 (Cyan)
	Drain_MKerb	Kerb Inlet Pit / Gate located Middle	AC_DRAINAGE_KERB	4 (Cyan)
	Drain_LKerb	Kerb Inlet Pit / Gate located LHS	AC_DRAINAGE_KERB	4 (Cyan)
	Drain_MH	Manhole	AC_DRAINAGE_MH	4 (Cyan)
	Drain_Open	Open Drain Text Box	AC_DRAINAGE_DRAIN	4 (Cyan)
	Drain_Pipe	Pipe Text Box	AC_DRAINAGE_PIPE	4 (Cyan)
	Drain_Pit	Field inlet Pit	AC_DRAINAGE_PIT	4 (Cyan)
	Drain_CPit	Field Inlet Pit, Concrete Shute	AC_DRAINAGE_PIT	4 (Cyan)
	Drain_PStn	Drain Pump Station	AC_DRAINAGE_PS	4 (Cyan)
	Drain_Tide	Tide Flap / Gate	AC_DRAINAGE_TIDE	4 (Cyan)

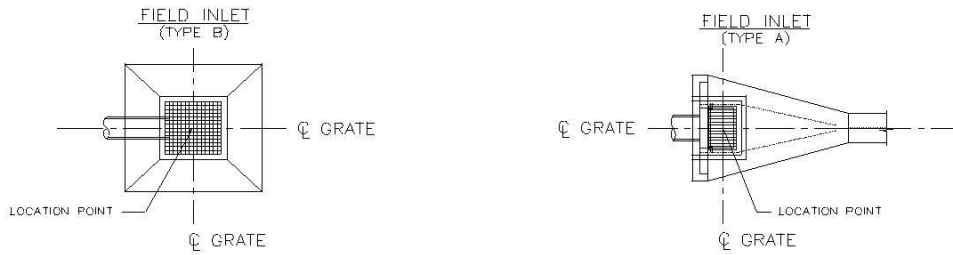


- Location of Structure Point and Levels

Drainage structure location point for the various structures shall be as shown.



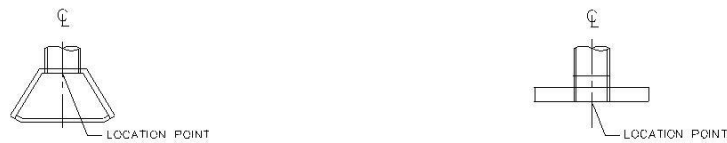
GRATED KERB INLET PIT



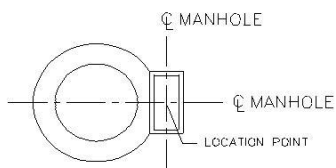
FIELD INLET PITS



MANHOLES



HEADWALLS



GROSS POLLUTANT TRAPS

## 16. ROAD NETWORK

The Road Network entity requirements are as follows:

- Line work


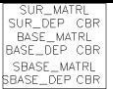
Description	Layer	Colour (by layer)	Linetype (by layer)
Barrier Kerb & Edge Restraint	AC_ROAD_KERB_SKNC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Barrier Kerb & Channel	AC_ROAD_KERB_SKCC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Maintenance Strip	AC_ROAD_KERB_MEDNC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Semi Mountable & Layback	AC_ROAD_KERB_SMKNC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Layback & Channel	AC_ROAD_KERB_SMKCC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Concrete Invert	AC_ROAD_KERB_NKCC	4 (Cyan)	Continuous (Polyline 0.0 wide)
Bridge Deck	AC_ROAD_BRIDGE	6 (Magenta)	Continuous (Polyline 0.0 wide)
Paths	AC_ROAD_PATH	4 (Cyan)	Continuous (Polyline 0.0 wide)
Existing Features	AC_ROAD_EXIST	8 (Grey)	Dashed (0.0 wide)
Thresholds	AC_ROAD_THOLD	4 (Cyan)	Continuous (Polyline 0.0 wide)
Centreline	AC_ROAD_CLINE	132	Continuous (Polyline 0.0 wide)

- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Kerb & Channel	AC_ROAD_KERB	4 (Cyan)	RS	1.0
Path Material	AC_ROAD_PATH_TEXT	1 (Red)	RS	2.0
Threshold Material	AC_ROAD_THOLD	1 (Red)	RS	2.0
Pavement Details	AC_ROAD_PAV	1 (Red)	RS	2.0
Road Names	AC_ROAD_TEXT	1 (Red)	RS	4.0

- All constructed footpaths are to be located and recorded in the AC\_ROAD\_PATH layer, with path material type recorded in the AC\_ROAD\_PATH\_TEXT layer.
- All different kerb types are to be individually identified by their respective Layer Names refer to standard kerb drawings S1000 & S1001.
- All Thresholds are to be represented by a closed polyline, with threshold material type recorded in the AC\_ROAD\_THOLD layer.

- All bridge decks are to be located and recorded in the AC\_ROAD\_BRIDGE layer.
- Subgrade CBR, Road pavement and surface details are to be recorded in the AC\_ROAD\_PAV layer in the Pavement block
- Road Block Details

Block	Name	Description	Layer	Colour
	Traffic_Sign	MUTCD Traffic Signs	AC_ROAD_SIGN	6 (Magenta)
<b>BRIDGE</b>	Bridge	Bridge details	AC_BRIDGE	6 (Magenta)
	Pavement	Pavement details	AC_ROAD_PAV	

## 17. PARKS / LANDSCAPING / STRUCTURES

The Park / Landscaping / Structure entity requirements are as follows:


- Linework

Description	Layer	Colour (by layer)	Linetype (by layer)
Vegetation	AC_LAND_VEGETATION	96 (Dark Green)	Continuous (Polyline 0.0 wide)
Soft fall Area	AC_LAND_SOFTFALL	30 (Orange)	Continuous (Polyline 0.0 wide)
Paving / Concrete	AC_LAND_PAVING	4 (Cyan)	Continuous (Polyline 0.0 wide)
Building / Structure	AC_LAND_STRUCTURE	4 (Cyan)	Continuous (Polyline 0.0 wide)
Pedestrian Bridge	AC_LAND_BRIDGE	2 (Yellow)	Continuous (Polyline 0.0 wide)

- Text

Description	Layer	Colour (by layer)	Text Style	Text Height
Vegetation	AC_LAND_TEXT	96 (Dark Green)	RS	1.0
Soft fall Area	AC_LAND_TEXT	96 (Dark Green)	RS	1.0
Lighting Electrical	AC_LAND_TEXT	96 (Dark Green)	RS	1.0
Paving Details	AC_LAND_TEXT	96 (Dark Green)	RS	1.0

- All distinct landscaping features with the development are to be represented by a closed polyline and on their respective layers. These features shall include but not limited to:
  - Garden Beds – AC\_LAND\_VEGETATION, including areas of vegetation with medians and roundabouts;
  - Areas of pavers / concrete that are not part of a pathway - AC\_LAND\_PAVING and attribute details recorded in the attribute block Structure; and
  - Soft fall areas – AC\_LAND\_SOFTFALL and the description of both the border edge and soft fall material in the attribute block Park\_Misc.
- All individual features with the development are to be represented by their respective blocks. These shall include but not limited to:
  - Individual Trees;
  - Rubbish Bins;
  - Water bubblers;
  - Play Ground equipment; and
  - Park Embellishments.
- The outer edge of all constructed structures are to be located and represented by a closed polyline. In association with the polyline, the relevant block will be used to record the attribute details for that structure and placed at the centre of the structure. These structures shall include but not limited to:
  - Buildings / Shelters – Attribute block, Structure;
  - Pedestrian Bridge – Attribute block, Bridge, refer road section; and
  - Playing Court (eg. Basketball or Tennis) – Attribute block, Park\_Misc.
- Parks / Landscaping Block Details

Block	Name	Description	Layer	Colour
	TREE	Single Tree	AC_LAND_VEGETATION	92
	WATER_FNTN	Water Drinking Fountain	AC_LAND_STRUCTURE	4 (Cyan)
	RUBBISH	Rubbish Bin	AC_LAND_STRUCTURE	4 (Cyan)
	PLAY_EQUP	Play Equipment	AC_LAND_STRUCTURE	4 (Cyan)
	PARK_MISC	Landscape Embellishments	AC_LAND_STRUCTURE	4 (Cyan)
	STRUCTURE	Building / Shelter	AC_LAND_STRUCTURE	4 (Cyan)

## 18. UTILITIES

Any utility laid outside of the service trench, ie. Gas or electricity that connects to a Council asset in a park or reserve (other than road reserve), must be located and recorded on layer

AC\_LAND\_UTILITY with reference to linestyles, text and symbols as per AS 1100.401 – 1984 “Engineering Survey and Engineering Survey Design Drawing”.

## 19. ATTRIBUTE INFORMATION REQUIREMENTS (“AS CONSTRUCTED”)

### WATER

Attribute Information is to be supplied for all new water reticulation assets which ultimately become the property and responsibility of Council. Attribute information is recorded in the water layer format and the various blocks as listed in the “As Constructed” Drawing Requirements water section.

- **Mains**

- Pipe diameter;
- Pipe material;
- Pipe manufacturer;
- Pipe Class;
- Pipe lining material;
- Pipe protection;
- JTYPE – Joint type;
- End caps, bends, fittings and thrust blocks;
- Location – Above or below ground, default below;
- Length – Length of pipe measured between junctions or changes in horizontal direction;
- Installation depth, if not standard;
- Operating pressure at critical locations (low points, high points);
- Running chainages from the pump station to changes of grade, valves, air vents, scour valves, bends and access chambers along the main;
- Surface level and crown level at changes of grade, and at a maximum of 30 metre centres;
- Dimensions from horizontal bends in the main to two (2) property boundaries or corners; and
- Year of Installation.

- **Valves and Hydrants**

A valve entity is classified as any sort of flow controlling or limiting device that is attached to a water reticulation or service line. Entities will include but not limited to air valves, sluice valves, scour valves, reducers, end caps and hydrants.

Required Attributes:

- Type – Type of flow control entity i.e. stop valve, scour valve, air valve;
- Size – Internal Diameter of pipeline valve/ hydrant is connected too. Reducer size shown as 250/150;
- Pressure Setting - Pressure Setting in kilo Pascal's;
- Valve off Direction – Direction to turn off valve i.e. Left / Right;
- Open/Closed – Whether valve is open or closed;
- Service – Whether the valve is on a potable or non-potable supply; and
- Installation Date – Year in which the water asset was constructed or installed ie. 2007.

- **Reservoir**

Required Attributes:

- Site locality plan showing the pump station building and associated works in relation to cadastral boundaries;
- Significant variations from the approved drawings including tolerances outside those specified;
- Level of floor in metres, A.H.D;
- Actual dimensions of reservoir;
- Actual configuration of associated pipework, ladders, walkways, control boxes, man access hatch etc;
- Real Property description;
- Location of water service;
- Set out, configuration and details of scour and overflow pipework;
- Location and details of any driveways, apron slabs, fences etc;
- FSL – Finished surface level of the reservoir pad in metres A.H.D;
- BWL – Bottom water level in metres A.H.D;
- TWL – Top water level in metres A.H.D;
- Capacity – Maximum storage capacity in mega litres;
- Diameter – Internal; and
- Installation Date – Year in which the water asset was constructed or installed i.e. 2007.

- **Water Meter**

Required Attributes:

- Type – Whether meter is District or Service;
- Meter Number – Unique number assigned to meters by Council;
- Size – Internal Diameter of pipeline meter is connected too;
- Bore Size – Internal diameter of meter bore size; and
- Installation Date - Year in which the water asset was constructed or installed i.e. 2007.

- **Pump Station**

Required Attributes:

- Asset No. – Council asset number;
- Actual dimensions of building;
- Control Pressure - Pump control pressure;
- Control Capacity – Pump control capacity;
- Number – Number of pumps Installed. The pumps are individually represented by the Pump block and placed next to the pump station;
- Inlet – pipe inlet diameter;
- Outlet – pipe outlet diameter;
- Head – System head pressure;
- Flow – Design flow rate;
- Installation Date - Year in which the water asset was constructed or installed i.e. 2007;
- Slab Level in metres, A.H.D;
- Valve Pit Floor Level, lid level and outside FSL in metres, A.H.D;
- Cross reference detail drawings and standard drawings;
- Full pump specification includes duly, make, model, motor rating, curve number, impeller, diameter, etc;

- Site locality plan at (scale 1:200) showing the as-constructed pump station and associated works in relation to cadastral boundaries;
- Real Property description;
- Location of water service;
- Location of operation and maintenance manuals;
- Finished surface contour levels and spot levels;
- Clearance dimensions between flanges and wall surfaces;
- Cover to pipe work;
- Switch Board Layout Details;
- Actual internal configuration of pumps, pipework, control panel, generator etc;
- Q100 flood line level and highest Recorded Flood Level in metres, A.H.D;
- Locations and details of any driveways, apron slabs, fences etc; and
- Reference Dwg – Drawing number for design of constructed water asset.

- **Pumps**

Required Attributes:

- Type – Duty or Standby;
- Type – end suction, vertical turbine, split case (Horizontal / Vertical) etc;
- Manufacturer;
- Model;
- Number – Pump serial number;
- Housing – Housing material;
- Impeller – Impeller material;
- Impeller Diameter;
- Impeller curve;
- Shaft size;
- Shaft seal – Type of seal used;
- Flow Rate;
- Motor Kilowatts;
- Motor Current;
- Bearing Size; and
- Size – Pump Size (weight and outside dimensions).

- **Electrical Controls**

Required Attributes:

- Iso\_size – Main Isolator size;
- Type – Isolator Type;
- Manufacturer – Isolator manufacturer;
- Inc\_Size – Main Incomer size;
- Wiring\_enclosure – whether wiring enclosure is buried direct, conduit, cable tray;
- Voltage – Voltage of switchboard;
- IP – IP rating;
- Installation Date - Year in which the water asset was constructed or installed i.e. 2007;
- Reference Dwg – Drawing number for design of constructed water asset; and
- Reference Manual – Manual detailing components etc of switchboard.

- **Valve Pit / Chlorination Plant**

Required Attributes:

- Installation Date - Year in which the water asset was constructed or installed i.e. 2007; and
- Reference Dwg – Drawing number for design of constructed water asset.

## **SEWER**

Attribute Information is to be supplied for all new waste water assets which ultimately become the property and responsibility of Council. Attribute information is recorded in the sewer layer format and the various blocks as listed in the “As Constructed” Drawing Requirements sewer section.

- **Valves**

A valve entity, is classified as any sort of flow controlling or limiting device that is attached to a sewer pressure (rising) or vacuum line. Entities will include but not limited to air valves, reflux valves, scour valves and reducers.

Required Attributes:

- Manufacturer – Valve Manufacturer;
- Control – Manual or Automatic;
- Material – Valve Material;
- Seat – Valve seat material;
- Size – Internal Diameter of pipeline valve is connected too. Reducer size shown as 250/150;
- Pressure Setting - Pressure Setting in Pascal's;
- Valve off Direction – Direction to turn off valve i.e. Left / Right;
- Open/Closed – Whether valve is open or closed; and
- Installation Date – Year in which the sewer asset was constructed or installed i.e. 2007.

- **Manholes / Maintenance Shafts**

Required Attributes:

- Name - Identity label of manhole / Maintenance Shaft as per Appendix P;
- Type – Preformed or Cast In-Situ;
- Material – Manhole / maintenance shaft material PB or PE;
- Class – Classification rating;
- Seal – Seal Type;
- Lining – Manhole lining;
- LidRL - Surface level of Lid, in metres A.H.D;
- Lid\_Material - Material of lid;
- Depth - Depth to invert of Manhole / Inspection Shaft;
- Diameter – Inside diameter of manhole; and
- Installation Date - Year in which the sewer asset was constructed or installed i.e. 2007.



- **Endcaps**

Required Attributes:

- Name - Identity label of endcap as per Appendix P;
- IL - Invert level;
- FSL – Finished Surface level above location of Endcap; and
- Installation Date - Year in which the sewer asset was constructed or installed i.e. 2007.

- **Sewer Pipes**

Gravity Sewer Required Attributes:

- Size – Pipe inside diameter;
- Material – Pipe material;
- Manufacturer – Pipe manufacturer;
- Class – Pipe Class;
- Lining – Pipe lining material;
- JTYPE – Joint type;
- Location – Above or below ground, default below;
- Pipe Length – Length from end to end. Chamber dimensions are not to be included. The length is recorded in metres;
- Node Length – Length centre of node to centre of node. Length is to be recorded in metres;
- Grade – Grade of pipe between manholes/ inspection shaft or endcap;
- USIL – Upstream invert level of pipe; and
- DSIL – Downstream invert level of pipe.

Pressure (Rising) Sewer Mains Required attributes:

- Pipe diameter;
- Pipe material;
- Pipe material class;
- Pipe Protection;
- Pipe manufacturer;
- Class – Pipe Class;
- Pipe lining material;
- JTYPE – Joint type;
- Location – Above or below ground, default below;
- Length – Length of pipe measured between pump stations, pits, bends, connection or discharge point;
- Depth of pipe – if not standard;
- Fittings (bends, reducers, tees);
- Valves – Type (scour, air);
- Operating pressures at low and high points;
- Line velocity at maximum operating flow;
- Invert levels at ends and changes in grade;
- Running chainages from the pump station to changes of grade, valves, air vents, scour valves, bends and access chambers along the main;
- Surface level and crown level at changes of grade, and at a maximum of 30 metre centres;
- Dimensions from horizontal bends in the main to two (2) property boundaries or corners; and
- Year of Installation.

- **Storage / Overflow**

Required Attributes:

- Name - Identity label of storage/overflow;
- Site locality plan showing the as-constructed tank and associated works in relation to cadastral boundaries;
- Show all significant variations from the approved drawings including tolerances outside those specified;
- LidRL - Surface level of Lid, in metres A.H.D;
- Lid\_Material - Material of lid;
- Actual dimensions of tank;
- Depth - Depth to invert of Manhole / Inspection Shaft;
- Invert level in metres of outlet pipe, A.H.D;
- Invert level in metres of inlet pipe, A.H.D;
- Floor Slab Level and top of tank in metres, A.H.D;
- Well diameter;
- Capacity of well;
- Actual set out and configuration of piping and external to the tank;
- Installation Date - Year in which the sewer asset was constructed or installed i.e. 2007;
- Q100 flood line level and Highest Recorded Flood level in metres, A.H.D;
- Protection coating system used;
- Real Property description;
- Overflow invert level;
- Overflow discharge location;
- Location of water services; and
- Finished surface contour levels and spot levels.

- **Pump and Lift Stations**

Required Attributes:

- Identity label of pump station;
- Pump or Lift station;
- The protection coating system used;
- Real Property description;
- Lid RL – Lid level in metres, A.H.D;
- Well Invert – Invert level of well in metres, A.H.D;
- Wet Well Diameter;
- Locations and details of any driveways, apron slabs, fences etc;
- Depth – Difference between lid RL and Well Invert;
- Inlet invert – Invert level of inlet pipe in metres, A.H.D;
- Inlet Diameter – Pipe inlet diameter;
- Overflow invert – Invert level of outlet pipe in metres, A.H.D;
- Outlet Diameter – Pipe outlet diameter;
- Alarm RL – High level alarm in metres, A.H.D;
- Diameter – Well Diameter or dimensions;
- Wet/Dry – Whether well is wet or dry;
- Capacity – Emergency Storage Capacity of well in hours;
- Volume – Operational volume;
- Pumps – Number of pumps;
- System Head – System head pressure;

- Pump Head – Pump design head;
- Head – Maximum head at receiving mains;
- Flow – Design flow rate;
- Start Frequency – Design starts per hour;
- Installation Date - Year in which the sewer asset was constructed or installed i.e. 2007;
- Reference Dwg – Drawing number for design of constructed sewer asset;
- Slab Level in metres, A.H.D.;
- Underside of plug in metres, A.H.D.;
- Invert Level of Rising Main in metres, A.H.D.;
- Underside of plug in metres, A.H.D.;
- Standby Start Level in metres, A.H.D.;
- Duty Start Level in metres, A.H.D.;
- Pump Stop Level in metres, A.H.D.;
- Pump Suction Level in metres, A.H.D.;
- Valve Pit Floor Level, Lid level and outside FSL in metres, A.H.D.;
- The Level at Which the contributing sewerage system or sewer pumping station will overflow in metres. A.H.D.;
- Q<sub>100</sub> flood line level and Highest Recorded Flood Level in meters, A.H.D.;
- Rising Main Diameter;
- Riser Pipe Diameter;
- Incoming Sewer Diameter xli. Capacity of wet well;
- Maximum Operational Volume;
- Cross-reference detail drawings and standard drawings;
- Full pump specification including duty, make, model, motor rating, curve number, impeller, diameter, etc;
- The protection coating system used;
- Site locality plan at (Scale 1:200) showing the as-constructed pump station and associated works in relation to cadastral boundaries;
- Real Property description;
- Overflow discharge location;
- Location of water service;
- Location of operation and maintenance manuals li. Finished Surface Contour Levels and spot levels;
- Clearance dimensions between flanges and internal wall surfaces liii. Cover to pipe work;
- Show existing and proposed Manholes within the area of the locality plan including manhole number;
- Inlet Level in metres, A.H.D.;
- Switch Board Layout Details; and
- All significant variations from the approved drawings including tolerances outside those specified.

- **Electrical Controls and Pumps**

Required Attributes:

- Refer to attribute details for water electrical controls and pumps.

- **Valve Pit**

Required Attributes:

- Installation Date - Year in which the sewer asset was constructed or installed i.e. 2007; and
- Reference Dwg – Drawing number for design of constructed sewer asset.

- **Property Connection Branch**

Required Attributes:

- Chainage – Distance from downstream manhole/inspection shaft;
- Type – Type as per standard drawing S3005; and
- IL – Invert level of connection to sewer pipe, in metres A.H.D.

## **STORMWATER**

Attribute Information is to be supplied for all new waste water assets which ultimately become the property and responsibility of Council. Attribute information is recorded in the drainage layer format and the various blocks as listed in the “As Constructed” Drawing Requirements stormwater drainage section.

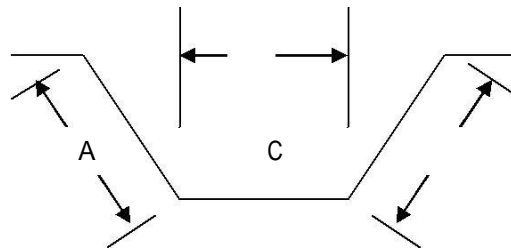
- **Catch Drains**

Required Attributes:

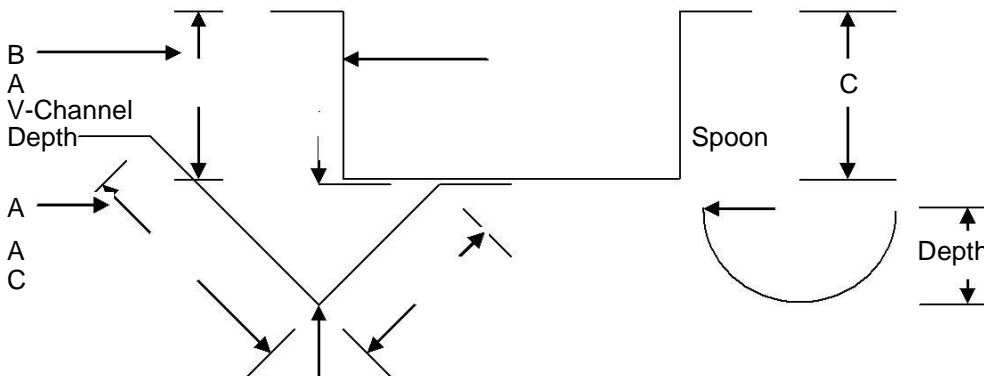
- Type – Type of Catch Drain i.e. lined, unlined and lined invert;
- Shape – Shape of channel, Trapezoidal, Rectangular, V-Channel or Spoon;
- Material – Construction Material;
- Length – Slope length of drain;
- USIL – Upstream invert level;
- DSIL – Downstream invert level;
- DIMA – Dimension A, average length of lined material, refer below;
- DIMB – Dimension B, length of lined material, refer below;
- DIMC – Dimension C, average length of lined material, refer below;
- Depth – Depth from channel invert to top of lowest embankment; and
- Thickness – Average thickness of channel lining.

Trapezoidal

B



Rectangular



**Note: Where changes in cross sections occur, the relevant attributes should be noted on 'As Constructed' drawings**

- **Stormwater Quality Improvement Device**

Required Attributes:

- Type – Type of SQID;
- Manufacturer – Name of Manufacturer of the device;
- Lid Material – Material from which the cover is constructed;
- LidRL – Surface level on the centre of the cover lid;
- StorageRL- Level at which maximum storage capacity is reached;
- SumpIL – Invert level at the lowest point in the device;
- Volume – Volume of material in cubic metres that the device is capable of holding;
- Dimension A – Overall internal maximum width in millimetres;
- Dimension B – Overall internal maximum breadth in millimetres, zero value if circular; and
- Installation Date - Year in which the drainage asset was constructed or installed i.e. 2007.

- **Detention / Retention and Bio-Retention Basins**

Required Attributes:

- Type – Type of Basin, Dry, Wet, Bio;
- Capacity - Storage capacity in storage basin;
- Weir – Surface level of weir in metres, A.H.D;

- Length – Length of weir at recorded weir height;
- Material – weir Material, soil, rock etc;
- Area – Area of filter material;
- Filter – Type of filter material;
- Filter\_depth – Depth of media material;
- Wall – Wall material type;
- Wall\_volume – Volume in cubic metres of wall material;
- UG Storage – Underground Storage or Drainage, Yes/No;
- Installation Date - Year in which the drainage asset was constructed or installed i.e. 2007; and
- Reference Dwg – Drawing number for design of constructed drainage asset.

- **Head and Wing walls**

Required Attributes:

- Type – Precast, Cast In-Situ, Stone Pitch;
- Width – Length of headwall;
- Height – Height of headwall;
- Apron – Yes/No, default no;
- Wingwalls – Yes /No, default no;
- Debris Trap – Yes/No, default no;
- Floodgate – Yes/No, default no; and
- Installation Date - Year in which the drainage asset was constructed or installed i.e. 2007.

- **Kerb / Field Inlet Pits and Manhole / Access Chambers**

Required Attributes:

- Type – Type of Inlet;
- Dimension 1 – The overall internal width or diameter of pit;
- Dimension 2 – The overall height of a rectangular pit;
- LidRL - Surface level on the centre of the cover lid, grate or centre of kerb inlet;
- IL – Invert level at the lowest point in the pit/ manhole or chamber;
- Cover Material – Cover Type;
- Chamber Material – Construction material of the chamber;
- Lintel No's – Number of lintels;
- Grate No's – Number of grates; and
- Installation Date - Year in which the drainage asset was constructed or installed i.e. 2007.

- **Pipe / Culvert**

Required Attributes:

- Type – Pipe, Culvert or Slab Link Culvert;
- Number – Number of pipes / culverts;
- Dimension 1 – The overall internal width for culverts or diameter of pipes;
- Dimension 2 – The overall height of a culvert;
- Length – Slope length from end to end. Chamber dimensions are not to be included and pipe length shall be actual length, not plan length. The length is recorded in metres;
- Material – Construction Material;
- Class – Classification of pipe/culvert type;
- USIL – Upstream invert level of pipe/culvert; and
- DSIL – Downstream invert level of pipe/culvert.

- **Pump Station**

Required Attributes:

- LidRL - Surface level on the centre of the cover lid;
- SumpIL – lowest point in the well;
- LidMaterial – Lid material type, concrete, cast iron etc;
- Material – Pump chamber material, concrete, masonry block etc;
- Dimension 1 – The overall internal width for well;
- Dimension 2 – The overall height of well;
- Capacity – Capacity of well;
- Volume – Operational volume;
- Installation Date – Year in which the drainage asset was constructed or installed ie. 2007; and
- Reference Dwg. – Drawing number for design of constructed sewer asset.

- **Electrical Controls / Pumps**

Required Attributes:

- Refer to attribute details for water electrical controls and pumps.

- **Tidal Flap**

Required Attributes:

- Type – Type of Tidal Flap;
- Manufacturer – Manufacturer of the tidal flap;
- Material – Construction Material;
- Size – Dimension of tidal flap; and
- Installation Date - Year in which the drainage asset was constructed or installed i.e. 2007.

## **ROAD**

Attribute Information is to be supplied for all new road assets which ultimately become the property and responsibility of Council. Attribute information is recorded in the road layer as text or in the various blocks as listed in the “As Constructed” Drawing Requirements road section.

- **Pavement / Surfacing**

Required Attributes:

- Surface – Type of wearing course material, Asphaltic Concrete, 2 Coat Bitumen, 80mm Pavers or Concrete;
- Surface\_Depth – Depth of sealed road surface where applicable;
- Reinforcement – Type of reinforcement used in concrete surfacing;
- Each pavement Layers – Type of pavement material used, as per Main Roads Standard Specification;
- Each pavement Layers\_Depth – Depth of pavement material;
- Width – Pavement width from kerb invert to kerb invert or seal width where no kerb and channel exists; and
- CBR – Sub-grade CBR test results, based on a 4-day soaked CBR test of the in situ sub-grade material upon which the pavement design was based.

- **Pathways**

Required Attributes:

- Width – Width of pathway;
- Type – Material type, concrete, paved, Asphaltic Concrete; and
- Depth – Depth of material.



- **Signs**

Required Attributes:

- MUTCD Code – Numbering system for sign specified by the Queensland Department of Main Roads in the Manual of Uniform Traffic Control Devices (MUTCD);
- Name – Common name for the sign, i.e. street, give way stop etc;
- Number – number of signs attached to the same supports; and
- Supports – Number of support posts the sign is attached to.

- **Roundabouts**

Required Attributes:

- Type – Type of roundabout, concrete or vegetated;
- Size – Diameter of roundabout excluding concrete annulus if present; and
- Annulus – Width of concrete annulus.

- **Bridge**

Required Attributes:

- Type – Type of bridge, i.e. Road or Pedestrian;
- Deck – Deck material;
- Span – Number of bridge spans;
- Width – Width of bridge decking;
- Length – Length of Bridge decking;
- Pylon – Pylon material;
- Headstock – Headstock material;
- WC – Wearing course type, for road bridges;
- Depth – Wearing Course depth, for road bridges; and
- Installation Date - Year in which the bridge was constructed or installed i.e. 2007.

## **PARKS / LANDSCAPING / STRUCTURES**

- **Playground Equipment**

Required Attributes:

- Type – Type of playground equipment, i.e. Swing, climbing frame, adventure playground etc;
- Make – Manufacturer of the play equipment;
- Model – Manufacturers model number for the play equipment; and
- Installation Date - Year in which the play equipment was constructed or installed i.e. 2007.

- **Landscape Embellishments**

Required Attributes:

- Type – Descriptive comment on feature type;
- Material – Construction material, if applicable;
- Dimensions – Dimension of feature, if applicable; and
- Installation Date - Year in which the asset was constructed or installed i.e. 2007.

- **Buildings / Structures**

Required Attributes:

- Type – Type of building / structure;
- Roof – Roof material;
- Wall – Wall material;
- Floor – Floor material;
- Dim\_A – Width of building in metres;
- Dim\_B – Depth of building in metres; and
- Height – Height to roof line in metres.

- **Tree**

Required Attributes:

- Type – Species name;
- Name – Common Name; and
- Size – Trunk size.

# **OPERATIONAL WORKS**

## **DP1 – DEVELOPMENT PRINCIPLES**

### **GENERAL**

#### **INTRODUCTION**

1. This section of the Development Manual has been prepared to provide guidance on the design principles and issues to be considered by the designer in the preparation of layout plans for new urban developments. It is to be read in conjunction with the relevant planning scheme, and any local laws and policies.

#### **URBAN DEVELOPMENT OBJECTIVES**

1. In addition to the requirements of the relevant planning scheme, local laws and policies, urban development layouts should:
  - Protect and enhance environmentally significant areas;
  - Be sympathetic to the existing topography and landform;
  - Minimise the impacts on the surrounding environment;
  - Facilitate the provision of urban services; and
  - Provide a safe urban living environment.

#### **IDENTIFICATION OF SITE CONSTRAINTS AND VALUES**

1. In preparing an urban development layout, it is important to identify the natural constraints and values of the site and any engineering constraints on the provision of urban services and amenities.
2. Factors that may impose constraints on the development layout include but are not limited to the following:
  - Existing significant vegetation;
  - Road and service connections to adjoining properties;
  - Public transport networks;
  - Railway and cane tramway lines;
  - External stormwater drainage catchments;
  - Downstream stormwater drainage and receiving waters;
  - Low lying areas subject to flooding and ponding;
  - Constraints and impact on adjoining properties;
  - Constraints and limitation of existing utility services and planned augmentation works;
  - Main Roads resumption requirements;
  - Existing topographical features;
  - Water quality issues; and
  - Geotechnical considerations.
3. Designers are encouraged to consult with the Council and other relevant authorities prior to or during the preparation of the site layout and design concept. Designers should in addition to requirements of this manual ascertain any specific requirements of these authorities as they relate to the designs in hand.

## VEGETATION PROTECTION AND ENVIRONMENTALLY SIGNIFICANT AREAS

1. Prior to preparing a development layout, all areas that have significant environmental value should be identified and incorporated into the layout design to enable them to be preserved and protected. Any disturbances within these areas shall be minimised to the satisfaction of Council and other relevant authorities, as may be appropriate.
2. All existing natural streams, watercourse and riparian vegetation shall be preserved. To minimise the impacts on stream bank vegetation, all streams and watercourses shall be protected by a drainage reserve. The extent of the drainage reserve shall be determined by the following criteria:
  - Not less than 3m clear of tree trunks of adjacent trees;
  - Not less than 10m clear of the high bank of the adjacent drainage path;
  - Not less than 20m clear of the high bank of a perennial stream;
  - Clear of the ARI 100 year storm event influence from the adjacent drainage path; and
  - Clear of the vertical projection of the tree canopy of the adjacent trees.

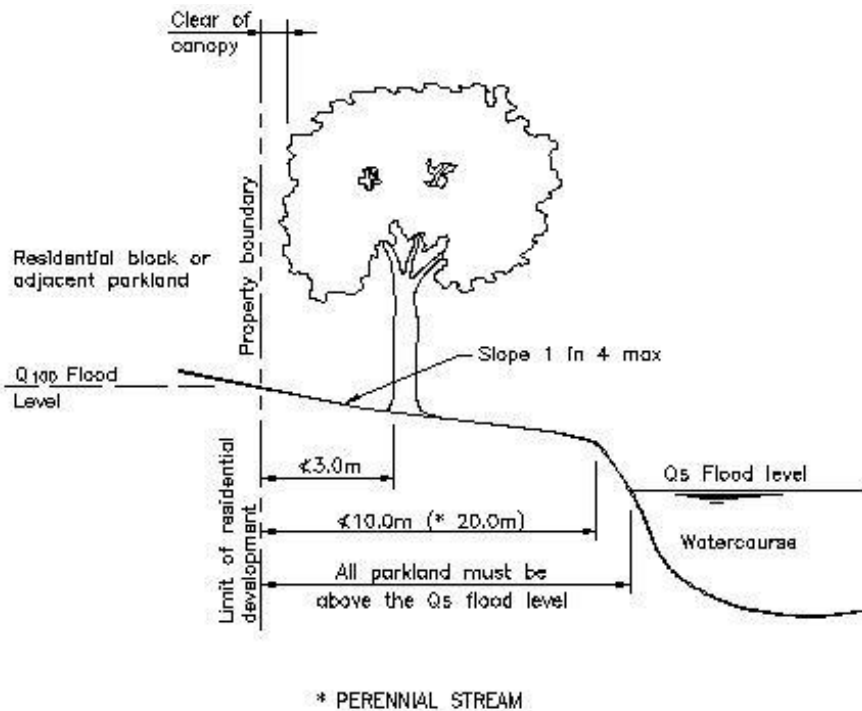


Figure DP1.1 Limits of development adjacent natural stream banks

3. In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.
4. Reference should be made to the Vegetation Management Act and any Local Laws and Policies to ascertain any requirements in relation to tree clearing.

## CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

1. It is important when designing development layouts that the principles of crime prevention through environmental design are considered, in particular:
  - Natural surveillance of public open spaces is optimised; and
  - Long pathway or obscured park areas that can become potential assault sites are

avoided.

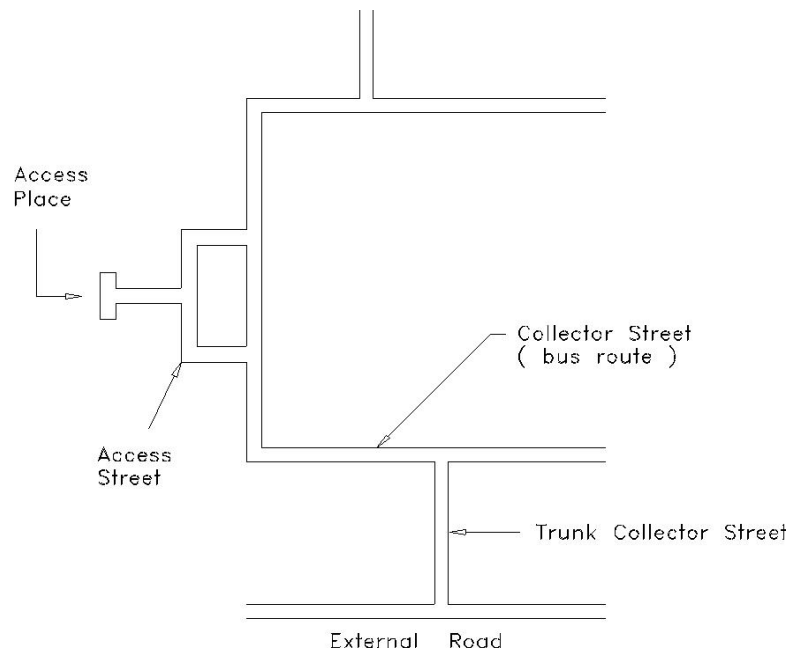
## **ENGINEERING ISSUES**

### **GENERAL**

1. The optimum site and road layout needs to be developed through consideration of social, environmental, town planning, traffic and engineering issues.
2. Although the engineering design of roads is the province of the Engineer, it is essential that the Surveyor, and Planner preparing the site layout be fully aware of the engineering issues to ensure that the road layouts proposed are satisfactory in this respect. Major alterations to the development layout may otherwise be necessary to accommodate engineering requirements.
3. The factors to be taken into consideration when designing new development layouts include the following:
  - Proposed land use;
  - Road hierarchy, interim and ultimate;
  - Public transport network;
  - Local planning policies, bikeways / pathways and open space;
  - Council's drainage management plans;
  - Council's traffic management plans;
  - Railway and cane tramway lines;
  - Access requirements for services vehicles and emergency vehicles;
  - Topography of the area;
  - Adequate road frontage to parks and drainage reserves;
  - Existing utility services constraints and proposed augmentation works;
  - Crime prevention through environmental design;
  - Impacts on adjoining properties;
  - Existing stormwater drainage;
  - Flooding and ponding;
  - Preservation of natural watercourses;
  - Significant existing vegetation;
  - Bushfire protection measures;
  - Impact of earthworks;
  - Water quality improvement structures and features;
  - Existing soil conditions; and
  - Geotechnical considerations.

### **ROAD NETWORK**

1. The provision of a road network within a subdivision development is to be designed so as to achieve the following aims:
  - Convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
  - Safe, logical and hierarchical transport linkages with existing street system;
  - Appropriate access for buses, emergency and service vehicles;
  - Convenient service corridors for public utilities;
  - Opportunity for street landscaping; and
  - Convenient parking for visitors.
2. A hierarchical road network is essential to maximise road safety, residential amenity and legibility. Each class of road in the network serves a distinct set of functions and is designed accordingly. A typical hierarchy is shown on Figure DP1.2.



**Figure DP1.2 Typical Road Hierarchy**

3. The maximum number of turning movements at intersections or junctions that a visitor should be required to undertake to reach a particular address within the development should be minimised.
4. The road network should be designed to ensure that roads connect to next order of road in the hierarchy. Under no circumstances should a road connect to another road, which is more than two, levels higher or lower in the hierarchy.
5. Where an Access Place forms part of a pedestrian or cycle network, suitable connectivity with adjoining Access Places or open space systems should be provided so as to ensure such pedestrian and cycle network are functionally efficient.
6. Developments layouts should be designed with a road layout to achieve the desired speed environment. The use of traffic control devices in lieu of a suitable road layout is not preferred.
7. It is important that the road hierarchy adequately caters for buses. The main criteria in determining the location of bus routes is that no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the Access Street in the hierarchy are designed as bus routes.

### **SITE REGRADING CONCEPT**

1. Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.
2. Where earthworks are proposed on any development site identified in the Whitsunday Regional Council Planning Scheme Landslide Overlay as having a gradient of 15% or greater, input should be sought from a qualified geotechnical engineer to ascertain slope stability and potential construction issues.

## **STORMWATER DRAINAGE**

1. The design of the drainage system, and earthworks for the proposed development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the additional flow produced as a result of the development.
2. If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.
3. The development layout shall be designed to accommodate both existing and future developed flows from upstream catchments on the basis of development in accordance with the relevant Planning Scheme.
4. In preparing a development layout, consideration should be given of the overall site drainage philosophy, and overland flow paths, to ensure that the road network has sufficient drainage capacity to safely convey stormwater runoff to its receiving waters with minimal nuisance or damage to the community.
5. Consideration should be given in the preparation of the layout to ensure that in the event of drainage system failure, adequate emergency relief paths are provided. In particular, downhill sloping cul-de-sac heads should be avoided where a sufficient width pathway or open space cannot be provided to convey the overland flow.
6. Some Councils have or are in the process of producing drainage management plans for particular catchments within their boundaries. Where a drainage management plan does not exist, Council may require the developer as a condition of the approval, to undertake a drainage study in accordance with Council's standard brief as supporting information to a drainage management plan for the catchment, to establish contributions for future upgrading works. The cost of the drainage management plan shall be credited against contributions required under Council's Flooding and Drainage Policy.

## **STORMWATER QUALITY MANAGEMENT**

1. In recognition of the impacts that development may have on the quality of water within the waterways, the over-riding objective for water quality management is to minimize the potential for development activity to cause harm to the environment / receiving waters.
2. All developments are required to include appropriate interception devices that ensure removal of suspended matter (litter) and treatment of contaminated stormwater prior to crossing the boundary of the development or discharge into downstream roadside gutters, stormwater drainage systems or waterways.
3. The location of the interception devices within the drainage system is to be planned to ensure that the first flush waters from all parts of the site are treated and they can be easily accessed for cleaning and maintenance.

## **SEWERAGE RETICULATION**

1. In preparing a development layout, consideration should be given to the provision of sewerage reticulation connections to adjoining properties on the basis of their future development in accordance with Council's Strategic Plan.
2. Where an existing sewerage reticulation line pass through a development site, the development layout should where possible incorporate the sewer with the development layout. Where this is not practical the layout should be prepared so as to minimise the extent of the sewerage relocation work necessary.

## **ELECTRICITY SUPPLY AND TELECOMMUNICATION SERVICES**

1. In preparing a development layout, the relevant Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided and if the provision of land for the purpose of siting infrastructure would be necessary.

## **TRAMLINES THROUGH URBAN AREAS**

1. Where cane tramlines run through urban areas a tramway reserve shall be created over tramline and transferred to Council.
2. The width of the tramway reserve for a single line shall be a minimum of twelve (12) metres. The reserve should be centrally located around the tramline except where exceptional circumstances prevent this. (e.g. adjoining tramway easement or reserve is placed off centre).
3. Under certain embankment / cutting conditions it may be necessary to widen the easement to provide a 3.0m wide access to at least one side of the track.
4. Where multiple tracks exist, the tramway reserve shall include all tracks plus a distance of six (6) metres from the centreline of the outermost tracks on each side.
5. This widened section shall be continued past the point of convergence of the tracks (i.e. the point of the switch of the first turnout of single line) a minimum of twenty (20) metres before becoming a standard twelve (12) metre easement again.
6. Residential areas should be sited away from siding locations if at all possible because of major dust and noise pollution problems. For cases where development will adjoin siding locations (closer than one hundred (100) metres from any part of the planned subdivision to the cane unloading point) then each such location would need to be the subject of a special study between the developer, the appointed consultants, representatives of the Mill and Council, in order to identify the unique problems of the location.
7. The number of road crossings should be kept to a minimum. Factors affecting the positioning of road crossings include: sight distances, track grades, proximity of the nearest crossing and the noise problem associated with the use of the train whistle at close successive crossings. Of particular importance is the adjacent grading of the track. The locating of road crossings on or near the base of falling grades should be avoided. Any road crossing proposal must be submitted to the Mill for the assessment of its likely implications on its own operations and on road users and residents.



# DESIGN GUIDELINES

## D1 – ROAD GEOMETRY

### GENERAL

#### SCOPE

1. This section sets out the minimum standards developed specifically for the design of roadworks using principles of street design to ensure safety and improved amenity and to reduce pedestrian/vehicular conflicts.
2. This Manual will be read in conjunction with the Institute of Public Works Engineering Australia publication Complete Streets: Guideline for Urban Street.

#### AIMS

1. The geometry of a road is to be designed so as to achieve the following aims:
  - Provide convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
  - Provide appropriate access for buses, emergency and service vehicles;
  - Provide a convenient way for public utilities;
  - Provide an opportunity for street landscaping and
  - Provide convenient parking for visitors.

#### REFERENCE DOCUMENTS

**Note: Where Acts or reference documents are updated, reference should be made to the current version.**

##### Australian Standards

- AS1158 Lighting for Roads and Public Spaces
- AS1348.1 Road and Traffic Engineering – Glossary of terms, Road Design and Construction
- AS1428 Design for Access and Mobility
- AS2890.1 Parking Facilities: Off-street parking
- AS2890.2 Parking Facilities: Off street Commercial Vehicle Facilities
- AS2890.5 Parking Facilities: On street Car Parking
- AS/NZS 3845 Road Safety Barrier Systems
- AS4282 Obtrusive Effects of Outdoor Lighting

##### Department of Transport and Main Roads

- Road Planning and Design Manual
- Manual of Uniform Traffic Control Devices (MUTCD)
- Transport Operations (Road Use Management) Act

## AUSTROADS

- Guide to Road Design
- Guide to Traffic Management
- Guide to Road Safety
- Cycling Aspects of AUSTROADS Guides

## Disability Discrimination Act

## Disability Standards for Accessible Public Transport

- The Institute of Public Works Engineering Australia, QLD Division. (IPWEA)
- Complete Streets: Guidelines for Urban Street Design

## Joint Venture for More Affordable Housing

- Australian Model Code for Residential Development. (AMCORD)

## CONSULTATION

1. Designers are encouraged to consult with the Council and other relevant authorities prior to or during the preparation of the design. Designers should in addition to requirements of this manual ascertain specific requirements of these authorities as they relate to the designs in hand.

## ROAD DESIGN CRITERIA

### DESIGN SPEED

1. For geometric design of roads, design speeds shall be as nominated in Table D1.1 unless specified otherwise by Council. Developments should be designed with a road layout to achieve the desired speed environment. The use of Traffic Control Devices in lieu of a suitable road layout is not preferred.
2. Adoption of a low design speed discourages speeding, attention should be given to ensuring that potentially hazardous features are visible to the driver and adopting traffic engineering measures which will help a driver avoid errors of judgement.
3. Design speeds shall be calculated on largest radius track between kerb and centreline unless a physical constraint is incorporated in the design to maintain vehicle tracking in traffic lane.

### LONGITUDINAL GRADIENT

1. A general minimum gradient of 0.5 per cent should be adopted for all roads, which will ultimately include kerb and channel. In very flat conditions where approved by Council it may be reduced to 0.3 per cent.
2. A desirable minimum gradient of 1.0 per cent should be adopted for all roads, which will have earth table drains, except where approved otherwise by Council, in exceptional cases.
3. Roads constructed, without kerb and channel, completely in embankment may have zero grade.
4. Maximum grades shall be as nominated in Table D1.1.
5. Longitudinal grade through intersections should not exceed 4 per cent, the actual gradient

being dependent on the type of terrain. Design of the road alignment and the grades used are interrelated. A steep grade on a side street is undesirable if vehicles have to stand waiting for traffic in the priority road.

6. Turning circles in cul-de-sacs on steep grades should have grades less than 5 per cent.
7. Where minimum radius crest vertical curves are used local widening is to be provided to facilitate safe ingress/egress from properties.

### **HORIZONTAL ALIGNMENT**

1. Horizontal alignment shall generally comply with the requirements of Complete Streets, Department of Transport and Main Roads or AUSTRROADS manuals, as applicable.
2. Designers should ensure that, for a given design speed, the minimum radius of curvature utilised is such that drivers can safely negotiate the curve. Curves that progressively tighten produce an uncomfortable sense of disorientation and alarm. Sudden reverse curves that drivers cannot anticipate also have a potential to cause similar conditions.
3. The horizontal alignment shall ensure adequate sight distances taking into account construction of solid fencing on property boundaries.

### **VERTICAL CURVES**

1. Vertical curves should be used on all changes of grade where the algebraic change of grade exceeds:
  - Access Place, Access Street Collector Streets 1.0%
  - Trunk Collector Streets 0.6%
2. The length of the crest vertical curve for stopping sight distance should conform to Complete Streets.
3. For adequate riding comfort, lengths of sag vertical curves should conform to Complete Streets.
4. Every effort should be made to provide vertical curves as long as possible, for improved appearance.
5. Drainage poses a practical limit to the length of sag curves and a maximum length (in metres) of 15 times the algebraic sum of the intersecting vertical grades should be adopted. This is to avoid water ponding in excessively flat sections of kerb and channel. A minimum grade of 0.5 per cent should be maintained in the kerb and channel.
6. In general, a minimum 10m length vertical curve shall be provided where the side road joins the through road at three way intersections.
7. The tangent point of a vertical curve in the side road shall be located at, or outside of, the kerb line of the through road. Council may approve the use of a concrete invert in lieu of a vertical curve where the side road is an Access Place and the algebraic change of grade is less than 6.0 per cent.
8. The three dimensional coordination of the horizontal and vertical alignment of a road should be aimed at improved traffic safety and aesthetics. The following principles should be applied:
  - The design speed of the road in both horizontal and vertical planes should be of the same order;
  - Combined horizontal and vertical stopping sight distance and minimum sight distance should be considered three dimensionally;

- Sharp horizontal curves shall not be introduced at or near the crest of a vertical curve;
- Horizontal curves should leave the vertical curve and be longer than the vertical curve; and
- A short vertical curve on a long horizontal curve or a short tangent in the grade line between sag curves may adversely affect the road's symmetry and appearance.

## **CROSSFALLS**

1. Carriageway crossfalls for streets shall conform to the requirements of Complete Streets.
2. Generally, pavement crossfalls on straight roads shall be:
  - Bituminous seal coat 3 per cent
  - Asphaltic concrete pavement 3 per cent
  - Cement concrete pavement 3 per cent
  - Paved surfaces 3 per cent
  - Gravel 5 per cent
3. Median Crossfalls – The maximum crossfall on grassed medians on divided roads shall be desirably 1 in 6 with an absolute maximum of 1 in 4. Refer also Department of Transport and Main Roads Design Manuals. However, at median openings, the pavement crossfall should not exceed 5 per cent.
4. For roundabouts detailed consideration of crossfall is required taking into account diameter, heavy vehicle turning etc.

**Table D1.1 WRC Street and Road Hierarchy – Deemed to Comply Requirements**

WRC Roadway Classification	Austrroads Roadway Classification (Guide to Road Design Part 2 Table 2.2 & 2.3)	No. of Dwellings	Traffic Generation vpd	Reserve Width (Minimum)	Carriageway Width (Minimum)	Verge Width Each Side (Minimum)	Max. Grade (Desirable)%	Speed kph (max)
Access Place	Urban Local Roads	0-4	0-40	15m	3.5m	4m	(12) 16 <sup>4</sup>	50
Access Street		4-19	40-190		5.5m			
Collector Street Minor	Urban collector/distributor roads	20-74	200-740	15m	6.5m	4m	(12) 16 <sup>4</sup>	60
Collector Street Major		75-299	750-2999	16m	7.5m <sup>2</sup>	4m	(8) 10	70
Sub Arterial Road	Urban arterial roads	300-599	3000-5999	20m	10m	4.5m	(8) 10	80
		600 - 2000	6000-20000	28m	2 x 7 carriageway	4.5m	(12) 16	100
Rural	(refer table D1.4)	Refer Table D1.4 for details of Rural Road Elements						
Arterial and Major Arterial	Controlled access highways (motorways or freeways)	The requirements for these categories shall be provided by the council or relevant authority (TMR) traffic volumes shall be identified in a traffic management report.						
Industrial Access	Urban Local Roads	<8ha	-	20m	12m	4m	(6) 10	50
Industrial Collector	Urban collector/distributor roads	<30ha	-	22m	14m	4m	(6) 8	50

**Notes:**

- Carriageway (and reserve) widening shall be provided on bends in accordance with Queensland Streets.
- Widening of carriageway to 10m shall be required on all bus routes, and a minimum road reserve of 18m provided.
- Carriageway widths are measured from the invert of the kerb and channel on one side of the carriageway to the invert of the kerb and channel on the opposite side of the carriageway.
- The absolute maximum grade shall be 20% for a maximum length of 60m. The maximum length of grades less than 20%, but not less than 16%, shall be 60m plus 25m for each 1% the grade is less than 20%. The maximum length of any grade greater than 16% shall be 160m.
- Road reserve widths may require widening to accommodate table drains, provision for services, on-street car parking provision and bus bays.
- Minimum reserve width must be provided, irrespective of minimum verge and carriageway widths specified.
- Where the road is nominated as part of the bikeway network, allowance for bike lanes shall be added to this width (minimum bikeway width is 1.5m, or 2.0m where the design speed is >60km/hr).

For Intersection detailed consideration of crossfall is required to take into account longitudinal grades and the implication for high vehicles turning through an intersection.

## **CARRIAGEWAY WIDTH**

1. Minimum carriageway widths for all streets shall be as nominated in Table D1.1.
2. The carriageway width must allow vehicles to proceed safely at the operating speed intended for that level of road in the network and with only minor delays in the peak period. This must take into consideration the restrictions caused by parked vehicles where it is intended or likely that this will occur on the carriageway. Vehicles include trucks, emergency vehicles and, on some roads, buses.
3. The safety of pedestrians and cyclists where it is intended they use the carriageway must also be assured by providing sufficient width and visibility.
4. The carriageway width should also provide for unobstructed access to individual allotments. Motorists should be able to comfortably enter or reverse from an allotment in a single movement, taking into consideration the possibility of a vehicle being parked on the carriageway opposite the driveway.
5. The design of the carriageway should discourage motorists from travelling above the intended speed by reflecting the functions of the road in the network. In particular, the width and horizontal and vertical alignment should not be conducive to excessive speeds.
6. Appropriate road reserve width should be provided to enable the safe location, construction and maintenance of required paths and public utility services (above or below ground) and to accommodate the desired level of streetscape.
7. Where a "split level" road is proposed, a stable form of retaining structure such as reinforced concrete, crib block, gabion or masonry walling (or other approved alternative) is required between upper and lower road levels. Carriageway widths are to be exclusive of the plan area of the retaining structure. Excessive earth batters will not be permitted.
8. Traffic islands shall be designed in accordance with the current Department of Transport and Main Roads or AUSTRROADS Design Manuals.

## **VERGES**

1. Minimum verge widths for all streets shall be as nominated in Table D1.1.
2. A suitable design of the verge will depend on utility services, access to allotments, pedestrian usage, tree preservation and stormwater drainage.
3. All verges shall fall from the frontage property boundary to the adjacent kerb and channel with acceptable crossfalls of between 3% - 5%. In the case where the allotment falls away from the road reserve (i.e. the allotment is lower than the level of the road), the verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.
4. The maximum slope permissible within a road verge is 1 in 4.
5. The verge when considered in conjunction with the horizontal alignment and permitted fence and property frontage treatments should provide appropriate sight distances, taking into

account expected speeds and pedestrian and cyclist movements.

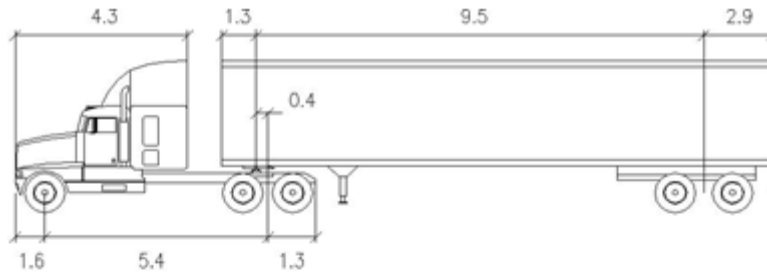
6. Utilities service locations shall be in accordance with the relevant Authorities requirements.
7. Verges shall be covered full width with topsoil to a depth of not less than 40mm and shall be lightly compacted and grassed in accordance with Council's minimum standards and Specifications.

## **INTERSECTIONS**

1. All new intersections of Access Places, Access Streets and Collector Streets, shall be three way intersections designed and located in accordance with Complete Streets.
2. A roundabout shall be used in the design of four way intersections.
3. Intersections of Trunk Collector, Industrial, and Sub Arterial roads shall be designed in accordance with AUSTRROADS Design Manuals and shall allow for potential improvement to incorporate other traffic control methods e.g. Traffic signals.
4. Intersections with State controlled roads shall be designed and constructed in accordance with the requirements of the Department of Transport and Main Roads.
5. The design of intersections or junctions should allow all movements to occur safely without undue delay. Projected traffic volumes shall be used in designing all intersections or junctions on trunk collector streets or higher order roads.
6. Truncations shall be provided to real property boundaries in order to maintain minimum verge widths and adequate sight distances taking into account potential for construction of solid fencing on the property boundaries.
7. The turning radii at intersections measured at the kerb invert shall be 9.0m minimum, and accommodate the intended movements without allowing desired speeds to be exceeded.
8. All vehicle turning movements are accommodated utilising AUSTRROADS Design Vehicles and Turning Templates, as follows:
  - For turning movements involving trunk collector streets or collector streets, the "design semi- trailer" with turning path radius 15.0 m;
  - For turning movements involving access streets but not involving collector streets, the "design single unit truck/bus" with turning path radius 13.0 m;
  - For turning movements on access places but not involving, collector streets or access streets the garbage collection vehicle with turning path radius 12.0 m;
  - For turning movements at the head of cul-de-sac streets sufficient area is provided for the "design single unit truck" to make a three-point turn and
  - Road furniture shall be located to allow for clear manoeuvring of the design semi-trailer.
9. Intersection channelisation is to be provided and designed in accordance with the current Department of Transport and Main Roads or AUSTRROADS Design Manuals.
10. All channelisation shall be designed to accommodate a design vehicle providing a clearance of not less than 0.6 m between the wheel track and the kerbs at all points, unless specified otherwise by Council.
11. Traffic islands or medians of less than 2m width to be hard surfaced in concrete with a patterned broomed finish incorporating a coloured pigment in accordance with Council's

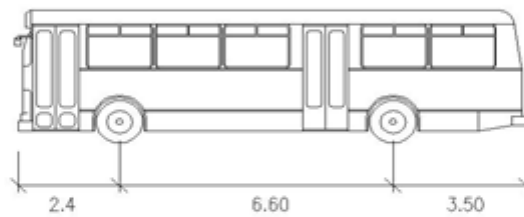
requirements. This colour should generally be terracotta unless otherwise approved by Council.

12. Traffic islands, which are to be grassed or landscaped, shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.
13. On Trunk Collectors, Sub-Arterial and Arterial roads, median breaks will only be permitted at approved intersections.
14. Pavement markings associated with channelisation and signs shall be provided in accordance with the Department of Transport and Main Roads - Manual of Uniform Traffic Control Devices.



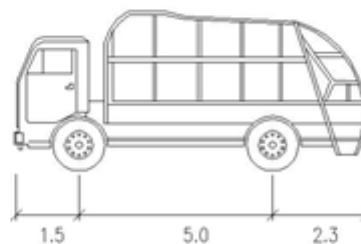
Tractor Width	: 2.50	Trailer Width	: 2.50
Tractor Track	: 2.50	Trailer Track	: 2.50
Turning Radius (Outside)	: 15.00		

### Semi-Trailer



Width	: 2.50
Track	: 2.50
Turning Radius (Outside)	: 13.00

### Single Unit Truck / Bus



Width	: 2.50
Track	: 2.50
Turning Radius (Outside)	: 12.00

### Garbage Truck

**Figure D1.3 Standard Vehicles**



## **ROUNDBABOUTS**

1. Design of roundabouts will generally be in accordance with current Department of Transport and Main Roads Design Manuals and AUSTRROADS Guide to Road Design.
2. Roundabout shall only be used at intersection of Collector Streets and Access Streets or higher order roads only. All roundabouts shall have a minimum inscribed circle diameter of 30.0m.
3. Centre islands which are to be grassed or landscaped shall be provided with a water service conduit and a perimeter subsoil drainage line connected to the underground drainage system or an open drainage channel.
4. Landscaping to centre islands to be in accordance with Council minimum standards and Specifications.
5. Roundabouts shall include provision for on road cycle lanes unless alternate cycle paths are provided.

## **CUL-DE-SAC TURNING AREAS**

1. The turning areas at the ends of the cul-de-sac in streets is to be designed in accordance with Complete Streets, excepting as follows:
  - Three-point turns (T-Heads) will not be permitted without the prior consent of Council. Council may review site specific alternatives where topography and site constraints exist.
  - Where a full turning circle is not provided to the minimum radius below, provision for turning within kerbs for Council's design garbage truck must be demonstrated.
2. Where a full turning circle is provided the minimum kerb radii shall be:
  - Approach and departure curves 15 m
  - The turning circle 10 m
3. Turning areas at the ends of cul-de-sac in industrial developments shall be full turning circles based on criteria for the specific application, with the following minimum kerb radii:
  - Approach and departure curves 30 m
  - The turning circle 15 m
4. All turning heads shall have adequate provision for on-street parking at cul-de-sacs in accordance with Complete Streets. Provision of parking areas within the verge must not compromise the future connection of services to the allotments.

## **LOCAL AREA TRAFFIC MANAGEMENT**

1. The road network should be designed to manage the movement and speed of traffic in local areas. In this regard any traffic management devices such as thresholds, slow points, speed humps, chicanes and splitter islands should be designed in accordance with the requirements of the AUSTRROADS Guide to Road Design and are to be approved by Council.
2. Devices other than at intersections should be located to be generally consistent with streetscape requirements, existing street lighting, drainage pits, driveways, and services may decide the exact location of devices.
3. Emergency vehicles must be able to reach all residences and properties.

4. Where bus routes are involved, buses should be able to pass without mounting kerbs and with minimised discomfort to passengers.
5. Traffic management devices and associated road furniture must not prevent the passage of larger vehicles (i.e. semi-trailers) however their principle function is not to be compromised.
6. In newly developing areas where street systems are being developed in line with LATM principles, building construction traffic must be catered for.
7. Maximum vehicle speeds can only be reduced by deviation of the travelled path. Pavement narrowings have only minor effects on average speeds, and usually little or no effect on maximum speeds.
8. Speed reduction can be achieved using devices, which shift vehicle paths laterally (slow points, roundabouts, corners). The use of vertical devices (i.e. humps, platform intersections, platform pedestrian/school/bicycle crossings) is not desirable and shall only be used where specifically approved by Council.
9. Speed reduction can be helped by creating a visual environment conducive to lower speeds. This can be achieved by 'segmenting' streets into relatively short lengths (less than 200-300m), using appropriate devices, streetscapes, or street alignment to create short sight lines.
10. Adequate critical sight distances should be provided such that either party in a potential conflict situation may take evasive action. Sight distances should relate to likely operating speeds.
11. Sight distances to be considered include those of and for pedestrians, cyclists and property accesses, as well as for drivers.
12. Night time visibility of street features and LATM devices must be adequate and in accordance with the MUTCD.
13. Many devices will be designed for their normal use by cars, but with provision (such as mountable kerbs) for larger vehicles. Some typical dimensions include:
  - Pavement narrowing:
  - Single lane 3.5m between kerbs;
  - 3.75m between obstructions; and
  - Two lane 5.50m minimum between kerbs;
  - Bicycle lanes (including adjacent to pavement narrowings) - 1.5m minimum;
  - Plateau or platform areas:
  - 75mm to 150 mm height maximum, with 1 in 15 ramp slope;
  - Dimensions of mountable areas required for the passage of large vehicles to be determined by appropriate turning templates.

## **BUS STOPS**

1. Bus stops should be provided on all bus routes so no more than 10 per cent of residents should have to walk in excess of 500 metres to catch a bus. Normally roads above the access street in the hierarchy are designed as bus routes. Table D1.2 details minimum criteria for bus stops.
2. Unless otherwise approved, bus stops shall be constructed in accordance with *AUSTROADS Guide to Road Design, MUTCD and Disability Standards for Accessible Public Transport*.
3. Tactile Ground Surface Indicators (TGSI) are to be installed at all bus stops and shelters in accordance with *AS/NZS 1428.4:2009*, .

**Table D1.2 Bus Stop Criteria**

Road	Stops (Spacing)	Description
Collector Streets	400 metre <sup>1</sup>	Single Bay and shelter <sup>2</sup>
Trunk Collector or higher order Road	400 metre	Single Bay and Shelter <sup>2</sup>

Notes:

1. Loop roads with single entry / exits only require stops and bays on one side of the road.
2. Shelters are subject to Council's requirements.

### **ACCESS TO ALLOTMENTS**

1. Criteria for acceptable access to allotments are to be in accordance with Standard Drawings R- 0050, R-0051, R-0053 and R-0056.
2. Criteria for acceptable access to steep allotments are to be in accordance with Design Manual D2.
3. All rear access (Hatchet or Battleaxe) allotments or allotments accessed via an easement, shall be provided with a reinforced concrete driveway (or other surface as approved by Council in rural areas only) a minimum width of 3.0m, extending the full length of the access leg of the allotment. The driveways shall commence at the adjacent kerb and channel with a standard kerb crossover or at the existing edge of pavement. Conduits for internal allotment services are to be provided adjacent to the concrete driveway for the full length of the driveway unless otherwise approved.

### **PARKING PROVISIONS**

1. Parking provisions in accordance with the relevant sections of Complete Streets shall be accorded with on all roads, except that for Major Collector Street with a traffic generation of 3000 vpd - 5999 vpd.
2. Streets which cannot comply with the on-street parking provisions of Complete Streets, due to reduced allotment frontage widths or carriageway widths, shall make provision for indented or verge parking bays at a minimum frequency of 1 parking bay per 2 allotments. Particular attention should be made to providing adequate provision for on-street parking at cul-de-sacs, turning heads and elbow bends.
3. Verge widths are to be maintained alongside indented or verge parking areas. Where necessary, property boundaries shall be adjusted to meet this requirement.

### **PATHWAYS**

1. Unless otherwise approved, pathways will be constructed taking into consideration the Disability Discrimination Act and Disability Standards for Accessible Public Transport.
2. Where a pathways link is located between allotments, the minimum width of land dedicated to Council shall be 5.0m. Concrete paving is to be for the full width of the pathway link and at least 2.5m wide and extend to the adjacent kerb and channel together with a kerb ramp. Vehicular access is to be restricted at the ends of pathways through the installation of bollards at the property line in accordance with the Councils requirements.
3. Maximum cross fall on all access pathways 2.5%.

4. Pathways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.
5. The pathway shall extend to the property boundary remote from the roadway where the path is not connecting two street frontages.
6. Bends shall be provided with a minimum internal radius of 6m.
7. All pathways shall have a non-slip surface, generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods shall require Council approval).
8. Where a pathway link is used for stormwater drainage overland flow relief it shall have a one way crossfall and be constructed in full width concrete with a layback kerb and channel or approved equivalent along one edge to contain the required flow within the concrete.
9. Pathways are not to be aligned with stormwater pits where a stormwater pit is required to be located at the end of a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards.
10. The requirements for pathways to be constructed longitudinally along roads shall be in accordance with Table D1.3.

**Table D1.3 Pathways along Roads**

Road Classification	Pathway Requirements <sup>2</sup>
Access Place	Nil (Kerb ramps to intersections only) <sup>1</sup>
Access Street	1.5m wide Pathway on one side of reserve <sup>3</sup>
Collector Streets	2.0m wide Pathway on one side of reserve <sup>3</sup>
Sub Arterial / Arterial	2.5m wide Pathway on both sides of reserve
Industrial	1.5m wide Pathway on each side of reserve

11. All pathways shall have appropriate immunity against cross drainage.
12. The maximum gradient shall be 16 per cent with a maximum crossfall of 2.5 per cent. Where the pathway is parallel with a road with a grade greater than 16 per cent footpath gradient shall match that of the road.
13. The finished surface level of concrete work shall be not more than 20mm above the finished surface level of adjoining ground and shall finish flush with adjoining hard surfaces.

### **BIKEWAYS**

1. The minimum width of land dedicated to Council for a bikeway shall be 5.0 metres with a minimum 2.5 metre wide concrete paving in accordance with *Cycling Aspects of AUSTRROADS Guides and MUTCD - Part 9, Bicycle Facilities*.
2. Bikeways constructed using alternate material (e.g. Asphalt, Paving blocks) are to be approved by Council.
3. Bikeways located in parks shall be constructed above the flow of a storm of 5 year ARI, unless approved otherwise by Council.
4. Where bikeways connect to or crosses over an Access Street or higher order road, a slow point shall be installed as approved by Council.
5. All bikeways shall have a non-slip surface. Generally, this can be achieved by applying a stiff broom to the wet surface. (Alternate methods require Council approval).

### **KERB AND CHANNEL**

1. Concrete kerb and channel, and layback kerb and tray shall be provided on both sides of all roads except as otherwise provided for in Complete Streets.
2. Standard kerbs in accordance with Standard Drawing R-0080 shall be used in the following cases:
  - Residential Streets – Layback Kerb and Layback Kerb and Channel;
  - Medians – Maintenance Strip Kerb;
  - Grassed and Landscaped Traffic Islands – Maintenance Strip Kerb;
  - Concrete Traffic Islands - Semi-mountable Kerb; and
  - Roundabouts (centre island only), - Maintenance Strip Kerb.
3. Where proposed construction adjoins existing kerb and channel the Designer shall confirm with Council whether the existing profile shall be extended or whether the new construction will be tapered smoothly to the existing kerb and channel.

The grading of kerb and channel will normally conform to the road centreline grading.

However, at locations where the kerb and channel grading diverts from the centreline grade, such as at intersections or on superelevated curves the following shall apply.

4. Minimum channel grade should be 0.5 percent unless approved other approved by Council.
5. Every effort should be made to provide vertical curves as long as possible, for improved appearance.
6. At all changes in horizontal alignment, kerbs and kerb and channel shall be constructed with horizontal curves.
7. To improve appearance where small deflections occur (e.g. on tapers), horizontal curves shall be as long as possible. Refer also to current Department of Main Roads or AUSTRROADS Design Manuals.
8. Kerb ramps shall be provided at all tangent points of intersection kerb returns, at park entrances and at any other locations where required by Council.
9. Access crossovers for Industrial, Commercial and Multi Residential site shall be installed in accordance with Standard Drawings R-0050, R-0051, R-0053 and R-0056.

### **SIGNS AND ROAD MARKINGS**

1. Permanent signing and road marking shall be in accordance with the current edition of the MUTCD. Where there is a choice of line marking colour, then only white or yellow paint is to be used.
2. Temporary or construction signing and road marking shall be in accordance with current edition of the MUTCD.
3. The relevant sign reference number from the MUTCD shall be included on the construction drawings.
4. All signs and pavement markings shall be adequately dimensioned to ensure accurate setting out.
5. Signs located in grassed areas shall have a surrounding 500mm dia x 100mm thick concrete mowing strip.
6. Signs located in concrete islands or medians shall be installed with the "V Loc" socket system and fitted with anti-theft bolts.
7. The bottom of all un-sleeved posts shall be flattened prior to placing in concrete footing.
8. Vandal proof bolts and fittings shall be used on all permanent signing.
9. Street Name signs shall be installed in accordance with Standard Drawing R-0130.

### **ROAD EDGE GUIDE POSTS AND GUARDRAILS**

1. Road edge guide posts shall be provided at all locations where concrete kerb and channel is not constructed e.g. half road construction, tapers, ends of roads etc.
2. Guide posts shall conform to and be installed in accordance with Department of Main Roads 'Manual of Uniform Traffic Control Devices'.

3. Guardrails shall be installed in accordance with the Department of Main Roads Road Planning and Design Manual.

### **PEDESTRIAN FOOT BRIDGES**

1. Pedestrian foot bridges are to be provided where necessary and are to be constructed from concrete, steel or timber (all steelwork is to be hot dipped galvanised) and shall be provided with handrails / fences for pedestrian safety.
2. The clear width of all pedestrian bridges shall match the width of the approaching pathway / bikeway unless otherwise approved by Council and shall have squeeze points to control access.
3. Designers shall consult with Council at concept stage to confirm location, widths, flood immunity etc.

### **TRAMLINES CROSSINGS**

1. Road crossings are to be constructed in accordance with Department of Transport and Main Roads Standard Drawing 881.
2. Flashing lights and crossing warning signs to the Department of Transport and Main Roads standards are to be erected on all new road crossings or crossings where the traffic density will increase because of the development.
3. Prior to commissioning of flashing lights and warning lights appropriate temporary controls including warning signage shall be installed and maintained at all road crossings.

### **FENCING**

1. All fencing located inside the road reserve shall have a minimum height of 1.2m, and shall be of a type that discourages climbing and constructed in accordance with Standard Drawing G-0045.
2. A continuous chain wire mesh fence shall be constructed along all interfaces between the development and the tramway reserve and shall be constructed in accordance with Standard Drawing G-0045.

### **RURAL DESIGN CRITERIA**

#### **GENERAL**

1. In addition to the foregoing sections this section specifically applies to all those sites identified as being suited to rural and rural residential subdivisions inclusive of rural home sites and hobby farms types of developments. For roads within the Rural Living Areas reference should be made to Table D1.1. Table D1.4 details specific road demands for rural roads.

**Table D1.4 Rural Road Elements**

	<b>AustRoads Classification</b>				
	Class 5	Class 5	Class 4	Class 3	Class 1 & 2
	<b>WRC Classification</b>				
	Rural Access Place	Rural Access St	Rural Collector	Rural Sub Arterial	Rural Arterial
Traffic Volumes or Road Class (vpd)	<100	100-199	200-999	1000-7999	>8000
Road Reserve (flat terrain < or = 5%)	20m	20m	20m	25m	25m
Road Reserve (Undulating/Hilly>5%)	25m	25m	25m	30m	30m
Formation	8m	8m	8m	10m	12m
Pavement Width	6.0m	6.0m	6.5m	8m	10m
Seal Width	Optional	4m (min)	6.5m	8m	10m
Shoulders <sup>2</sup>	1.2m	1.2m	0.75m	0.5m seal	1.5m seal
Speed kph (max)	80	80	100	100	100

Notes:

1. In undulating terrain this width shall be increased to enable services to be constructed on accessible flatter land on top and below batters.
2. Where the road is a designated on-road bicycle route (signposted and pavement marked) the shoulder provision needs to conform to the AUSTROADS.
2. Design speed is to be generally used as the basic parameter of design standards and the determination of the minimum design value for other elements in rural subdivisions is to be based on the concept of a "speed environment" as outlined in AUSTROADS Guide to Road Design.
3. Where appropriate superelevation, widening and centreline shift and their associated transitions are to comply with AUSTROADS Guidelines.
4. Where the table drain will have a flow velocity greater than 2.5m/s or is likely to scour, a stone pitched or suitably lined dish drain is to be constructed along the invert. (Generally table drains steeper than 6 per cent will require scour protection).

### **HORIZONTAL AND VERTICAL ALIGNMENT**

1. Horizontal and vertical curves are to be designed generally to the requirements of AUSTROADS Guide to Road Design. These requirements are essential to satisfy the safety and performance of proper road design. Roads having both horizontal and vertical curvature should be designed to conform to the terrain to achieve desirable aesthetic quality and being in harmony with the landform.

### **INTERSECTIONS**

1. Intersections should generally be designed in accordance with the publication AUSTROADS Guide to Road Design.
2. Adequate sight distance should be provided at intersections both horizontally and vertically. Each intersection location shall be examined for conformance with the criteria for Approach Sight Distance (ASD), Entering Sight Distance (ESD) and Safe Intersection Sight Distance



(SISD).

### **ACCESS TO ALLOTMENTS**

1. All accesses onto sealed roads are to be sealed as per R-0056. Where the access falls from the property towards the sealed road the whole access shall be sealed from the edge of the sealed bitumen to the property boundary. Accesses off gravel roads do not have to be sealed.
2. Drainage under accesses shall be designed and constructed to a size and length as determined by Council. Minimum pipe size – 375mm dia, Minimum length – 4.8m long.
3. All pipe and box culverts under accesses shall have headwalls to protect and retain gravel fill.
4. Precast vertical headwalls with wings are preferred, but insitu cast concrete or grouted stone may be used subject to Council Approval.
5. Precast sloping headwalls to be used on all access where the road design speed is 100km/h or where the culvert is within 4.5m of the traffic lane and the road speed is 80 km/h.
6. Accesses are to be designed to ensure that stormwater runoff from the road and the access discharge to the table drain.
7. Allotment Accesses shall be constructed in accordance with Standard Drawing R-0056 unless otherwise approved by Council.

# OPERATIONAL WORKS DESIGN GUIDELINES

## D2 – SITE REGRADING

### GENERAL

#### D2.01 SCOPE

1. This section sets out the minimum standards specifically developed for site regrading involved in land development and subdivision.
2. The designer needs to make reference to the associated design manual related to, D1 Road Geometry, D4 Stormwater Drainage and D5 Stormwater Quality Management.

#### D2.02 OBJECTIVES

This Manual aims to assist the Designer in achieving:

- Efficient and economical design;
- Enhancement of the environmental character and maintenance of natural features of the site; and
- Minimal impact on adjoining properties and developments.

#### D2.03 REFERENCE DOCUMENTS

Council Guidelines & Specifications

D1	Road Geometry,
D4	Stormwater Drainage
D5	Stormwater Quality Management.
S1	Earthworks
S8	Landscaping
Standard Drawings (Various)	

## Australian Standards

- AS 3798 Guidelines on Earthworks for Commercial and Residential Development
- AS 4373 Pruning of Amenity Trees
- AS 4970 Protection of Trees on Development Sites

Note: Where Acts or reference documents are updated, reference should be made to the current version.

## QLD State Authorities

- State Planning Policy 1/03 –Mitigating the adverse impact of Flood, Bushfire and Landslide
- State Planning Policy 2/02 – Planning and Managing Development involving Acid Sulfate Soils

### **D2.04 SITE REGRADING CONCEPT**

1. Areas of a site proposed for building or recreational purposes may not be suitable in their natural state for their intended function without improvement works, the designer shall review the natural surface contours and where necessary shall design finished surface levels that ensure the land is suitably prepared.
2. Excessive site regrading should be avoided, wherever possible site layouts should be developed to position roads and drainage networks to take advantage of natural surface grades. Site layouts that minimise the disturbance of the land will require less erosion and sediment control measures during construction phase and reduce the risk of environmental harm.
3. The designer shall consider the implications of site regrading in relation to the existing natural environment. Generally, site regrading shall be minimised in heavily treed areas.
4. The design of site regrading areas preferably should aim to achieve a balanced cut to fill to minimising haulage of imported fill or spoil to and from the development site.
5. Where practical, areas should be regraded to minimise the necessity for underground drainage systems with surface inlet pits, and allow surface water to flow naturally to roads or drainage reserves without excessive concentration.

## **D2.05 CLEARING**

1. Unless otherwise approved by Council any pruning and/or protection of trees shall be carried out in accordance with AS 4970 and AS 4373.
2. Clearing must be kept to a minimum. Trees and vegetation of significance shall be identified prior to design in order that the amount of disturbance may be minimised through appropriate design.
3. Reference should be made to the Vegetation Management Act and any relevant Local Laws and Policies prior to any tree clearing.
4. Generally, in areas with significant trees and vegetation:
  - Roadways clearing shall be limited to the limits of approved earthworks plus a sufficient lateral clearance to ensure that the works are not interfered by the trees or vegetation; and
  - Allotment clearing shall be limited to the minimum areas required to safely construct services such as sewers and catchment drains, and the limits of approved earthworks to allotments plus a sufficient lateral clearance to ensure the works are not interfered by the trees or vegetation.
5. No trees shall be damaged or removed from areas to be dedicated under the control of Council without prior written approval of Council.
6. Trees on existing roads shall not be damaged or removed without the approval of Council. All trees on existing roads affected by the works shall be shown and details given of proposed protection or relocation methods.
7. Prior to any clearing, all existing and future parkland shall be delineated to ensure its protection from unauthorised clearing.

## **D2.06 GENERAL STANDARD OF LOT PREPARATION**

1. Special requirements will apply where necessary but generally lots are to be cleared of low scrub, fallen timber, debris, stumps, large rocks and any trees which in the opinion of Council are approaching the end of their functional life or are dangerous or will be hazardous to normal use of the development. Prior consultation with Council is necessary. Such requirements shall be shown on the design plan.
2. Class 1, 2 and 3 Pest Plants are to be removed and disposed of in accordance with Land, pest and Stock Route Management Act and Regulation.
3. All timber and other materials cleared from lots shall be removed from the site. All roots, loose timber, etc which may contribute to drain blockage shall be removed.
4. All trees nominated by Council in its conditions of approval shall be preserved by approved means to prevent destruction normally caused by placement of conventional filling or other action within the tree drip zone. Details of the proposed protection measures shall be detailed on the design plans.

## **D2.07 FILLING**

1. If any land is to be filled all practices must ensure compliance with AS 3798 "*Guidelines on Earthworks for Commercial and Residential Developments*" and State Planning Policy 2/02.
2. Fill comprising industrial wastes or by-products is not permitted.
3. No person shall be permitted to fill any land where, in the opinion of Council, such filling will detrimentally affect the area available in any natural or artificial watercourse for either present or estimated future flood flows, or will detrimentally reduce the volume within a flood plain available for the storage of flood waters.
4. No person shall be permitted to fill any land if such filling may detrimentally affect natural drainage of any of the surrounding land.
5. All new allotments are to be flood free. Immunity levels shall be in accordance with relevant Council Policies and Planning Scheme requirements.
6. Every allotment shall be filled and drained to achieve Council's performance criteria, such that an area is available above the adopted flood line, or stipulated flood level, in accordance with the following documents:
  - Queensland Urban Drainage Manual (QUDM);
  - Council's Local Laws & Policies; and
  - Council's Flooding and Drainage Policies.

## **D2.08 COMPACTION**

1. Compaction of earthworks shall be in accordance with AS 3798 "*Guidelines on Earthworks for Commercial and Residential Developments*"

## **D2.09 CARTAGE OF SOIL**

1. The designer shall nominate in their design submission whether excess spoil is generated by the proposed earthworks and in these cases shall nominate the proposed spoil dump site and external haul route which shall be subject to the written approval of the Council.
2. In cases where the spoil is generated from works within existing declared roads, Council may nominate that the spoil be placed on Council controlled land within 5 km of the project site.
- 3.
4. Where rock is disposed of on site, the position of the rock is to be approved by Council and shown on the 'as constructed' drawings.
5. Unless otherwise approved by Council all topsoil shall be retained on the development site and utilised effectively to encourage appropriate revegetation.

## **D2.10 ALLOTMENT EARTHWORKS**

1. Allotments shall be provided with a minimum finished surface gradient of 0.5%, including catch drains, to facilitate drainage.

## **D2.11 BATTER TREATMENTS**

1. Cut and fill batters shall not straddle allotment boundaries unless otherwise approved by the Council.
2. Cut batters shall not extend into existing or proposed parks or bushland reserves unless specifically approved by Council. Fill batters may extend into proposed parks or bushland reserves with a maximum slope of 1 in 10 unless otherwise approved by Council.
3. In general, cut and fill batters shall be limited to a maximum slope of 1 in 4 (1 in 10 in parks), such that stabilisation is achieved by topsoiling and grassing which can be maintained by conventional tractor slasher.
4. All embankments and cuttings must be outside the road reserve. The toe of any cut batter is to be 300mm inside the property boundary; the top of any fill batter is to be 300mm inside the property boundary.
5. In environmentally sensitive areas or steep terrain, consideration may be given to relaxation of clause 4 subject to council approval.
6. Where subdivision roads are constructed in fill and the batter slope exceeds 1 in 2, Council may require an easement over the batter and to a nominated distance past the toe of the batter.

7. Batters in road reserves but outside the verge steeper than 1 in 4 may be retained by a retaining structure subject to approval by the Council.
8. On private land, batters should preferably be 1 in 4 or flatter for batters fronting the road reserve and 1 in 2 elsewhere. Batters steeper than 1 in 2 may be approved subject to the submission of an acceptable landscape treatment.
9. All batters steeper than 1 in 2 and higher than 1.5m shall require certification as to stability by a Registered Professional Geotechnical Engineer (RPEQ).

## D2.12 ALLOTMENT ACCESSES

1. The slope of the natural surface can result in difficulty in providing vehicular access to allotments fronting the road. Driveway grades within the property should be limited for safety and amenity. Refer Table 2.1 for Maximum Driveway Grades

**Table D2.1 Maximum Driveway Grades**

Location	Desirable	Maximum
Residential	16.6% (1 in 6)	20% (1 in 5) for 6m in every 12m
Industrial	10% (1 in 10)	16.6% (1 in 6)
Maximum change in driveway Grades – All areas <sup>1</sup>	8%	10%

Note:

Change of grade is expressed algebraically as the change in gradient between the two roadway grades.

2. Steep allotment access and drainage shall be designed and constructed to include the following (unless otherwise approved by Council):
  - The driveway shall be a minimum of three (3) metre wide concrete slab, with barrier kerb and channel provided on one side for vehicular safety and drainage purposes;
  - The driveway shall be constructed in such a manner as to ensure that the crossfall of the driveway be one-way and directed into the hill, for vehicle safety and drainage purposes;
  - A turn around shall be provided adjacent to each of the proposed dwellings sufficient to allow turning movements for an emergency services vehicle;
  - The driveway shall be located to minimise the visual impact, and minimise the amount of earthworks required; and
  - Both sides of the areas adjacent to the driveway shall be re-vegetated to minimise visual impact. This information is to be included in the application for engineering approval.

## **D2.13 RETAINING WALLS**

1. Council will allow retaining walls to be constructed up to a maximum height of 900mm without structural certification provided they are constructed fully in accordance with the technical literature provided by the manufacturer (ie. Koppers logs, Keystone or similar).
2. All retaining walls greater than 900mm high must be designed, detailed and certified by a structural RPEQ. Structural certification and geotechnical assessment if required shall be submitted to Council with design submission.
3. Retaining walls shall be designed so as to consider the location of any adjacent services (e.g. sewer). The minimum horizontal clearance between any adjacent services and the outermost edge of the retaining wall structure shall 800mm and outside the zone of influence whichever is the greater. Retaining walls must be designed to ensure that no imposed loads are applied directly to service infrastructure. Retaining walls adjacent to services shall be subject to Council approval.

## **D2.14 EARTHWORKS ON HILLSLOPES**

1. Where earthworks are proposed in any development where the slope of the land exceeds 15% (unless otherwise agreed), Council requires a report from a qualified Geotechnical RPEQ addressing slope stability and construction issues.
2. The designer shall incorporate the specific measures and recommendation contained within the geotechnical report to control soil and rock movements into the design of roads and house bench pads.
3. Where batters are 2.0 meters or higher a risk assessment is to be undertaken by the Engineer to determine if fencing is required to be undertaken in accordance with the relevant Australian Standard.

## **D2.15 EARTHWORKS TO PARKS**

1. All earthworks within proposed or existing parkland shall:
  - Be adequately drained;
  - Have no batters exceeding 1 in 10; and
  - Have acceptable landscaping in accordance with Council's minimum standards.

## **D2.16 FOOTPATHS / VERGE CROSSFALL**

1. All footpaths / verges shall fall from the frontage property boundary to the adjacent kerb and channel with acceptable crossfalls of between 2.5% - 5%. In the case where the allotment falls away from the road reserve (ie. the allotment is lower than the level of the road), the footpath / verge shall have a minimum fall from the frontage property boundary to the adjacent kerb of 3%.



## **D2.17 TOPSOILING AND GRASSING**

1. Topsoil is defined as surface soils high in organic matter and contaminated by residual grass seeds and grass roots.
2. The area under paved areas, footpaths, batters and areas of fill shall be stripped of topsoil and any other organic matter.
3. On the completion of the works, topsoil shall be re-spread to allotments, batters and footpaths and fill areas to a depth of 75mm with an absolute minimum of 40mm.
4. The footpath areas, batters and all disturbed areas including allotments are to be trimmed and drill seeded with an approved grass species.
5. All cut and fill batters shall be hydro-mulched or approved equivalent.

## **D2.18 INSPECTION REQUIREMENTS**

1. Inspections and testing requirements for all allotments and roads shall be to Level 1 in accordance with AS 3798 "Guidelines on Earthworks for Commercial and Residential Developments".
2. A higher level of inspection and testing may be required for more significant works as determined by Council.
3. Council may approve a lower level of inspection and testing for minor works and drainage works.

# **OPERATIONAL WORKS DESIGN GUIDELINES**

## **D3 – ROAD PAVEMENTS**

### **GENERAL**

#### **D3.01 SCOPE**

1. This section sets out the minimum standards for the design of the road pavement to meet the required design life, based on the subgrade strength, traffic loading and environmental factors, and including the selection of appropriate materials for select subgrade, subbase, base and wearing surface.
2. The Manual contains procedures for the design of the following forms of road pavement construction:
  - Flexible pavements; and
  - Rigid pavements (ie. concrete pavements).
3. Generally flexible pavements designed in accordance with this manual are preferred for road pavement construction in North Queensland. Council may examine pavement designs for rigid pavements subject to detailed engineering submissions of any such proposals. Council reserves the right to refuse any alternate proposal for pavement design.

#### **D3.02 OBJECTIVES**

1. The objective in the design of the road pavement is to select appropriate pavement and surfacing materials, types, layer thicknesses and configurations to ensure that the pavement performs adequately and requires minimal maintenance under the anticipated traffic loading for the design life adopted.

### D3.03 REFERENCE DOCUMENTS

**Note: Where Acts or reference documents are updated, reference should be made to the current version.**

Department of Transport and Main Roads

- Pavement Design Supplement
- MRTS 30Asphalt Pavements
- Road Planning and Design Manual Chapter 3 Appendix A 1<sup>st</sup> Edition

Australian Asphalt Pavement Association (AAPA)

- National Asphalt Specification-Advisory Notes

AUSTROADS / ARRB Publications

- Guide to Pavement Technology
- Guide to Road Design
- Design of Sprayed Seals
- ARRB-SR35 - Special Report No. 35 - Subsurface Drainage of Road Structures
- APRG 21 - Report No. 21 - A guide to the design of new pavements for light traffic
- Special Report No. 35 Subsurface Drainage of Road Structures
- Guide to Pavement Structural Design
- Technical Report – Pavement Design for Light Traffic – A supplement to Austroads Pavement Design Guide AP-T36/06

Cement and Concrete Association of Australia.

- T51 Concrete Pavement Design for Residential Streets and Paths

Concrete Masonry Association of Australia.

- T44 Concrete Segmental Pavements - Guide to Specifying
- T45 Concrete Segmental Pavements - Design Guide for Residential Access Ways and Roads
- T46 Concrete Segmental Pavements - Detailing Guide

## PAVEMENT DESIGN CRITERIA

### D3.04 DESIGN VARIABLES

1. Regardless of the type of road pavement proposed, the design of the pavement shall involve consideration of the following five input variables:
  - Design Traffic;
  - Subgrade Evaluation;
  - Environment Factors;
  - Pavement and Surfacing Materials; and
  - Construction and Maintenance Considerations.

### D3.05 DESIGN TRAFFIC

1. The design traffic shall be calculated based on the following minimum design lives of pavement:
  - Flexible - 20 years;
  - Rigid (Concrete) - 40 years; and
  - Segmental Block - 25 years.
2. Unless determined otherwise by the Council, the minimum number of design Equivalent Standard Axles (ESA's ie, 80 kN axle load passes) for the various road categories shall be as calculated in accordance with the requirements of the AUSTRODS publications Guide to Pavement Technology and APRG Report 21 - A guide to the design of new pavements for light traffic. For design traffic volumes approaching or exceeding  $5 \times 10^5$  ESA's (Trunk Collector Street), Department of Transport and Main Roads' Pavement Design Manual shall be used.
3. Design traffic shall be calculated for the applicable design life of the pavement, taking into account present and predicted commercial traffic volumes, axle loadings and configurations, commercial traffic growth and street capacity. For new subdivisions, the design traffic shall take account of both the construction traffic associated with the subdivision development, the in-service traffic, proposed and potential public transport routes and connection to adjacent development.
4. For interlocking concrete segmental pavements, the simplification of replacing ESA's with the number of commercial vehicles exceeding 3 tonne gross contained in CMAA – T45 is acceptable up to a design traffic of  $5 \times 10^5$ .
5. The pavement design shall include all traffic data and/or assumptions made in the calculation of the design traffic.
6. In the absence of other traffic data, the traffic values provided in Table D3.1 may be taken as a guide to the minimum design traffic, but shall be subject to variation depending on the circumstances for the particular development.

**Table D3.1 Minimum Traffic Loadings**

Street Type	%CV <sup>1</sup>	%ESA / CV	Minimum ESA's
<b>Urban</b>			
Access Place	3.6	1.0	5 x 10 <sup>4</sup>
Access Street	5	1.0	1 x 10 <sup>5</sup>
Minor Collector Street	7	1.0	5 x 10 <sup>5</sup>
Major Collector Street	10	1.0	1 x 10 <sup>6</sup>
Sub Arterial	10	1.0	3.25 x 10 <sup>6</sup>
<b>Rural</b>			
<250vpd	5	1.0	2.5 x 10 <sup>5</sup>
>250vpd	9	1.0	2.5 x 10 <sup>6</sup>
<b>Industrial</b>	To be determined by specific design data		5 x 10 <sup>5</sup>
<b>Business / Commercial</b>	To be determined by specific design data		5 x 10 <sup>5</sup>

Note:

1. Consider potential for bus routes.

### **D3.06 SUBGRADE EVALUATION**

1. Subgrade evaluation shall be carried out by a NATA registered materials test authority on each different natural sub-grade material evident and shall be by the conduct of soaked 4 day CBR laboratory testing.
2. Design CBR for each subgrade area shall be determined in accordance with the method outlined in
3. AUSTROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.
4. The following factors must be considered in determining the design strength/stiffness of the subgrade:
  - Sequence of earthworks construction;
  - The compaction moisture content and field density specified for construction;
  - Moisture changes during service life;
  - Subgrade variability; and
  - The presence or otherwise of weak layers below the design subgrade level.
5. The subgrade Design CBR adopted for the pavement design must consider the effect of moisture changes in the pavement and subgrade during the service life, and hence consideration must be given to the provision of subsurface drainage in the estimation of equilibrium in-situ CBRs, and hence in the design of the pavement structure.
6. If the insitu subgrade test results in a CBR of 3 or less, the pavement is to be designed with input from RPEQ engineer experienced in the design of road pavements.

### **D3.07 ENVIRONMENT FACTORS**

1. The environmental factors, which significantly affect pavement performance, are moisture and temperature. Both of these factors must be considered at the design stage of the pavement. Reference should be made to AUSTRROADS publications Guide to road Design and Special Report No. 35 Subsurface Drainage of Road Structures.
2. The following factors relating to moisture environment must be considered in determining the design subgrade strength/stiffness and in the choice of pavement and surfacing materials:
  - Rainfall/evaporation pattern;
  - Permeability of wearing surface;
  - Depth of water table;
  - Relative permeability of pavement layers;
  - Whether shoulders are sealed or not;
  - Pavement type (boxed or full width); and
  - Subject to flooding (eg. Causeways and Floodways).
3. The effect of changes in moisture content on the strength/stiffness of the subgrade shall be taken into account by evaluating the design subgrade strength parameters (ie. CBR or modulus) at the highest moisture content likely to occur during the design life, ie the Design Moisture Content. The provision of subsurface drainage may, under certain circumstances, allow a lower Design Moisture Content, and hence generally higher Design CBR.
4. The pavement design shall include all considerations for environmental factors, and any assumptions made that would reduce or increase design subgrade strength, or affect the choice of pavement and surfacing materials.

### **D3.08 MATERIALS TESTING**

1. All materials testing shall be carried out by a NATA registered materials testing authority using the procedures described in the manuals or codes of practice as appropriate to the following authorities:
  - Department of Transport and Main Roads; and
  - Standards Association of Australia.

## PAVEMENT THICKNESS DESIGN

### D3.09 PAVEMENT STRUCTURE – GENERAL

- The minimum pavement provided shall be as detailed in Table D3.2.

**Table D3.2 Minimum Pavement Design Criteria**

Street Type	Minimum Pavement (mm) <sup>1</sup>	Surface Treatment	Minimum Base Course CBR	Minimum Subbase Course CBR
Access Place / Access Street / Residential Street	200	Minimum 30mm AC	30	45
Collector Streets	250	Minimum 30mm AC	30	45
	250	Minimum 30mm AC	30	50
Sub Arterial	300	50mm AC	30	50
Rural & Rural Residential				
<100vpd	150	Gravel	50	
100-999vpd	200	2 Coat Seal	30	45
>1,000vpd	200	2 Coat Seal	30	50
Industrial	250	50mm AC	30	50

Notes:

- Minimum pavement thickness does not include the depth of surfacing.
- All cul-de-sac heads and intersection turnouts in Rural and Rural Residential developments are required to have a 30mm asphalt surface treatment with a single coat seal.

- Notwithstanding subgrade testing and subsequent pavement thickness design, the thickness of subbase and base layers shall not be less than the following:
  - Flexible pavement: Subbase 100mm, Base 100mm
  - Rigid pavement: Subbase 100mm, Base 150mm
- The subbase layer shall extend a minimum of 150mm behind the rear face of any kerbing.
- The base and surfacing shall extend to the face of any kerbing. Where the top surface of the subbase layer is below the level of the underside of the kerbing and/or guttering, the base layer shall also extend a minimum of 150mm behind the rear face of the kerbing. Regardless of pavement design, all kerbing to be constructed on a minimum of 100mm pavement material.
- For un-kerbed roads, the subbase and base layers shall extend at least to the nominated width of shoulder.
- A change of pavement types may be considered for intersection thresholds and traffic control features.

### **D3.10 FLEXIBLE PAVEMENTS**

1. Flexible pavements with a design traffic up to  $5 \times 10^5$  ESA's shall be designed in accordance with AUSTRROADS publications Guide to Pavement Technology and ARRG Report 21 - A guide to the design of new pavements for light traffic.
2. Flexible pavement with a design traffic above  $5 \times 10^5$  ESA's shall be designed in accordance with Department of Transport and Main Roads' Pavement Design Manual.
3. In areas of high water table (within 300mm of subgrade level). Base course should be cement modified (1% by weight)
4. Concrete segmental pavements with design traffic up to  $5 \times 10^5$  and estimated commercial vehicles exceeding 3T gross shall be designed in accordance with CMAA-T45.
5. For design traffic above  $5 \times 10^5$  estimated commercial vehicles exceeding 3T gross the design shall be in accordance with AUSTRROADS Guide to Pavement Technology with the calculation of design traffic in terms of ESA's.

### **D3.11 RIGID PAVEMENTS**

1. Rigid (concrete) pavements, with design traffic up to  $5 \times 10^5$  ESA's shall be designed in accordance with either CCAA -T51 or AUSTRROADS Guide to Pavement Technology.
2. Rigid (concrete) pavements for design traffic above  $5 \times 10^5$  ESA's, the design shall be in accordance with AUSTRROADS Guide to Pavement Technology.

## **SURFACING DESIGN**

### **D3.12 BITUMEN WEARING SURFACE**

1. Except where the pavement is designed for asphaltic concrete or segmental paver surfacing or where a gravel pavement is permitted, the wearing surface shall be a bituminous as follows:
  - Urban Residential, Low Density Residential - Primer, plus 2 coat sprayed bitumen Seal (14mm / 7mm Aggregate)
  - Rural & Rural Residential bitumen Seal (16mm / 10mm Aggregate) - Primer, plus 2 coat sprayed

### **D3.13 SEGMENTAL PAVERS**

1. Segmental pavers shall be concrete segmental pavers 80mm thick, shape Type A, and designed to be paved in a herringbone pattern unless otherwise approved by Council. Concrete segmental pavements are only to be used for pathways and local pavement 'highlight' features (eg. 'threshold' treatments). The use of clay pavers on road wearing surfaces is not permitted.
2. The edges of all paving shall be constrained by either kerbing and/or guttering, or by concrete edge strips.



3. Sand bedding layers are to be provided with adequate drainage.

### **D3.14 ASPHALTIC CONCRETE**

1. All roadworks shall be surfaced with an appropriate thickness of Asphaltic Concrete in accordance with Table D3.2.
2. Council requires the use of dense graded asphalt on all roads.
3. All roads greater than 10% in grade shall have a 10mm primer seal or other Council approved measure applied to the base course prior to the placement of the AC.
4. Asphalt Surfacing
  - Where asphalt surfacing is required to be between 30mm and 50mm, it is considered to function as a wearing surface only;
  - Asphalt 40mm or thicker is required to be a dense graded asphalt (DG14) in accordance with Department of Transport and Main Roads' MRTS 30;
  - Asphalt of 30 – 40 mm thickness must be a dense graded asphalt (AC10) in accordance with the AAPA's National Asphalt Specification; and
  - A light prime is to be applied over the pavement material prior to the asphalt being laid.

### **SUBSURFACE DRAINAGE**

#### **D3.15 SUBSOIL DRAINS**

1. Subsoil or sub-pavement drains shall be provided on both sides of the formation in the following locations, unless the geotechnical report indicates the absence of subsurface moisture at the time of investigation and the likelihood that changes in the subsurface moisture environment will not occur within the design life of the pavement and/or the pavement has been specifically designed to allow for likely variations in subgrade and pavement moisture contents:
  - Cut formations where the depth to finished subgrade level is equal to or greater than 400mm below the natural surface level;
  - Locations of known hillside seepage, high water table or isolated springs;
  - Irrigated, flood-prone or other poorly drained areas;
  - Subgrades, which are highly susceptible to moisture, (ie. commonly displaying high plasticity or low soaked CBRs);
  - Pavement materials, which are susceptible to moisture;
  - Existing pavements displaying signs of distress due to excess subsurface moisture; and
  - At cut to fill transitions.
2. Subsoil drains shall always be installed to all grassed/landscaped central medians and islands, unless otherwise approved by Council.
3. Where only one side of the formation is in cut, and the other side in fill, it may be sufficient to provide subsoil or sub-pavement drains only along the edge of the formation in cut.
4. In some circumstances it may be necessary to note on the engineering design the need for

additional subsoil and sub-pavement drains that may become apparent during the construction process, due to changes in site moisture conditions or to areas of poorer subgrade being uncovered that were not identified in the geotechnical investigation.

5. The requirements for subsoil drains should be assessed and designed by a registered geotechnical engineer or specialist pavement engineer.
6. Subsoil drains shall be constructed in accordance with Standard Drawing R-0140.
7. In kerbed roads, the preferred location for the line of the trench is directly behind the kerb.
8. In un-kerbed roads, subsoil and sub-pavement drains shall be located within the shoulder, preferably at the edge of the pavement layers.
9. At the time of sub-soil drainage installation tree root barriers are to be installed in the appropriate locations and the kerb suitably marked (temporarily) to indicate where the tree is to be planted
10. The minimum desirable longitudinal design grade shall be 1.0 - 1.5%. (Absolute minimum grade of 0.5%).
11. Trench widths shall be a minimum of 300mm, with a minimum depth below finished subgrade level of 300mm in earth and 200mm in rock. All subsoil drain trenches shall be wrapped in an appropriate geotextile fabric.
12. Outlets shall be spaced at maximum intervals of 150 metres. Where possible, subsoil and sub-pavement drainage pipes shall discharge into gully pits or other stormwater drainage structures. Where not possible, outlets shall be provided through fill batters.
13. Flushing Points are to be provided at the commencement of each run of drain, and at intervals not exceeding 50 metres. Flushing points shall generally be located directly at the rear of kerb or at the edge of shoulder, as applicable.
14. Flushing Points and Outlets shall be constructed in accordance with Standard Drawing R-0142.

### **D3.16 DRAINAGE MAT (BLANKETS)**

1. Drainage mats are designed where there is a need to ensure continuity of a sheet flow of water under fills, to intercept and control seepage water and springs in the floors of cuttings, to intercept water which would otherwise enter pavements by capillary action or for protection of vegetation or habitat downstream of the road reserve where a fill would otherwise cut the flow of water.
2. In embankments drainage mats are constructed after the site has been cleared and grubbed and before commencement of embankment construction.
3. In excavations drainage mats are constructed after completion of the subgrade construction and before construction of the pavement.
4. The minimum thickness of compacted filter material shall be 300mm plus an allowance for the expected consolidation or 500mm if the amount of consolidation of embankment foundation is not known.
5. The requirements for and design of drainage mats shall be undertaken by a geotechnical

engineer experienced in the design of road pavements.

6. All drainage mats shall be wrapped in appropriate geotextile.

## **OPERATIONAL WORKS DESIGN GUIDELINES**

### **D4 – STORMWATER DRAINAGE**

#### **GENERAL**

##### **D4.01 SCOPE**

1. This section sets out the minimum standards for the design of stormwater drainage systems for urban and rural areas.
2. The designer needs to make reference to the associated design manuals related to D1 Road Geometry and D5 Stormwater Quality Management.
3. The Queensland Urban Drainage Manual (QUDM) shall be the basis for the design of stormwater drainage, except as amended by these manuals.

##### **D4.02 OBJECTIVES**

1. The objectives of stormwater drainage design are as follows:
  - To collect and convey stormwater from a catchment to its receiving waters with minimal nuisance, danger or damage and at a development and environmental cost which is acceptable to the community as a whole;
  - Limit flooding of public and private property, both within the catchment and downstream, to acceptable levels; and
  - To provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed velocity/depth limits.
2. For new developments a stormwater drainage system in accordance with the "major/minor" system concept in accordance with QUDM; that is, the "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.
3. For redevelopment areas where the proposed development replaces an existing development, the on-site drainage system is to be designed in such a way that the estimated peak flow rate from the site for the design average recurrence interval (ARI) of the receiving minor system is no greater than that which would be expected from the existing development and is not concentrated in such a way as to cause nuisance to downstream properties.

## **D4.03 REFERENCE DOCUMENTS**

**Note: Where Acts or reference documents are updated, reference should be made to the current version.**

Department of Energy and Water Supply

- Queensland Urban Drainage Manual

Institute of Engineers Australia

- Australian Rainfall and Runoff - A Guide to Flood Estimation

Australian Standards

- AS 3600-2009 Concrete Structures

## **DESIGN CRITERIA**

### **D4.04 GENERAL**

1. The QUDM shall be the basis for design of stormwater drainage except where amended by these manuals.
2. Minor system flows (as defined by QUDM) are to be conveyed underground to a legal point of discharge unless otherwise approved by Council.
3. Councils have or are in the process of producing drainage management plans for particular catchments within their boundaries.
4. The design of the stormwater drainage system, for the development shall be such that the upstream drainage is not adversely affected and that the downstream drainage system is capable of adequately catering for the discharge of the modified flow produced as a result of the development
5. If the downstream system is not capable of carrying the modified discharge, the designer shall indicate the measures proposed to ensure the downstream system is capable of carrying the modified discharge. This will involve negotiation with adjoining landowners for minor creek systems to produce easements over downstream drainage paths. Written approval from the respective property owners is required for the easement and any engineering works on their property from the development site to the legal point of discharge.
6. Alternatively, where a development will result in increased runoff the stormwater drainage system may include on-site measures to such as detention basins, to ensure that the peak discharge from the development area is restricted to a level no greater than that discharging prior to the development.
7. All works proposed within creeks and natural watercourse, or lands under the control of other Authorities must have the approval of all relevant authority prior to commencing the work and evidence of such approvals shall be provided with the design submission.
8. The design of the stormwater drainage system shall accommodate the future developed peak flows from upstream catchments on the basis of development in accordance with the Planning Scheme.

9. The designer shall be responsible for assessing the existing and future developed flow regime entering the development site from upstream catchments and shall provide detailed calculations with the design submission.
10. Unless approved otherwise by the Council, piped drainage systems shall extend to the boundaries of the subject land, with inlet and discharge works within the subject property.
11. All Material and components of the Stormwater Drainage system shall be durable and fit for purpose, with a minimum lifespan 60 years.

#### **D4.05 DESIGN AVERAGE RECURRENCE INTERVAL**

1. Design Average Recurrence Interval (ARI) shall be in accordance with Table D4.1 (modified from QUDM Table 7.3.1).
2. For the purpose of drainage, a major road shall be defined as a major collector or higher order road.

**Table 4.1 Recommended Design Average Recurrence Intervals**

<b>Major System Design ARI (years)</b>	100	
2. Minor System Design ARI (years)		
<b>Development Category</b>		
Central Business and Commercial	10	
Industrial	5	
Urban Residential High Density - Greater than 20 dwelling units / ha	10	
Urban Residential Low Density - Greater than 5 and up to 20 dwelling units / ha	5	
Rural Residential - 2 to 5 dwelling units / ha	5	
Open Space – parks, etc	1	
Major Road	Kerb & Channel Flow	10 <sup>1</sup>
	Cross Drainage (Culverts)	50 <sup>2</sup>
Minor Road	Kerb & Channel Flow	Refer to relevant development category in QUDM
	Cross Drainage (Culverts)	10 <sup>2</sup>

Notes:

1. The design ARI for the minor drainage system in a major road shall be that indicated for the major road, not that for the Development Category of the adjacent area; and
2. Culverts under roads should be designed to accept the full flow for the minor system ARI shown. In addition, the designer must ensure adequate public safety controls (eg. D\*V product) exist and that nominated Major Storm flow does not cause unacceptable damage to adjacent properties, or adversely affect the use of the land. If upstream properties are at a relatively low elevation, it may be necessary to install culverts of capacity greater than that for the minor system ARI design storm to ensure unacceptable flooding of upstream properties does not occur. In addition, the downstream face of causeway embankments may need protection where overtopping is likely to occur.

**D4.06 DESIGN RAINFALL DATA**

1. Design Intensity Frequency Duration (IFD) Rainfall Charts have been developed for the Whitsunday Regional Council Area. Table D4.2 shows the location of the appropriate Rainfall Chart to be used for stormwater drainage design (Refer **Appendix A** in this manual).
2. If the location of a proposed development falls between two IFD Charts or is not covered by the above charts, Council should be contacted to confirm appropriate table to be used.

**Table D4.2 IFD Rainfall Charts**

<b>Location</b>	<b>IFD Chart</b>
Abbot Point	1
Airlie Beach	2
Bowen	3
Cannonvale	4
Collinsville	5
Conway Beach	6
Dingo Beach	7
Gumlu	8
Hamilton Island	9
Mount Coolon	10
Proserpine	11
Proserpine Airport	12
Shute Harbour	13

#### **D4.07 CATCHMENT AREA**

1. The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or man-made paths, to this point. Consideration shall be given to likely changes to individual catchment areas due to the full development of the catchment.
2. The catchment boundary shall be determined by using the most accurate information available and details of catchments shall be provided to Council with the design submission.

#### **D4.08 KERB INLETS AND MANHOLES**

1. Kerb Inlet pits shall be in accordance with Standard Drawings D-0061 – D-0063. All pits are to be recessed sufficiently to maintain a continuous lip line in accordance with these drawings. Alternate proprietary kerb inlets systems may be used only where approved by Council.
2. Kerb Inlet capacity design charts have been prepared for the standard kerb inlets (Refer Appendix B in this manual). Where alternate proprietary kerb inlets systems have been approved for use by a Council, a copy of certified inlet capacity design charts for the alternate inlets shall be provided to Council with the design submission.
3. Blockage Factors shall be used for the design of the drainage system as shown in Table D4.3.

**Table D4.3 Kerb Inlet Blockage Factors**

<b>Inlet Type</b>	<b>Blockage Factor</b>
On Grade – Side Entry (no grate)	20%
On Grade – Side Entry (with grate)	10%
On Grade – Grate only	50%
Sag – Side Entry (no grate)	20%
Sag – Side Entry (with grate)	Nil
Sag – Grate only	50%

4. The kerb inlet capacity design charts shall be used in accordance with the following:
  - Curves indicated on the charts that are shown in full are considered "Reliable" curves;
  - Curves indicated on the charts that are shown dashed up to an Approach Flow of 250 l/sec are considered "Satisfactory" for use;
  - Curves indicated on the charts that are shown dashed with an Approach Flow in the range 250 l/sec to 500 l/sec are "Estimates Only" and are to be used with caution in critical locations; and
  - No extrapolation beyond the limits of these charts shall be permitted.
5. Side entry pits with grates are preferred. Grated inlet pits with no side entry shall only be used in areas with a low risk of consequential damage from blockage and shall be subject to Council approval.
6. Manholes shall be provided on stormwater drainage lines in accordance with the requirements of QUDM. Manholes for pipes up to 1200mm dia shall be constructed in accordance with the Standard Drawing D-0010 – D-0012. Council may examine proposals for the use of proprietary manufactured directional changes for stormwater systems and the acceptance of these will be subject to the satisfaction of the Council.
7. Other factors to be considered in the design are as follows:
  - Pits to be free draining;
  - Kerb inlet pits at intersections generally are to be located at the tangent point taking into account the position of pedestrian paths and kerb ramps. Inlets shall not be placed on kerb return unless specifically approved by Council;
  - Reductions in pipe sizes shall not be permitted; and
  - Pipework openings are to be located within a single wall. i.e. pipes shall not be permitted to enter through the corner of the pit structure.
8. The desirable maximum inlet pit depth should be limited to 1.5m to enable maintenance.
9. The desirable minimum and maximum stormwater manhole depth is to be limited to 1.2m and 3.0m respectively.
10. Inlet pits should be located at the mid-point of allotment frontages to reduce the likelihood of conflict with service conduits and future driveways



#### **D4.09 PIPES / BOX CULVERTS**

1. Stormwater drainage pipes and boxes shall be generally of reinforced concrete (including FRC) construction and in accordance with the following:
  - Minimum pipe size 375mm dia, minimum box culvert size 450mm x 300mm;
  - Minimum clear cover shall be 600mm in general or in accordance with manufacturers specification, otherwise approved by the Council;
  - The minimum vertical and horizontal clearances between a stormwater pipe and any other pipe or service conduit shall be 150mm;
  - In areas of high water table, the designer must consider buoyancy uplift in relation to pipe/culvert joints; and
  - In aggressive environments or where any part of the pipe / box culvert is below the Highest Astronomical Tide (refer to Queensland Tide Table for local conditions), pipes / box culverts will have cover to reinforcement in accordance with the exposure classification requirements of AS 3600.

#### **D4.10 OVERLAND FLOW**

1. Overland flow paths or emergency relief paths shall be formed and located in accordance with the requirements of QUDM. The following additional requirements shall also be required.
  - Where a pathway link is used for overland flow the pathway shall be concrete for its full width, shall have a maximum crossfall of 2.5 per cent and be constructed with a layback kerb and channel or approved equivalent along one edge. The ARI 100 year flow shall be contained completely within the pathway;
  - The footpath profile at the overland flow tip out point shall be designed to provide a fall from the kerb at the road edge towards the pathway / park;
  - Flows through parks shall have non-erosive velocity or adequate protection against scouring to the satisfaction of Council;
  - Where a stormwater pit is required to be aligned with a pathway for overland flow, the pedestrian path is to be offset and appropriate measures provided to guide pedestrians away from the pit and remove any potential hazards; and
  - Where flows discharge into receiving waters or drainage reserves, adequate protection against scouring of the batter slope shall be provided to the satisfaction of Council.

#### **D4.11 DRAINAGE CALCULATIONS**

1. If a legal point of discharge and tailwater conditions have not been provided by Council as development conditions, they shall be confirmed with Council prior to proceeding with detailed design.
2. Hydraulic calculations shall generally be carried out in accordance with QUDM. The calculations shall substantiate the hydraulic grade line adopted for design of the system. A sample of a summary sheet for hydraulic calculations is given in QUDM.
3. Catchment plans and hydraulic calculations including any additional calculations in support of overland flow path capacities, weir flows over kerbs, culvert designs etc. shall be provided to Council with the design submission. Where a hydraulic modelling programme is used, calculations to be provided with the design including listings of all programme input parameters.

#### **D4.12 OPEN CHANNELS**

1. Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council permits the use of an open channel to convey flows from a development site to the receiving water, such a channel shall be designed in accordance with QUDM.
2. Maximum side slopes on grass lined open channels shall be 1 in 4, with a preference given to 1 in 6 side slopes, channel inverts shall generally have minimum cross slopes of 1 in 10.
3. Low flow provisions in open channels to prevent scouring from trickle flows shall be provided to all grass lined channels. Trickle flow protection shall be contained within a pipe or hard lined channel and shall be designed to cater for the 3 month ARI storm event (60 per cent of the 1 Year ARI storm event flow).
4. Subsurface drainage shall be provided in grass-lined channels to prevent waterlogging of the channel bed.
5. Profiles of all grass lined channels shall such that mowing may be undertaken by a tractor and slasher to the satisfaction of Council.
6. Where the flow velocity and / or depth within an open channel pose a safety hazard, barrier fencing and / or appropriate hazard warning signs shall be provided to discourage access to the channel. The extent of precautions should be determined following consultation with Council.
7. The depth velocity product and the gutter flow widths are to be included in the submitted drainage calculations

#### **D4.13 ALLOTMENT DRAINAGE**

1. Interallotment drainage systems shall be designed in accordance with Q.U.D.M section 5.18. The minimum standard shall be Level 2 as defined in Q.U.D.M figure 5.18(b) and 5.18.3, however the Engineer may direct a higher level for specific developments or parts thereof..
  2. Interallotment drainage system shall be provided to all allotments where:
    - Any part of the allotment falls away from the frontage roadway; or the mid block finished surface level is less than 600 mm above the lowest invert level along the frontage kerb and channel.
- Easement shall be required over level 2 interallotment drainage systems.
3. Interallotment pipes shall generally be:
    - uPVS sewer pipe minimum class SHE;
    - uPVC drainage pipe PLASCOR or equivalent, of equivalent class to uPVC sewer class SHE;
    - R.C. Pipe class "1" rubber ring jointed;
    - F.R.C pipe class "X" rubber ring jointed; and
    - uPVC pipes to be rubber ring jointed. Standard manufactures fittings shall be used in all cases: site fitted saddles are not permitted.
  4. Interallotment drainage system shall be discharged into an underground drainage system or approved open channel. Discharge of interallotment systems to kerbs and channel shall not be permitted.

## COVER

1. The general minimum cover to pipe shall be 500mm. the minimum cover to house connections shall be 500mm.
2. The depth of the house connection shall be determined as follows (subject to the above minimum);
  - Determine the longest run of house drain to the connection point possible within the allotment;
  - Allow 0.3 meters cover to the house drain at the head of the line; and
  - Allow minimum grade of 1 in 100 for the house drain.
3. Inspection manholes may be precast or cast insitu concrete boxes or precast FRC or RC pipe systems to the dimensions shown in table D4.4

Table D4.4 – Inspection Manholes

Maximum Depth to invert (mm)	Boxes – internal Dimensions (mm)	FRC or RCP Systems
900	600 x 600	600mm diameter
>900	600 x 900	750mm diameter
Minimum Wall thickness	100 *	N/A
*precast boxes shall be approved prior to installation, wall thickness may vary according to manufacturer.		

4. Manholes shall be provided in the following locations:
  - One per lot;
  - Changes in grade;
  - Changes in direction;
  - Changes in pipe diameter; and
  - End of lines

## D4.14 TELEMETRY SYSTEMS

1. Where required by the Local Authority pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.
2. It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design

#### **D4.15 RETAINING WALLS**

1. Where retaining walls are incorporated in the retention of earth batters, adequate drainage shall be incorporated behind the top of the wall to ensure surface stormwater flows do not flow over the top of the wall but are contained in a designed system to pass the wall.
2. Appropriate scour protection is to be provided to the base of the wall.

#### **D4.16 DETENTION BASINS**

1. Detention basins may be considered as drainage solutions but shall be subject to approval of Council. Where approved detention basins shall be designed in accordance with QUDM.

#### **D4.17 HEADWALLS**

1. Pipe / Box culvert headwalls shall be in accordance with the Department of Transport and Main Roads Standard Drawings 1303 – 1306 and 1318 Proprietary precast headwall may also be used as an alternative to cast insitu structures.
2. The designer shall ensure that in addition to standard aprons and cut-off walls adequate protection works commensurate with design velocities and flows shall be provided to prevent downstream scouring and erosion.
3. Where floodgates are to be used, headwalls and aprons shall be specifically designed to accommodate the floodgate and minimise the potential for debris and siltation to impede the operation of the floodgate. Most precast headwalls are not suitable for use with floodgates.

#### **D4.18 TABLE DRAINS**

1. Table drains shall generally be constructed with a minimum depth of 600mm or to a depth of 300mm below the pavement subgrade, whichever is greater.
2. Table drain profiles may be either v-shaped or trapezoidal. Reference should be made to the Local Authority Specific Requirements for each Councils preferred profile.

#### **D4.19 EASEMENTS**

1. Where stormwater drainage pipes pass through property other than a road reserve an easement shall be provided over the line in favour of the Council. The width of this easement is determined by the depth at which the stormwater pipe is laid and based on twice the depth to the pipe obvert plus the pipe diameter (with a minimum width of three (3) metres) and located centrally over the pipe.
2. If a stormwater pipe passes adjacent to a property and based on the above formula the area of influence passes within the property, an easement over that portion shall be required.
3. The width of easement shall contain the ARI 100 year storm flow from the upstream catchment or be three (3) metres wide, whichever is greater.
4. Allotment drainage or catch drains which have a change in horizontal alignment greater than 45 degrees shall be provided with concrete or wire-reinforced rock mattresses at such change points which shall be designed to cater for flows in accordance with QUDM.

#### **D4.20 OUTLET / OUTLET PROTECTION**

1. Outlet into natural watercourse, open channels and tidal areas shall be designed in accordance with the requirements of QUDM.
2. Protection works to outlet shall be designed to meet the following criteria:
  - Dissipate the outflow velocity to minimise scouring;
  - Provide protection from stream flows in receiving waters;
  - Provide protection from overland (Major Storm) flows into receiving waters; and
  - Provide protection from local scouring or undermining of the outlet structure.

3. Where a headwall is located within the tidal splash zone, it will be designed to comply with the exposure classification requirements of AS 3600.
4. An energy dissipating outfall shall be provided where the velocity of the outflow or nature of the discharge from the pipe system into the receiving water could cause scouring in the receiving channel.
5. All tidal outlets shall be fitted with floodgates to prevent the intrusion of salt water into the system.
6. Outlets with floodgates shall be designed to ensure that they can operate freely at all times, and are protected from siltation, excessive vegetation growth, debris and the impacts of stream flows in the receiving waters.
7. The designer shall provide calculations to show that they have accounted for losses due to floodgates or other water control devices in the hydraulic design.
8. All outlets shall be located to facilitate inspection and maintenance access.



# **APPENDIX A**

## **IFD RAINFALL CHARTS**

## CHART 1 – ABBOT POINT

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	116	150	191	216	249	293	326
6 Mins	109	141	180	203	234	275	307
10 Mins	91.2	117	150	169	194	228	254
20 Mins	69.9	89.6	113	127	145	170	188
30 Mins	58.3	74.6	93.6	105	120	140	155
1 Hr	40.3	51.5	64.8	72.5	83.1	96.9	107
2 Hrs	25.8	33.2	42.5	47.9	55.3	65	72.5
3 Hrs	19.4	25.2	32.6	37.1	43.1	51	57.2
6 Hrs	11.8	15.5	20.6	23.8	27.9	33.6	38
12 Hrs	7.37	9.73	13.3	15.5	18.4	22.3	25.5
24 Hrs	4.85	6.42	8.82	10.4	12.3	15.1	17.2
48 Hrs	3.23	4.27	5.89	6.91	8.25	10.1	11.5
72 Hrs	2.42	3.21	4.46	5.26	6.29	7.72	8.86

## CHART 2 – AIRLIE BEACH

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	127	163	210	238	275	325	363
6 Mins	120	154	198	225	260	307	344
10 Mins	99.8	129	166	188	217	257	288
20 Mins	75.3	97.1	124	141	163	192	215
30 Mins	62.7	80.8	103	117	135	160	178
1 Hr	44.2	57.1	73.5	83.4	96.7	114	128
2 Hrs	29.9	38.9	51.1	58.7	68.6	82	92.6
3 Hrs	23.5	30.8	41.1	47.6	56.1	67.7	76.9
6 Hrs	15.5	20.5	28.3	33.3	39.9	48.9	56.1
12 Hrs	10.5	14	19.7	23.4	28.2	35	40.4
24 Hrs	7.39	9.86	13.8	16.4	19.7	24.4	28.2
48 Hrs	5.3	7.01	9.6	11.3	13.4	16.4	18.8
72 Hrs	4.2	5.56	7.56	8.85	10.5	12.8	14.7



### CHART 3 – BOWEN

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	118	152	194	219	253	297	332
6 Mins	110	142	182	206	238	280	313
10 Mins	92.3	119	152	171	197	232	259
20 Mins	70.6	90.5	114	128	147	172	192
30 Mins	58.8	75.3	94.9	106	122	142	158
1 Hr	40.7	52.1	65.8	73.8	84.6	98.9	110
2 Hrs	26.3	33.8	43.3	48.9	56.5	66.5	74.2
3 Hrs	19.9	25.7	33.4	37.9	44	52.2	58.5
6 Hrs	12.2	16	21.2	24.4	28.7	34.4	38.9
12 Hrs	7.69	10.1	13.7	16	19	23	26.3
24 Hrs	5.05	6.69	9.22	10.8	12.9	15.8	18.1
48 Hrs	3.35	4.45	6.21	7.34	8.81	10.8	12.5
72 Hrs	2.5	3.35	4.73	5.63	6.8	8.42	9.72

### CHART 4 – CANNONVALE

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	127	164	210	238	275	324	363
6 Mins	120	155	199	225	260	307	344
10 Mins	100	129	166	188	218	257	288
20 Mins	75.6	97.4	125	141	163	192	215
30 Mins	62.9	81.1	104	117	135	159	178
1 Hr	44.5	57.4	73.8	83.8	97	115	129
2 Hrs	30.1	39.2	51.5	59.2	69.2	82.8	93.5
3 Hrs	23.6	31	41.5	48.2	56.9	68.7	78.1
6 Hrs	15.6	20.7	28.8	34	40.7	50.1	57.7
12 Hrs	10.6	14.2	20.1	24.1	29.1	36.3	42
24 Hrs	7.62	10.2	14.3	17.1	20.6	25.5	29.5
48 Hrs	5.61	7.43	10.2	11.9	14.2	17.4	19.9
72 Hrs	4.52	5.96	8.11	9.47	11.2	13.7	15.6

## CHART 5 – COLLINSVILLE

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	99.4	129	170	196	228	273	307
6 Mins	93.2	121	160	183	214	255	288
10 Mins	77.6	101	132	151	176	210	236
20 Mins	59.2	76.7	99.6	113	132	156	175
30 Mins	49.3	63.7	82.3	93.5	108	128	144
1 Hr	33.8	43.6	56.1	63.6	73.5	86.8	97
2 Hrs	21.4	27.6	35.6	40.4	46.8	55.3	61.9
3 Hrs	15.9	20.6	26.6	30.3	35.2	41.7	46.7
6 Hrs	9.46	12.3	16.1	18.4	21.4	25.5	28.7
12 Hrs	5.86	7.61	10	11.4	13.3	15.9	17.9
24 Hrs	3.91	5.06	6.57	7.48	8.69	10.3	11.6
48 Hrs	2.69	3.46	4.4	4.96	5.71	6.7	7.46
72 Hrs	2.05	2.62	3.31	3.72	4.26	4.98	5.54

## CHART 6 – CONWAY BEACH

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 year	20 years	50 years	100 years
5 Mins	132	170	214	240	275	322	358
6 Mins	125	160	202	227	260	305	340
10 Mins	104	134	169	189	218	255	284
20 Mins	79	101	127	142	163	190	212
30 Mins	65.8	84.1	106	118	135	158	176
1 Hr	46.1	59.1	74.8	84.1	96.7	113	126
2 Hrs	30.9	39.9	51.5	58.5	67.8	80.3	90.1
3 Hrs	24.1	31.3	41	47	54.9	65.5	73.9
6 Hrs	15.6	20.6	27.8	32.3	38.3	46.4	52.9
12 Hrs	10.3	13.7	19.1	22.5	27	33.2	38.2
24 Hrs	7.03	9.42	13.4	16	19.3	24	27.9
48 Hrs	4.79	6.47	9.35	11.3	13.8	17.3	20.2
72 Hrs	3.7	5.02	7.37	8.97	11	14	16.4

## CHART 7 – DINGO BEACH

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 year	20 years	50 years	100 years
5 Mins	119	155	203	232	270	322	362
6 Mins	113	146	192	219	256	305	343
10 Mins	93.9	122	160	183	213	254	286
20 Mins	71.1	92.3	120	138	160	191	215
30 Mins	59.1	76.8	100	114	133	159	179
1 Hr	41.3	53.7	70.5	80.8	94.3	113	127
2 Hrs	27.3	35.6	47.3	54.5	64	76.9	87
3 Hrs	21	27.5	36.8	42.7	50.3	60.7	68.9
6 Hrs	13.3	17.6	24	28	33.3	40.5	46.3
12 Hrs	8.74	11.6	16.1	19	22.8	28	32.2
24 Hrs	6.07	8.14	11.5	13.7	16.6	20.6	23.8
48 Hrs	4.32	5.84	8.45	10.2	12.4	15.6	18.2
72 Hrs	3.4	4.61	6.77	8.24	10.1	12.8	15

## CHART 8 – GUMLU

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	113	146	188	213	246	290	325
6 Mins	106	137	177	200	231	273	305
10 Mins	88.9	115	147	167	192	227	253
20 Mins	68.2	87.7	112	126	145	170	189
30 Mins	56.9	73.1	92.	104	120	140	155
1 Hr	39.1	50.3	64	72.1	83	97.3	108
2 Hrs	24.8	32.1	41.	47.7	55.4	65.7	73.7
3 Hrs	18.5	24.1	32	36.9	43.2	51.8	58.5
6 Hrs	11	14.6	20.	23.6	28.1	34.4	39.3
12 Hrs	6.77	9.06	12.	15.3	18.4	22.8	26.3
24 Hrs	4.41	5.91	8.3	10	12.1	15	17.3
48 Hrs	2.93	3.9	5.4	6.48	7.79	9.59	11
72 Hrs	2.18	2.91	4.0	4.84	5.83	7.19	8.27

## CHART 9 – HAMILTON ISLAND

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	125	161	208	236	274	325	365
6 Mins	117	152	196	223	259	307	345
10 Mins	98	127	164	186	216	256	287
20 Mins	74.1	95.7	123	140	162	192	215
30 Mins	61.5	79.5	102	116	134	159	179
1 Hr	43.1	55.8	72	81.8	94.9	113	126
2 Hrs	29	37.6	48.9	55.8	65	77.4	87.1
3 Hrs	22.7	29.5	38.7	44.3	51.7	61.7	69.6
6 Hrs	14.9	19.5	25.7	29.7	34.8	41.8	47.4
12 Hrs	9.85	12.9	17.4	20.2	23.8	28.8	32.8
24 Hrs	6.62	8.75	11.9	14	16.6	20.3	23.2
48 Hrs	4.4	5.86	8.15	9.65	11.6	14.3	16.5
72 Hrs	3.36	4.49	6.33	7.54	9.11	11.3	13.1

## CHART 10 – MOUNT COOLON

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	102	130	163	182	208	242	268
6 Mins	94.8	121	152	170	194	226	250
10 Mins	79.2	101	125	140	159	185	204
20 Mins	61.2	77.5	94.6	104	118	135	149
30 Mins	51	64.3	77.9	85.5	96.2	110	121
1 Hr	34.4	43.3	52.4	57.3	64.5	73.7	80.6
2 Hrs	21	26.6	32.6	36	40.7	46.8	51.4
3 Hrs	15.3	19.5	24.1	26.8	30.5	35.3	39
6 Hrs	8.67	11.2	14.2	16	18.5	21.7	24.2
12 Hrs	5.02	6.52	8.52	9.74	11.3	13.5	15.2
24 Hrs	3.04	3.97	5.28	6.1	7.16	8.59	9.72
48 Hrs	1.84	2.41	3.26	3.8	4.49	5.43	6.18
72 Hrs	1.3	1.71	2.34	2.75	3.27	3.99	4.57

## CHART 11 – PROSERPINE

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 year
5 Mins	129	166	210	237	272	320	356
6 Mins	122	156	199	224	258	303	338
10 Mins	102	131	166	187	215	253	282
20 Mins	77.1	98.9	125	141	161	189	211
30 Mins	64.2	82.3	104	117	134	157	175
1 Hr	44.9	57.7	73.4	82.8	95.4	112	125
2 Hrs	29.8	38.5	49.7	56.5	65.6	77.7	87.2
3 Hrs	23	29.9	39.1	44.8	52.2	62.2	70.1
6 Hrs	14.8	19.4	25.9	30	35.3	42.6	48.4
12 Hrs	9.65	12.8	17.5	20.5	24.5	29.9	34.2
24 Hrs	6.56	8.76	12.3	14.6	17.6	21.9	25.3
48 Hrs	4.49	6.05	8.76	10.6	12.9	16.2	18.9
72 Hrs	3.45	4.69	6.93	8.46	10.4	13.2	15.5

## CHART 12 – PROSERPINE AIRPORT

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	130	166	210	236	271	317	352
6 Mins	122	156	198	222	255	300	334
10 Mins	102	131	165	186	213	250	278
20 Mins	77.7	99.4	125	140	160	187	208
30 Mins	64.7	82.7	104	116	133	156	173
1 Hr	44.8	57.5	72.8	81.9	94.2	110	123
2 Hrs	29.2	37.8	48.8	55.5	64.4	76.3	85.6
3 Hrs	22.3	29	38.1	43.6	51	61	68.8
6 Hrs	13.9	18.3	24.8	28.9	34.2	41.6	47.4
12 Hrs	8.82	11.8	16.4	19.4	23.4	28.8	33.2
24 Hrs	5.83	7.84	11.2	13.5	16.4	20.5	23.9
48 Hrs	3.87	5.25	7.72	9.41	11.6	14.7	17.2
72 Hrs	2.91	3.99	5.97	7.37	9.13	11.7	13.8

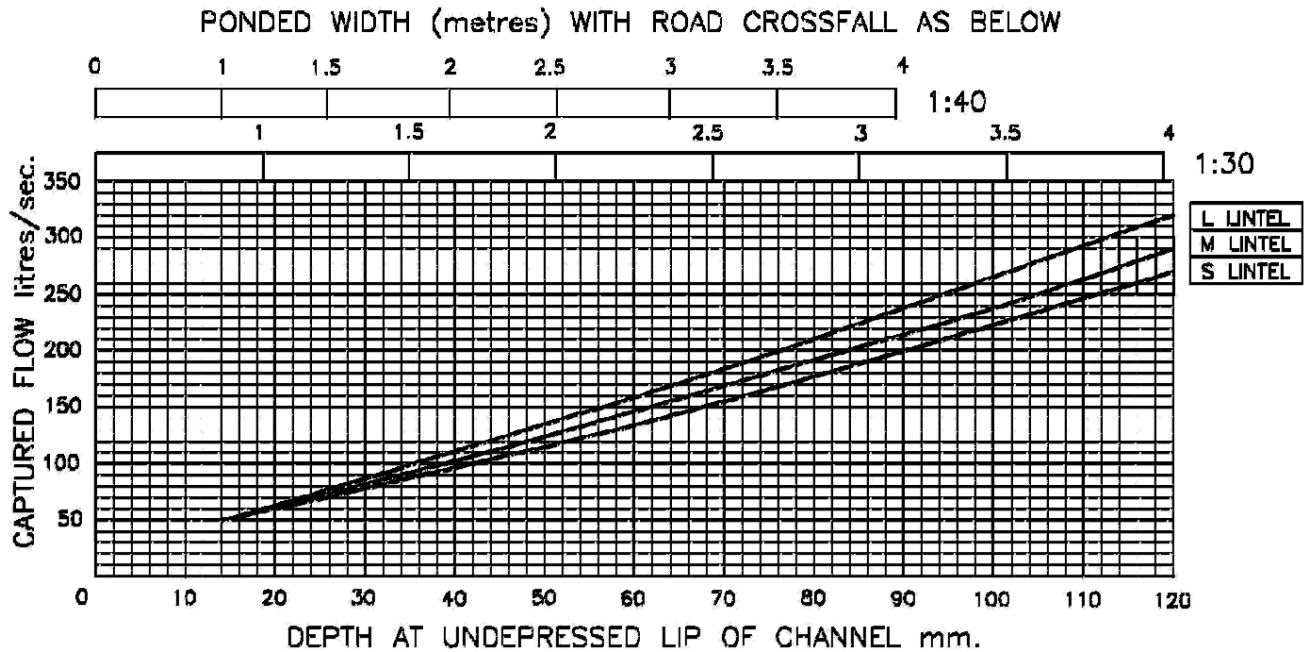
## CHART 13 – SHUTE HARBOUR

Duration	Rainfall Intensity (mm/h) by ARI						
	1 year	2 years	5 years	10 years	20 years	50 years	100 years
5 Mins	127	163	210	237	275	324	363
6 Mins	120	154	198	224	260	307	343
10 Mins	99.8	129	165	187	217	256	287
20 Mins	75.2	97	124	141	163	192	215
30 Mins	62.6	80.7	103	117	135	159	178
1 Hr	44.1	56.9	73.2	83.1	96.1	114	127
2 Hrs	29.8	38.7	50.6	57.8	67.3	80.2	90.3
3 Hrs	23.4	30.6	40.4	46.5	54.5	65.3	73.9
6 Hrs	15.5	20.4	27.5	32.1	38	46.1	52.5
12 Hrs	10.4	13.8	19	22.3	26.6	32.5	37.2
24 Hrs	7.32	9.69	13.3	15.6	18.6	22.7	26
48 Hrs	5.19	6.84	9.26	10.8	12.8	15.5	17.7
72 Hrs	4.1	5.4	7.29	8.48	10	12.2	13.9



## **APPENDIX B**

# **KERB INLET CAPACITY CHART**



CAPTURE  
WITH KERB OVERTOPPED 90mm.

LINTEL	CAPACITY
S	330 l/sec
M	350 l/sec
L	480 l/sec

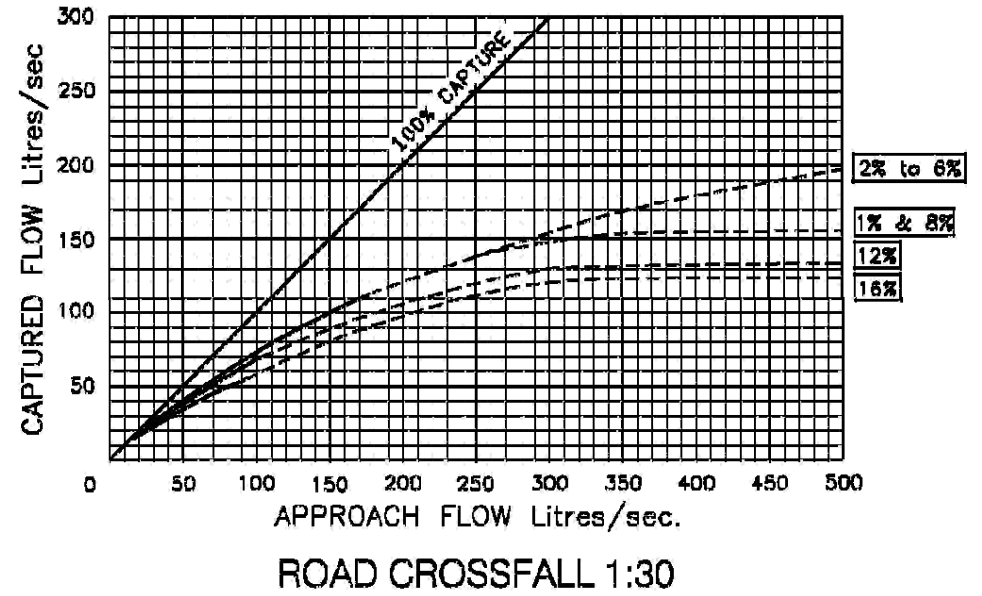
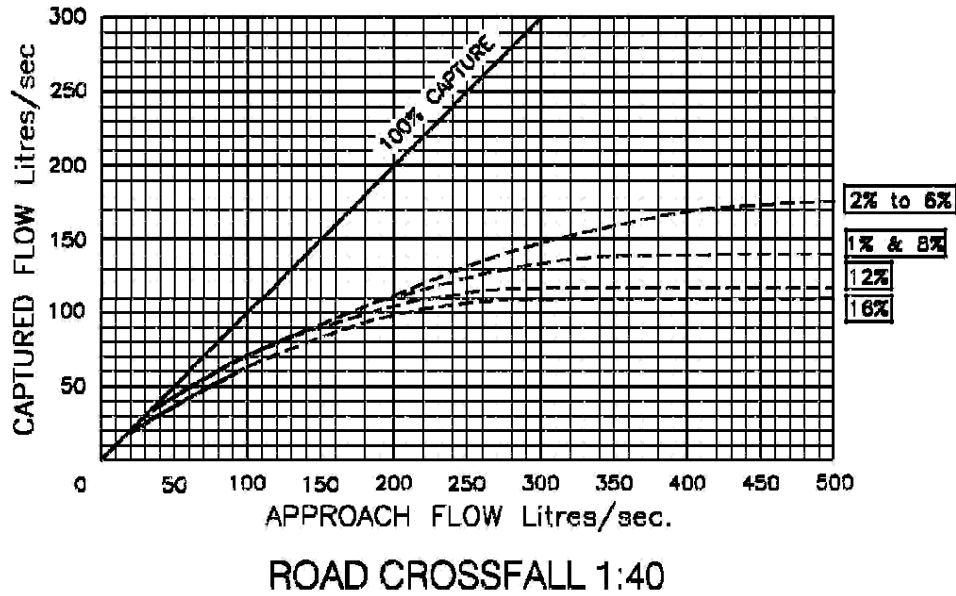
### SAG GULLY CAPTURE

**NOTES**

1. This capture chart should only be used in conjunction with the requirements of Design Guidelines D4 Stormwater Drainage.
2. Refer to Standard Drawings D-0061 – D-0063 for Kerb Inlet Pit details.

KERB INLET  
CAPACITY DESIGN CHART  
SAG INLET  
NO BLOCKAGE FACTOR





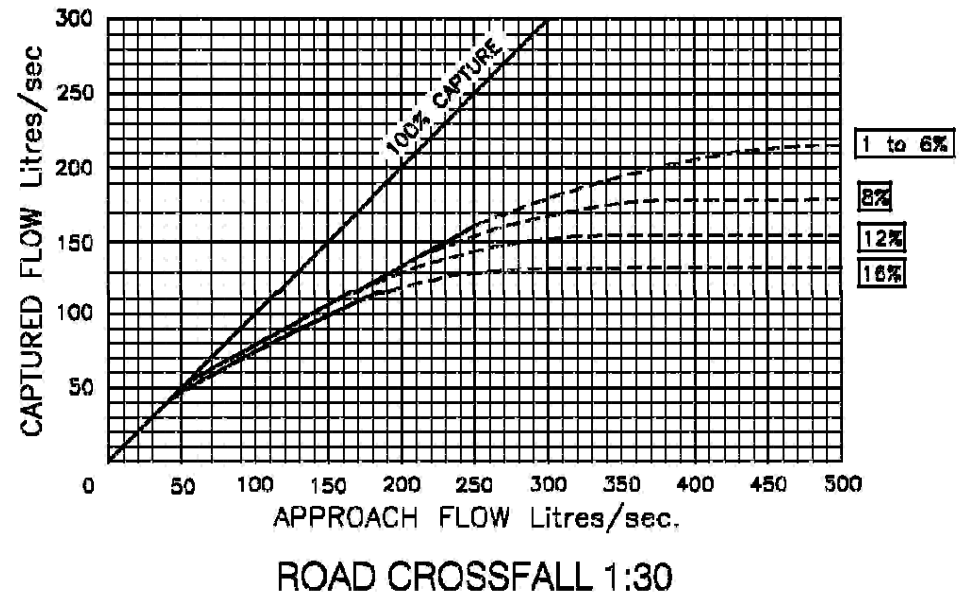
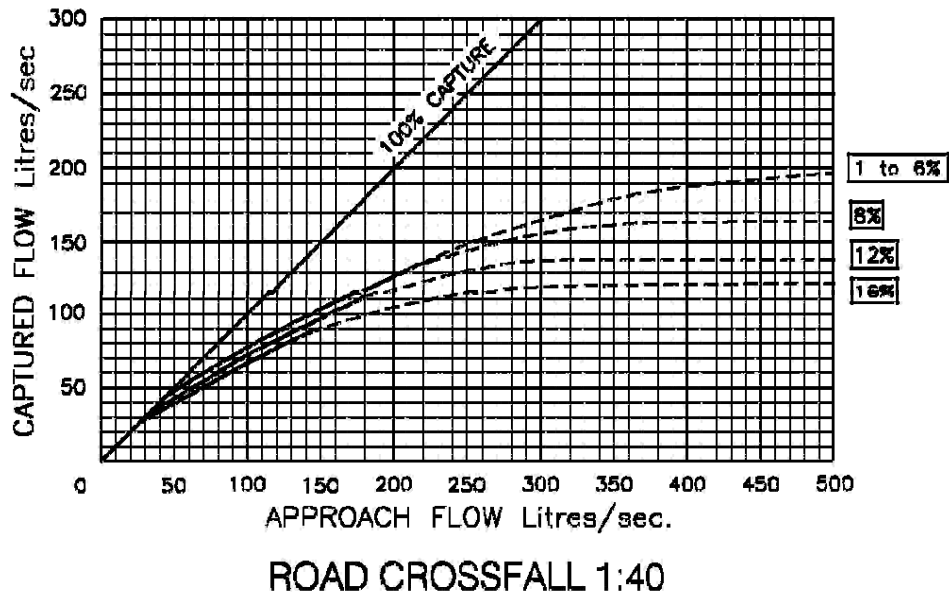
**LEGEND**

% Kerb & channel longitudinal slope

**NOTES**

1. This capture chart should only be used in conjunction with the requirements of Design Guidelines D4 Stormwater Drainage.
2. Refer to Standard Drawings D-0061 – D-0063 for Kerb Inlet Pit details.

**KERB INLET  
CAPACITY DESIGN CHART  
ON GRADE - TYPE 'S'  
10% BLOCKAGE FACTOR**



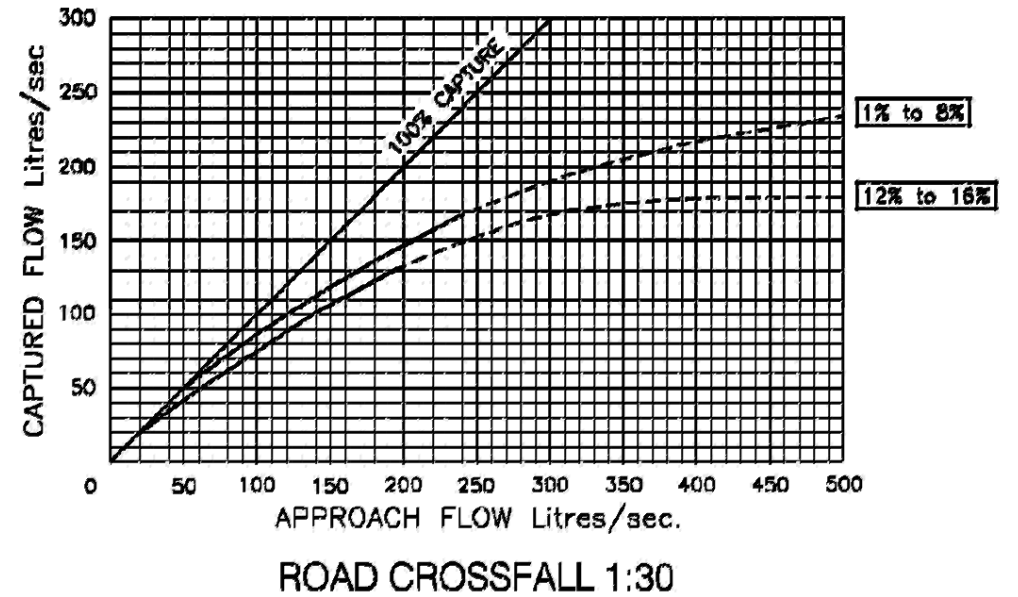
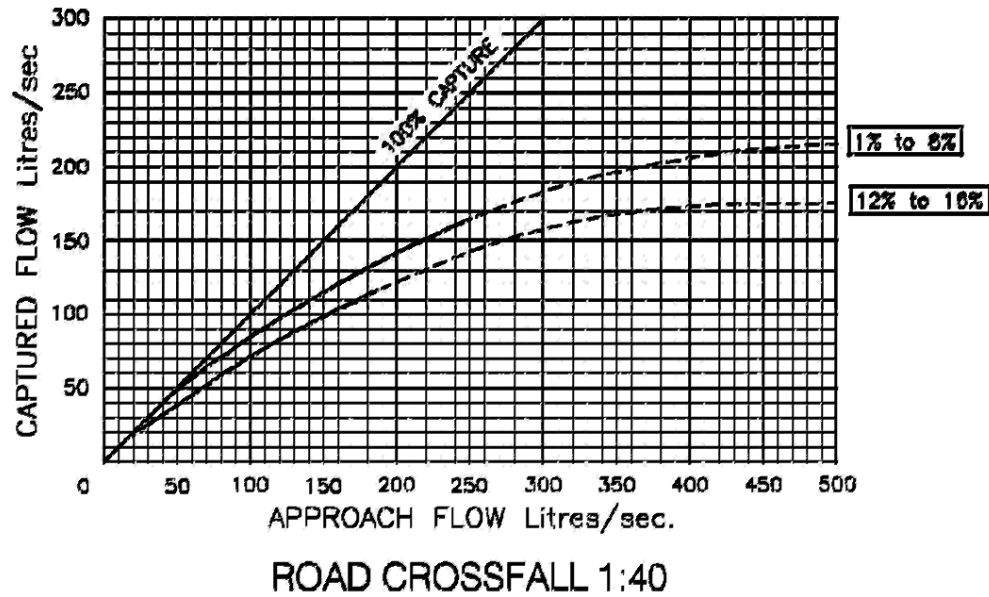
**LEGEND**

**— %** Kerb & channel longitudinal slope

**NOTES**

1. This capture chart should only be used in conjunction with the requirements of Design Guidelines D4 Stormwater Drainage.
- 1.
2. Refer to Standard Drawings D-0061 – D-0063 for Kerb Inlet Pit details.

**KERB INLET  
CAPACITY DESIGN CHART  
ON GRADE - TYPE 'M'  
10% BLOCKAGE FACTOR**



**LEGEND**

**— %** Kerb & channel longitudinal slope

**NOTES**

1. This capture chart should only be used in conjunction with the requirements of Design Guidelines D4 Stormwater Drainage.
2. Refer to Standard Drawings D-0061 – D-0063 for Kerb Inlet Pit details.

**KERB INLET  
CAPACITY DESIGN CHART  
ON GRADE - TYPE 'L'  
10% BLOCKAGE FACTOR**

# OPERATIONAL WORKS DESIGN GUIDELINES

## D6 – WATER RETICULATION

### GENERAL

#### D6.01 SCOPE

1. This document sets out the acceptable solutions for the planning, design and construction of water reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that needs to be to Council standards.
2. The water reticulation system shall be defined as mains less than 300mm diameter. Design of mains 300mm diameter and greater shall be subject to the specific criteria nominated by Council. All mains less than 300mm diameter shall be designed in accordance with this manual.
3. The planning, design, construction and certification of water reticulation infrastructure is to be carried out in accordance with the following provisions:
  - Council's general criteria as set out in these manuals and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
  - The criteria contained within the Water Services Association of Australia *WSA 03 – 2011 – Water Supply Code of Australia*;
  - The designer shall note the Queensland Workplace Health and Safety – Guide to the Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
  - For general guidance on infrastructure elements not contained within council's documents, the criteria contained within the Department of Energy and Water Supply *Planning Guidelines for Water Supply and Sewerage* may be used for guidance.
4. Aspects of modification or clarification of the Water Supply Code of Australia *WSA 03 – 2011* are detailed in Appendix A of this document.
5. Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply *Planning Guidelines for Water Supply and Sewerage*.

#### D6.02 GENERAL

1. It is the Consulting Engineer's responsibility to ensure that the current version of this section is used and that all infrastructure is constructed in accordance with this section.
2. It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.
3. Where a water supply source is being developed to service the development, the source shall either meet or exceed the *Australian Drinking Water Guidelines 2011 (ADWG)*, or the

developer shall provide the necessary infrastructure to treat the source to the ADWG, including disinfection before storage and/or distribution.

### **D6.03 OBJECTIVE**

1. The objective of a water supply system is to provide to the consumer a reticulated portable water supply to meet the demands imposed upon it by both the consumers and fire-fighting requirements.

### **D6.04 REFERENCE DOCUMENTS**

**Note: Where Acts or reference documents are updated, reference should be made to the current version excluding Water Services Association Australia (WSAA).**

#### Australian Standards

- AS/NZS 2566 Buried Flexible Pipelines
- AS 2368 Test Pumping of Water Wells
- AS 3952 Water Supply – Spring Hydrant Valve for Waterworks Purposes

#### Council Approved Product Register

#### National Health and Medical Research Council

- Australian Drinking Water Guidelines

#### QLD Government Legislation

- Water Act
- Water Supply (Safety and Reliability) Act

#### Water Services Association of Australia

- WSA 03 – 2011 – Water Supply Code of Australia

- WSA 01 –2004- Polyethylene Pipeline Code

#### Information and Guidance Note –

- WSA-TN4 Guidelines for design of pressure pipeline systems for water supply using PVC-M and PVC-O pipes

- 

#### Department of Energy and Water Supply

- Planning Guidelines for Water Supply and Sewerage National Uniform Drillers Licensing Committee 2012
- Minimum Construction Requirements for Water Bores in Australia

## RETICULATION

### D6.05 GENERAL

1. All connections or alterations to Council water reticulation mains shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.
2. The design of the water reticulation will take into consideration all external demands that are presently acting on the system or are likely to do so in the future. Council shall be consulted to ascertain these external demands, points of connection to existing reticulation and operating parameters.
3. Council approval of water reticulation does not relieve the Consulting Engineer of responsibility for the design.
4. In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages, showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review.
5. Prior to proceeding with detailed design, the Consultant shall liaise with Council to ascertain whether a network analysis (to determine the optimum size of the internal mains) is required by Council as part of the design submission for the development. For the design of water reticulation schemes and where Council requires a network analysis, it shall be completed by the Consultant at the Developers cost following discussions with Council and be based on the design criteria detailed in Section D6.07 below.
6. If a network analysis is required, the designer will be required to provide digital data compatible with Councils software, with the design submission, to enable the reticulation network to be input into Council's network model for checking. The network analysis shall be undertaken for the total development using Bentley WaterCAD compatible software and available for handover to Council for incorporation into the Council network program.
7. The network analysis shall be based on the design drawings and be spatially accurate.
  4. In sloping development sites, the water reticulation network is to be designed in pressure zones to allow Council to control maximum and minimum pressures within the development.

The network design shall be planned to satisfy the requirements of this manual and to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and Reliability) Act 2008, at a minimum whole-of-life cost (capital cost, operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution.
8. Refer to Appendix C Whitsunday Shire council standard conditions for water supply above RL50.

## **D6.06 EXISTING MAINS**

1. Council should be contacted to obtain copies of any "As Constructed" plans and details of any planned augmentation works.
2. Where, as a result of the development, existing mains are located on non-standard alignments or have less than minimum cover, the developer shall bear the cost of relocation, replacement or lowering, subject to the approval of the Council.
3. Pavement widening associated with some developments can place existing mains under the new pavement. In such cases, where the existing main has inadequate cover, the developer shall bear the cost of its replacement in a material approved by the Council, or reconstruction at an adequate cover depth or reconstruction on a standard alignment in the new verge.

## **D6.07 DESIGN CRITERIA**

1. Flow Parameters

Unless advised otherwise by Council, the Average Daily consumption and peaking factors for the design of Water Supply Schemes shall be as follows:

Average Daily Consumption (AD)	500 litre/person/day
Mean Day max Month (MDMM)	1.50 x AD
Peak Day (PD)	2.25 x AD
Peak Hour (PH)	1/12 x PD

In the absence of specific flow consumption data, the Average Daily Consumption shall be calculated using the equivalent demands shown in Table 6.1.

**Table 6.1 Equivalent Demands**

<b>Description</b>	<b>Equivalent Persons / Connection</b>
<b>Single Family Dwelling</b>	
Lot > 1500m <sup>2</sup>	3.7
Lot 1101m <sup>2</sup>	3.4
Lot 901m <sup>2</sup> to 1100m <sup>2</sup>	3.1
Lot 401m <sup>2</sup> to 900m <sup>2</sup>	2.8
Lot < 400m <sup>2</sup>	2.5
<b>Multi Unit Accommodation</b>	
Units > 3 bedrooms	0.4 + 0.6/bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
<b>Caravan Parks</b>	
Van Site / Camping Site	1.2
<b>Shops / Offices</b>	
Per 90m <sup>2</sup> GFA	1.0

Notes:

1. Based on 2.8 Equivalent Persons/Equivalent Domestic Connection (EP/EDC), with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m<sup>2</sup> to 900m<sup>2</sup>).
2. For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme, or estimation of maximum allowable density agreed with Council prior to design.

2. Pressure Parameters

- Minimum Service Pressure (excluding fire-fighting)

Minimum Pressure	22 metres head at peak hourly consumption
Minimum Pressure Location	At the property boundary for all lots.
Minimum Pressure Network Condition (for modelling from a reservoir).	Based on the reservoir level for Peak Hour of the third day of three consecutive Peak Day events (for dynamic models). In the absence of dynamic model results the minimum reservoir level shall be assumed at 15% of storage height. Liaise with Council to confirm minimum pressure constraints available at the connection to the existing system.



- Maximum Pressure

Maximum Pressure	80 metres head, see Note
Maximum Pressure Location	At the lot boundary
Maximum Pressure Network Condition (for modelling from a reservoir).	Based on reservoir level at 95 percent of top water level

Note:

Where the pressure in a main exceeds 800 kPa, Council may require the installation of Pressure Reducing Valves (PRV) that may (at Council's discretion) include telemetry control. Prior to proceeding with any design, Council shall be provided with details of the area affected and the number of lots involved.

### 3. Fire Fighting Parameters

Category	Fire flow Requirement	Number & Duration
<b>Residential</b> (i.e. An area comprising of predominantly residential dwellings of a maximum of 3 storeys)	15 L/s for 2 hours	1 @ 2 hours
<b>Commercial</b> (i.e. An area comprising of shop and office accommodation of a maximum of 3 storeys) <b>and Industrial</b>	30 L/s for 4 hours For schemes serving a population of less than 1000 a fire flow of 15 L/s for 2 hours should be satisfactory except where a special hazard or risk development exists	1 @ 4 hours
<b>High Risk</b> (i.e. A development where there is a probability of a fire occurring or there is a high cost of resultant damage (personal injury or property))	To be determined	Adopt a special hazard or risk fire
Residual pressure is to be 12m minimum at hydrant at all times, assuming that the elevation of the supply point is equal to the ground elevation at the hydrant. Positive residual pressures must exist within the reticulation during the fire event.		

#### Background Demand

The following minimum criteria should be adopted for background demand during a fire event:

- Predominantly Residential Areas:
  - The minimum residual pressure specified should be exceeded with a background demand of 2/3 Peak Hour demand;
  - A check should be undertaken at Peak Hour demand to ensure that pressures in the network remain positive; and
  - The calculated background demand should not be less than Average Day demand.
- Predominantly Commercial / Industrial Areas – In this case, the following scenarios should be investigated with the worst case being adopted:

- At Peak Hour demand of the Commercial / Industrial area (e.g. between 10am to 4pm). The intent of this scenario is to assess the local reticulation performance; and
- At 2/3 Peak Hour demand of the water supply zone (e.g. around 6pm). The intent of this scenario is to assess the zone trunk performance.
- Mixed Residential / Commercial / Industrial Areas – In such cases a combination of background demand conditions similar to the Predominantly Commercial / Industrial Areas above should be examined.

#### 4. Storage Parameters

Component	Sizing
Reservoirs (ground level)	3 (PD-MDMM) + (greater of Emergency Storage/Firefighting Storage)
Elevated reservoir	6 (PH – $\frac{MDMM}{12}$ ) + firefighting reserve

#### 5. Pump Parameters

Treated water pumps feeding a ground level reservoir	MDMM over 20 hours
Treated water pumps feeding an elevated reservoir	Capacity (L/s) = $\frac{6PH - \text{reservoir operating volume}}{3600}$ x Volume in litres
Standby pumps	Standby pump capacity to match the largest single unit pump capacity
Reticulation booster pump station	PH + fireflow
Pumped System	Peak instantaneous flow + fireflow  This situation may exist in smaller systems if variable speed pumps would replace any elevated storage. In these instances, it would be necessary to calculate instantaneous flow based on concurrent demand. This would exceed PH by a significant margin.

## 6. Pipeline Parameters

Pipe capacity – Trunk & Reticulation Mains	Size for PH + Fire Flow
Friction Equation	Hazen-Williams
Maximum Velocity	2.5m/s Velocities up to 4.0m/s may be acceptable during fire flows
Minimum Velocity	N/A

## 7. Headloss Calculations

For headloss calculations, the Hazen-Williams formula is generally used. Values of the Hazen Williams friction co-efficient (C) to be adopted are:

Pipe Diameter (D)	C Value
$D \leq 150\text{mm}$	100
$150\text{mm} < D \leq 300\text{mm}$	110
$300\text{mm} < D \leq 600\text{mm}$	120
$D > 600\text{mm}$	125

The above values take into account losses for pipe fittings such as bends, valves, tees, crosses etc and the effect of pipeline ageing.

## 8. Road Crossing

- Road crossings shall be minimum 100mm diameter;
- All Road crossings under Council controlled roads shall be constructed in Ductile Iron; and
- All Road crossings under Industrial Roads, Major Collectors or higher order roads shall be constructed with an isolation valve each side of the road.

### **D6.08 DEDICATION OF LAND, EASEMENTS & PERMITS TO ENTER**

#### 1. General Infrastructure

- All pumping stations, booster stations, storage tanks, reservoirs, water towers and the like are to be located on freehold land that is owned by or will be dedicated to Council at the time of plan sealing, except that small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and zoned for water infrastructure purposes; and
- Pumping Stations not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold.

## 2. Pipelines

- When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour over all such pipelines and appurtenances;
- Easements shall be a minimum of 3 metres wide and located centrally over the pipeline. Mains are to be no closer than 1 m from an easement boundary; and
- In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application:
  - A 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;
  - Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and
  - Proof of the registration of easements in favour of Council as specified above.

## **D6.09**

### **RURAL AND RURAL RESIDENTIAL DEVELOPMENTS**

1. Where a development is approved subject to the provision of domestic water supply from an underground source to service individual lots, water bores shall be installed in accordance with *Minimum Construction Requirements for Water Bores in Australia* and to the satisfaction of Council.
2. Bores must produce a minimum sustainable yield of one litre per second as determined by a 4 hour pump test in accordance with AS 2368 and pump test analysis, including observations of potential interference between bores, by a person qualified in groundwater hydrology.
3. Water samples must be collected from the bores in accordance with AS 2368 and analysed by a NATA registered laboratory or other laboratory as approved by Council. Water must be chemically suitable for human consumption in accordance with the "Australian Drinking Water Guidelines" issued by National Health and Medical Research Council.
4. The placement of the bore must be determined by an appropriately qualified person and shall be positioned in conjunction with the placement of any on-site wastewater disposal system to be used on the allotment.
5. Boreholes shall be cased and sealed at its surface to prevent the inflow of contaminated surface water.
6. Maximum bores casements size shall be 125mm in diameter.
7. Bores shall be sunk to a minimum depth of 60 metres, or until the bore reaches bedrock.
8. The development must have adequate water and access to that water for fire-fighting services acceptable to the rural fire services and/or Queensland Fire and Rescue Service.
9. In low density residential areas, where re-subdivision of lots is proposed (reconfiguration for densification), rider mains are also required by the developer/applicant in accordance with Appendix A4.6. In this case, the rider main must be placed across the full length of frontage to provide connection points for densification on both sides (each side) of the developer/applicant's lot(s). Should a rider main exist on one or both sides of the lot(s), the applicant/developer is required to connect to that rider main as well as providing full frontage coverage himself.

### **D6.10 RETICULATION NETWORK**

1. All water mains shall be laid on a standard alignment and unless directed otherwise alignments shall be as follows:

Urban	2.5m
Rural	2.5m
2. Bending of pipes is not permitted notwithstanding any clause to the contrary in the WSA Code.

## **D6.11 COVER**

1. Unless noted otherwise on the approved Project Drawings the minimum depth of cover to be provided for mains shall be as follows:

Verge, Parks etc.	600mm
Under Kerbed Roads	800mm
Under Un-Kerbed Roads	900mm

The maximum depth of cover to be provided for mains shall be 1500mm

## **D6.12 HYDRANTS**

1. Hydrants shall be installed for fire-fighting purposes on all potable water mains unless approved otherwise by Council.
2. Generally, hydrants shall be at 80m maximum centres for all urban areas and wherever possible located opposite allotment boundaries, and at every second allotment boundary for Rural, Park Residential and Low Density Residential allotments.
3. Hydrants shall be located at ends of lines in cul-de-sacs opposite the nearest allotment boundary.
4. Hydrants shall be located near access legs of battle-axe or hatchet shaped allotments.
5. Staged developments resulting in temporary dead ends shall have a hydrant located within close proximity to the end of line to enable maintenance flushing.
6. In undulating areas, hydrants should also be positioned at all high and low points of the main.
7. Hydrants shall be constructed in accordance with Standard Drawings W-0060, W-0061 and W-0063.

## **D6.13 VALVES**

1. Valves shall be located opposite the first truncation point at a three-way intersection; or opposite the nearest allotment boundary.
2. All valves shall be located within the verge. Valves shall only be located within the road carriageway where specifically approved by Council.
3. Valves shall be installed where necessary to isolate sections of the system for maintenance purposes such that maintenance can be carried out causing minimum inconvenience and disturbance to the consumers. Generally, the maximum number of houses inconvenienced should be no greater than 20.
4. Cul-de-sacs shall have an isolation valve if more than 4 lots are served.

5. At tee junctions a valve shall be located on the leg of the tee. Where necessary to achieve maintenance isolation requirements, additional valves shall be installed to one or both sides of the tee junction.
6. The maximum spacing between isolation valves shall be 300m.
7. In higher density areas the spacing of isolation valves may be reduced to the requirement of the Council.
8. Valves shall be constructed in accordance with Standard Drawings W-0060 – W-0063.

#### **D6.14 IRRIGATION**

1. All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation system. Refer Design Manual D9 Landscaping for design of irrigation systems.
2. A hydraulic design certificate is required for the irrigation system and to ascertain the required service size.
3. All connections to Council's existing system shall be completed by the Developer at the Developer's cost and subject to appropriate conditions agreed with Council.

#### **PUMP STATIONS**

##### **D6.15 GENERAL**

1. Pump stations shall be subject to specific requirements of the local authority. Council should be consulted prior to design to confirm the specific requirements for pumps, electrical, switchboards, telemetry, etc.
2. Council acceptance of pump station design does not relieve the Consulting Engineer of responsibility for the correctness of the design.

##### **D6.16 PUMP STATIONS**

1. Pump stations are to be contained in an above ground structure. The structure is to be constructed from reinforced masonry block and/or reinforced concrete. The structure is to be sized to allow for adequate internal access to all items for operational control but particularly for maintenance works. Openings will allow the easy reach and replacement of the largest item contained in the pump station. The use of multistage/centrifugal pumps is preferred.
2. A back-up power supply is to be provided either by a generator or diesel pump unless a five (5) day reservoir capacity is provided. Suitable arrangements for ducting airflow to the generator / diesel pump and the disposal of exhaust gases so as not to create a nuisance is required. Sufficient fuel is to be stored to operate for 12 hours at rated load.

3. Noise suppression is to be addressed and incorporated into the pumps station design. The pump station design is to comply with the Environmental Protection Act during normal use.
4. The tenure of property on which pump stations and access roads are situated are to be transferred to Council as freehold title. Pump station sites are not to encroach upon gazetted road areas unless otherwise approved by Council.
5. Access to the pump station site is to be via an appropriate standard sealed access and the pump station site is to accommodate maintenance vehicles and their manoeuvring.
6. Internal and external pump station surfaces are to be painted as directed.

#### **D6.17 TELEMETRY SYSTEMS**

1. Where required by the Local Authority pump station control panel shall incorporate SCADA equipment for transmission of monitoring data and control to Council's existing master system. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.
2. It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design

#### **D6.18 ALTERNATIVE WATER PUMPING SYSTEMS**

Alternative water pumping systems to provide increased pressures and flows to individual developments in lieu of a water storage reservoir may be considered by Council. Such systems should generally include a number of centrifugal pumps installed in parallel and coordinated by a pump controller, which senses, and responds to water demand. The controller shall also regulate the pump speed to give a graduated increase or decrease in the volume of water being supplied and evenly shares the work between pump units.

1. In general, Council will only permit the use of such booster pump stations where all of the following conditions apply:
  - Where Council considers it impractical to build a storage reservoir for topographical, geotechnical, or aesthetic reasons;
  - Where a reservoir would service only that particular development;
  - Where the number of lots to be serviced by the booster pump station is less than 25; and
  - Where the booster pump station building can be blended with the architectural style of residences within the development.
2. The consultant should submit an initial report and associated recommendations for consideration by Council prior to any detailed design. As a minimum the report should include:
  - Reason for and benefits to the community based on the total life cycle costs of an alternative water pumping system;
  - Connection points to the existing system;
  - Water supply schematic plan;
  - Maintenance issues; and
  - Environmental reasons.

#### **D6.19 DUAL WATER SUPPLY SYSTEMS**



1. The Dual Water Supply System comprises *Water Supply Code WSA 03-2011* and the Whitsunday Regional Council Amendments (**Appendix B**) to the above supplement.
2. **Appendix B** describes Whitsunday Regional Council's specific requirements for Dual Water Supply System works up to and including DN 300 that vary from or are additional to those detailed in the *Water Supply Code WSA 03-2011*..

#### **D6.20 PRIVATE BOOSTERS**

1. Written approval for the use of private boosters must be obtained from Council.

#### **D6.21 CONDUITS**

1. A conduit shall be provided to all landscaped or grassed Medians, Traffic Islands and Roundabout islands to facilitate a future water service connection for landscaping purposes.
2. Where the length of a median exceeds 50m, conduits shall be provided at 50m centres. At roundabouts and channelised intersections the conduit layout should enable all landscape islands to be connected to a single water service connection.
3. Conduits under roadways shall be a minimum 100mm dia. uPVC Class 9 sealed each end with push-on caps.
4. Cover to conduits under roads shall be 600mm minimum or 100mm below subgrade, whichever is the greater.
5. The position of all conduits under roadways shall be clearly marked by the casting a non-ferrous cuphead bolt into of the top of the kerb.
6. Where concrete footpaths are constructed on the road verge and the future water service connections are not being provided, a conduit shall be provided under the footpath opposite the allotment boundary to facilitate the future installation of water services by Council. Generally, water services shall be located at an alternate boundary to Ergon Energy's pillar box. Exceptions may be considered in individual circumstances were unusual conditions or lot layouts exist and where approved by Council and Ergon Energy.
7. Conduits under footpaths shall be a minimum 80mm dia. uPVC Class 6 with 300mm cover and are to extend 300mm past the edge of the footpath. The position of all conduits under footpaths shall be clearly marked by casting a non-ferrous cuphead bolt into the property side of the footpath while the concrete is wet.



# **APPENDIX A**

## **ADDENDUM TO WATER SUPPLY CODE OF AUSTRALIA**

**WSA 03-2011**

## **APPENDIX A - Addendum to Water Supply Code of Australia WSA 03-2011**

### **SYSTEM PLANNING PROCESS**

#### **2.2.2 Extending/Upgrading an Existing Water Supply Scheme**

Where a water supply network simulation model exists Council shall assess the impacts of the proposed development on the existing water supply system. The assessment shall be based on the details of the system extension provided by the Consulting Engineer.

### **DEMANDS**

Refer to Section D6.07 – Design Criteria of this Manual for the water supply demand requirements to be adopted in design.

#### **2.5.3 Operating Pressures**

Refer to Section D6.07 – Design Criteria of this Manual for operating pressure parameters to be adopted in design.

#### **PUMPING STATIONS 2.8.3(c) Standby Arrangements:**

Council requires standby pump units to be provided. The standby capacity shall be as directed by Council.

The power supply to pumping stations shall have 50% spare capacity for future upgrading and be electrically configured such that the pumping station can operate from an emergency generator supply at times of power failure (thus, a provision of space in the switchboard for a manual ATS change over panel is required).

### **2.9 SERVICE RESERVOIRS**

Refer to Section D6.07 – Design Criteria of this Manual for storage parameters.

#### **1.2.3 CONCEPT PLAN FORMAT**

Refer to AP 1.29 – Water Reticulation Concept Plan of this Manual for requirements for a Concept Plan.

#### **3.1.3 Empirical sizing of reticulation mains**

Table 3.1 is not to be used for sizing of reticulation mains. Refer to Section D6.07 – Design Criteria of this Manual for population and design flow requirements.

### 3.1.6.3 Hydraulic Roughness Values

Refer to Section D6.07 – Design Criteria of this Manual for roughness values to be used in design. The Hazen-Williams formula is to be used for head loss calculations.

### 3.8 Pipeline Components Minimum pressure class

The minimum class for pipe and fittings, including rider mains, shall be PN 16.

## PIPELINE MATERIALS

Pipes used for water mains shall comply with the following table.

Nominal Size DN	Type of Pipe	Class of Pipe
63, 90	MDPE	Series 1 PE100 – SDR11 MIN PN 16
100 150, 200, 250, 300	PVC, PVC-M & PVC-O	Series 2 MIN PN16
100, 150, 200, 250, 300	Ductile Iron	PN20

Notes:

- Where ductile iron is used above ground, the minimum class required will be PN35.
- Where required by Council, a lining material may be required to restrict the loss of lining due to calcium leaching.

### 5.1.1 Design Tolerances

Horizontal alignment shall be referenced to the MGA co-ordinate system.

## LOCATION OF WATER MAINS

### 5.6 SHARED TRENCHING

Shared trenching shall not be specified without prior approval of Council

### 5.8 RIDER MAINS

1. Rider mains are not permitted

### 5.9 CONNECTION OF NEW MAINS TO EXISTING MAINS

The connection of new water reticulation to Councils existing system shall only be completed by th at the Developers cost and subject to appropriate conditions agreed with Council.

### **5.10.1 Permanent ends of water mains**

1. Dead Ends to water mains should be avoided. However, should Dead Ends be unavoidable, the following facilities shall be constructed to facilitate scouring of the lines:

For mains 100mm diameter or greater a hydrant shall be positioned at the end of the line.

For mains of 50mm diameter, a 50mm valve shall be installed to the end of line with a 50mm flushing line extended to the adjacent kerb and channel.

## **8.7 SWABBING POINTS**

Swabbing points shall be provided where specified by Council.

### **8.8.4 Hydrant types**

Hydrants shall be the spring hydrant “Maxi Flow” 2000 type (DN80) manufactured in accordance with AS 3952 by an Australian Standards quality endorsed company. Hydrants are to be coated with a thermosetting epoxy powder to AS 2638 and AS 3952.

### **8.8.8 Hydrant Spacing**

- Hydrants should be installed for fire-fighting purposes on all mains unless approved otherwise by Council;
- Generally, hydrants are to be at 80 metres maximum centres for all urban areas and where ever possible, located opposite allotment boundaries, and at every second allotment boundary for Rural, Rural Residential and Low Density Residential allotments. Care should be taken to ensure there is no clash with other services such as light poles;
- Hydrants are to be located at ends of lines in cul-de-sacs opposite the nearest allotment boundary;
- Hydrants are to be located near access legs of battle-axe or hatchet shaped allotments;
- Staged developments resulting in temporary dead ends are to have a hydrant located within close proximity to the end of line to enable maintenance flushing;
- In undulating areas, hydrants should also be positioned at all high and low points of the main;
- Hydrants are to be constructed in accordance with Standard Drawings W-0060, W-0061 and W-0063; and
- Locate Hydrants within 90 m of Property sites. This may require the construction of private fire mains.

## **9.4 RECORDING OF WORK AS-CONSTRUCTED INFORMATION**

As constructed information shall conform to Section CP1 – Operational Works Construction Procedures of the Whitsunday Regional Council Development Manual.

### **Inspection and Test Plans**

For an ITP template for construction of water reticulation works refer to Appendix C of CP1 – Operational Works Construction Procedures of the Whitsunday Regional Council Development Manual.

## **Traffic Management**

Traffic management shall be in accordance with the requirements of the authority responsible for the roads where construction activities are carried out.

### **15.2.3 Curving of Pipe**

Bending of pipes is not permitted.



## **APPENDIX B**

# **ADDENDUM TO DUAL WATER SUPPLY SYSTEMS**

**WSA 03-2002**

## **APPENDIX B – Addendum to Dual Water Supply Systems – WSA 03-2002**

### **NWD 2.2 Water Supply Mains – Drinking Water**

Buried appurtenances shall be colour coded blue.

### **NWD 2.3 Water Supply Mains – Non-Drinking Water**

Buried appurtenances shall be colour coded lilac.

### **NWD 3.1 Design – Demands**

Fire-fighting demands shall be provided from the drinking water mains.

### **NWD 3.4 Cross-Connections between Drinking and Non-Drinking Water Supply Systems.**

No cross-connections, either permanent or temporary, shall be installed between drinking and non-drinking water supply systems downstream of Councils headwork storages without prior council approval.

#### **NWD 3.4.2 Temporary Cross-Connections**

No temporary cross-sections shall be installed downstream of Councils headwork storages without prior council approval.

### **NWD 3.5 Sizing of Mains**

The sizing of external non-drinking water mains shall be undertaken by the Consulting Engineer.

The standard sizes for non-drinking water mains shall be the same as the standard sizes for drinking water mains.

### **NWD 3.7 Location of Mains**

Water mains shall be laid on the standard alignment – refer to Section D6.10 of this manual. Where the non-drinking water mains and drinking water mains are laid in the same footpath, the drinking water main shall be laid nearest to the property boundary. Access to the valve and pipe need to be clear of the footpath.

### **NWD 3.8 Main Depths**

The depths of non-drinking water mains shall comply with the requirements for drinking water mains.



### **NWD 3.10 Property Services**

The size of non-drinking water property services shall be DN20 or DN25 as agreed with Council.

Where non-drinking water and drinking water property services are laid across a road at a common location, the services shall be placed in a common DN100 conduit.

Meters for the non-drinking water shall be placed above ground.

### **NWD 3.12 Hydrants**

Hydrants shall only be installed on the drinking water mains. Flushing points shall be provided on the non-drinking main, at all ends of line and cul-de-sac heads. Flushing points shall consist of an isolation valve and camlock coupling with dust cap.

### **NDW 3.18 Identification Markers and Marker Posts**

Identification markers for the components for the non-drinking water network shall comply with that specified for drinking water components except that:

The hydrant road pavement markers shall be purple.

Where there is no road pavement adjacent to hydrants, posts with reflective indicator plates shall be installed similar to that for the hydrants marker posts on drinking water mains.

All marker posts for the non-drinking water components shall have the letters NDW added to the lettering on the indicator plates and the top of the marker posts painted purple.

### **NWD 7.1 Tapping of Mains**

Tapping of non-drinking water mains shall be carried out to the same requirements as specified for tapping of drinking water mains.

### **NWD 8.3 Independent testing of Reticulation Main**

The test pressure for non-drinking water property services shall be 1.2 MPa.



## **APPENDIX C**

# **STANDARD CONDITIONS FOR WATER SUPPLY ABOVE RL50**

## **WATER SUPPLY**

9. The water supply system shall be designed in accordance with Water Resources Commission Guidelines and amendments, Council's Development Manual, Council's Standard Drawings, and to the requirements of the Council's Water Supply and Sewerage Engineer. Similarly, adherence to Acts, Regulations, relevant standards and Council's ByLaws is required.

## **RESERVOIRS**

10. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Shire Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
11. The land on which the reservoir is constructed and sufficient surrounding land, 4 meters minimum, shall be dedicated to Council at no cost to Council.
12. A 240v power supply shall be provided to the reservoir site.
13. A suitable sealed access and turning area shall be constructed and dedicated to Council at no cost to Council, in accordance with Council's Development Manual.
14. The access road to the reservoir is not to be utilised as a common access. Land in which the access road is situated is to be dedicated to Council at no cost to Council.
15. The gradient of the access road is not to exceed 20%.
16. Storm water layout with details of overflow / scour / underdrainage flow path is to be identified.
17. Security fence details are to be provided.

## **PUMP STATION BUILDING**

18. The reservoir is to be reinforced concrete cast insitu with a concrete roof, as per Whitsunday Shire Council, Standard Drawings and notes, fully secured and to the full satisfaction of Council's Water and Sewerage Engineer.
19. The land on which the pump station is constructed and sufficient

surrounding land, 3 meters minimum, shall be dedicated to Council at no cost to Council.

20. The finished floor level of the pump station should be self draining and no less than 200mm above the surrounding finished ground level.
21. Should be situated at a suitable RL AHD so that the return gravity system does not exceed to maximum head recommended by the Water Resources Commission Guidelines.
22. Provision is to be made within the building, opening to external, for a suitable sized room to house the disinfection equipment and storage tank. The room shall be independent of all mechanical and electrical equipment.
23. Pump control room is to be fitted with sufficient ventilation to allow air flow within the room.
24. A suitable sealed access and hard standing area shall be provides and constructed as per Council's Development Manual.
25. Security fence details are to be provided.
26. Building to be sized to house the following but not limited to:
27. Duty / Stand-by pump arrangement.
28. Electromagnetic type flow metering. (ie. Kent or combined Instruments).
29. Control cabinet and switching equipment as per council's standard specifications.
30. Telemetry connected and commissioned to be fully compatible with Councils existing telemetry control system.
31. Low pressure safety cut out switch on the suction side of the pumping system, shall be installed in a manner so that it can be isolated from the main and release the pressure to text the suitability without having to close down the water supply to the pumps.
32. Room to house the disinfection equipment.

## **PUMPS**

1. For calculating the duty head of the pump please note that the BWL of the Cannonvale reservoir is at RL 72.
2. Duty / Stand-by pump arrangement is to be provided. They must be able to run in parallel if required.
3. Pumps must be fitted with mechanical seals.
4. Reflux valves shall be on the discharge side of the pump.
5. Valving is to be provided so each pump can be isolated and removed if necessary should the case arise.
6. Vacuum and pressure gauges are to be fitted –
7. Pumps and system should be protected against water hammer.
8. All pumping equipment is to be new.

#### **POWER TO THE SITE**

33. All power used up until the project is placed on maintenance shall be the developers responsibility. At On MTCE the developer shall have the Ergon account transfer to Council.

#### **PIPEWORK**

34. All appropriately sized pipe work into / out of the pump station and pipe work associated with the pump connections shall be DLCL and fully flanged.
35. A dedicated rising main, appropriated sized, of K9 DICL shall link the pump station to the reservoir.
36. All gravity mains, appropriately sized, may be uPVC Class 16.
37. Water mains are to be installed on the topside of the road, in natural ground, where possible.
38. Horizontal separation of the rising main and the gravity main shall be maintained at 300mm.
39. Any under-boring of main roads shall utilise 6mm steel for the sleeve as a minimum or as their approval.

40. Long section of the main on the suction side of the pumps shall be submitted, to ensure air locks can not affect the performance of the pumps.

## **DISINFECTION**

Disinfection facilities (sodium hypochlorite) to be provided should include but not limited to;

41. Adequate sized room to house all equipment to comply with WHS regulations.
42. Adequate sized storage tank complete with an approved measuring device
43. Pumping equipment with adequate pumping capacity to maintain a chlorine residual in the reticulation system to the satisfaction of Council'.
44. Bunding details, pump out pit (300 x 300 x 200mm deep) and the method of sealing all of the concrete works and walls are to be provided
45. The retractable injection quell shall be installed external to the building and suitably protected from damage.
46. The injection point is to be installed on the discharge side of the pumps.
47. Provide an approved safety shower / eye wash basin in a secured area, external to the building.
48. Provide a 20mm hose tap in a secured area

## **CONSULTATION**

49. It is essential that the applicant's water supply consultant discuss in full the system with Council's Water and Sewerage Engineer prior to and during the design phase.
50. An Elpro approved installation contractor is to be used for the telemetry system. (Belmont Electrical.)

## **DESIGN GUIDELINES**

### **D7 – SEWERAGE SYSTEM**

#### **GENERAL**

##### **D7.01 SCOPE**

1. This document sets out the minimum standards for the planning and design of sewer reticulation systems that are to be constructed by a Developer and handed to Council to operate. This section also covers certain service connection issues relating to development approvals and private infrastructure that need to be to Council standards.
2. The sewer reticulation system shall be defined as sewers of 150mm and 225mm diameter, used to collect and convey sewage from properties. Designs for sewers larger than 225mm diameter shall be subject to specific criteria nominated by the Council. All sewers 225mm diameter or less shall be in accordance with this manual. This definition of sewer reticulation systems applies only to these Whitsunday Regional Council Sewerage Design Manual and Specifications and is independent of the definition of trunk infrastructure as relates to trunk infrastructure charges.
3. The planning, design, construction and certification of infrastructure is to be carried out in accordance with following provisions:
  - Council's general criteria as set out in this manual and Council's Standard Specifications and Drawings that are based on the Desired Standards of Service;
  - The criteria contain within the Water Services Association of Australia (WSAA) publications identified in D7.04. While vacuum and pressure sewer scheme WSA codes are listed, they are still considered unconventional infrastructure –refer D7.07;
  - The designer shall note the Queensland Workplace Health and Safety – Guide to Workplace Health and Safety Obligations of Designers of Structures and the design shall include the required Safety Design Report; and
  - For general guidance on infrastructure elements not contained within council's documentation, the criteria contained with the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage may be used for guidance.
4. Aspects of modification or clarification of the Water Services Association of Australia codes are detailed in Appendix A of this manual.
5. Council's Land Development Guidelines and Standard Specification and Drawings shall take precedence over the Water Services Association of Australia Codes and the Department of Energy and Water Supply Planning Guidelines for Water Supply and Sewerage.
6. Smart Sewers are considered Unconventional Infrastructure.

7. Smart Sewer planning, design, construction and certification may be carried out in accordance with Queensland Urban Utilities Sewerage Standards – Nu Sewer – Design and Construction Specification Version 6 and aspects of modification or clarification are detailed in Appendix D of this manual and approved by Council.

## **D7.02 GENERAL**

1. It is the Consulting Engineer's responsibility to ensure that the current version of Whitsunday Regional Council Development Manual is used and that all infrastructure is constructed in accordance with this section as a minimum standard.
2. It is the Consulting Engineer's responsibility to ensure that all work is undertaken to council's requirements. Responsibility for supervision, testing, inspection, commissioning and remedial work rests with the Consulting Engineer.

## **D7.03 OBJECTIVE**

1. The objective of the sewerage system is to transport sewage from domestic, commercial and industrial properties using gravity flow pipes and, where this is uneconomic, by pumping to the treatment plant.
2. While various options can be determined that meet the minimum technical requirements, the selected option should meet least community cost for whole lifecycle. To achieve the optimum solution will require sewerage reticulation issues to be considered at the commencement of the planning process and to integrate with other planning issues, and not be considered an end of process infrastructure provision exercise.

## **D7.04 REFERENCE DOCUMENTS**

**Note: Where Acts or reference documents are updated, reference should be made to the current version excluding Water Services Association of Australia (WSAA)**

### Australian Standards

- AS/NZS 1547-2012 On-site domestic wastewater management.
- AS/NZS 3500-2013 Plumbing and drainage set

### Council Approved Products Register QLD Government Legislation

- Water Act 2000
- Water Supply (Safety and Reliability) Act 2008
- Plumbing and Drainage Act 2002



- Queensland Plumbing and Wastewater Code

#### Water Services Association of Australia

- WSA 02-2014 Gravity Sewerage Code of Australia
- WSA 04-2005 Sewerage Pumping Station Code of Australia
- WSA 05-2013 Conduit inspection Reporting Code of Australia
- WSA 06-2008 Vacuum Sewerage Code of Australia
- WSA 07-2007 Pressure Sewerage Code of Australia
- WSA 01-2004 Polyethylene Pipeline Code

#### Department of Energy and Water Supply

- Planning Guidelines for Water Supply and Sewerage

## **DESIGN CRITERIA**

### **D7.05 GENERAL**

1. Sewers shall be designed to accommodate flows from upstream catchments, calculated on the basis of their future development in accordance with Council's Strategic Plan, and accordingly, shall be extended to the upstream boundary(ies) of the proposed development (where required) to service upstream properties with the least whole of life cost. Designers should consult with Council to confirm location of any future connections points, details of any planned augmentation works and sewerage catchment areas.
2. Council approval of sewerage reticulation does not relieve the Consulting Engineer of responsibility for the correctness of the design.
3. In staged developments, to ensure an efficient distribution system is established, the designers are required to submit to the Council an overall layout of the proposed subdivision, including all stages, showing the sizing of mains to be incorporated. This proposal shall be submitted to the Council for approval in principle before the submission of any construction plans and specifications will be accepted for review. Refer to Application Procedures.


### **D7.06 EXISTING SEWERS**

1. Prior to proceeding with the design, the designer shall obtain from Council "As Constructed" sewer information relevant to the proposed development and confirm point(s) for connection.

2. Works associated with some developments can impact on existing mains. Where as a result of the development an existing main has inadequate cover, it shall be reconstructed with a material approved by the Council or such other alternate protection measures deemed necessary by Council. Subsequent to construction, Ovality Testing is to be undertaken after the completion of works in accordance with this Manual and supervised by a Council Representative.
3. Where finished surface levels around existing manhole covers are altered, the manhole shall be reconstructed to conform with the requirements of this manual.
4. All connections or alterations to Council sewerage network, shall be made by the Developer at the Developers cost and subject to appropriate conditions agreed with Council.

#### **D7.07 UNCONVENTIONAL INFRASTRUCTURE**

1. Conventional infrastructure includes gravity sewers, lift stations, area pumping stations and pressure (rising) mains. Unconventional infrastructure includes smart sewers, small bore systems of any kind, including vacuum systems, hybrid low pressure systems, common effluent drainage systems, grinder pumps serving small clusters of properties and the like, and any other unconventional or unusual systems.
2. The use of unconventional infrastructure shall require special approval by Council and may require extended maintenance periods and a higher value for performance bonds.
3. In unconventional systems, Council may not have approved design criteria. Accordingly, proposals will be considered on the basis of best engineering practice and are to be subject to a lifetime benefit cost analysis.
4. If unconventional infrastructure is proposed the Consultant shall submit an initial report and associated recommendations for consideration by Council prior to any detailed design. The report should include as a minimum:
  - Description of proposed infrastructure;
  - Reasons for departing from Conventional systems;
  - Reasons for and cost benefits to Council;
  - Connection points to existing system;
  - Schematic layout plan; and
  - Maintenance and operational issues.
5. Subject to Council's assessment of the Consultant's initial report and prior to any detailed design, Council may engage an independent Consultant to act for Council in assessing the initial report and to recommend suitable system parameters.
6. All costs associated with the engagement of the independent Consultant shall be at the Developers expense.
7. Any subsequent designs of infrastructure shall be planned to satisfy the requirements to meet Council Customer Service Standards, which are published pursuant to the requirements of the Water Supply (Safety and reliability) Act, at a minimum whole-of-life cost (capital cost,



operational and maintenance cost) for an environmentally acceptable solution and not simply a least capital cost solution.

## D7.08 DESIGN CRITERIA

### 1. Capacity

- Population estimates shall be based on those equivalent demands detailed in Table 7.1; and
- The minimum pipe capacity shall be based on the criteria detailed in Table 7.2.

**Table 7.1 Equivalent Demands**

Description	Equivalent Persons/Connection
<b>Single Family Dwelling</b>	
Lot > 1500m <sup>2</sup>	3.7
Lot 1101m <sup>2</sup> to 1500m <sup>2</sup>	3.4
Lot 901m <sup>2</sup> to 1100m <sup>2</sup>	3.1
Lot 401m <sup>2</sup> to 900m <sup>2</sup>	2.8
Lot < 400m <sup>2</sup>	2.5
<b>Multi-Unit Accommodation</b>	
Units > 3 bedrooms	0.4 + 0.6 / bedroom
Units = 3 bedrooms	2.2
Units = 2 bedrooms	1.6
Units < 2 bedrooms	1.0
<b>Caravan Parks</b>	
Van Site / Camping Site	1.2
<b>Shops / Offices</b>	
Per 90m <sup>2</sup> GFA	1.0

Notes:

1. Based on 2.8 Equivalent Persons / Equivalent Domestic Connection (EP/EDC), with 1 EDC equivalent to a single residential dwelling on a standard size allotment (401m<sup>2</sup> to 900m<sup>2</sup>).
2. For undeveloped land equivalent populations shall be calculated in accordance with the maximum allowable population density in the Planning Scheme for that land use, or estimation of maximum allowable density agreed with Council prior to design.

**Table 7.2 Sewerage Loading**

Average Dry Weather Flow (ADWF)	270L /EP / d	Based upon analysis of pump station flows and STP inflow records during dry weather
Peak Wet Weather Flow (PWWF)	5 x ADWF or C <sub>1</sub> x ADWF whichever is greater	C1 Peaking Factor = 15 x (EP) <sup>0.1587</sup> Minimum value C1 to be 5
Peak Dry Weather Flow (PDWF)	C <sub>2</sub> x ADWF	C2 Peaking Factor = 4.7 x (EP) <sup>0.105</sup>
Vacuum Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4
Smart Sewer Peak Wet Weather Flow (PWWF)	4 x ADWF	Peaking Factor of 4

2. Pipe Velocity

- Pipe velocities shall be based on the details shown in Table 7.3.

**Table 7.3 Pipe Velocities**

Design Criteria	Recommended Value
Mannings 'n' (PVC)	0.013
Mannings 'n' (Poly)	0.013
Minimum Velocity @ PWWF	0.6 m/s
Minimum Velocity @ PDWF	0.3 m/s
Depth of Flow @ PWWF – Proposed Sewers	Max Flow depth shall not exceed ¾ pipe full

3. Minimum Grades

- Minimum grades for sewer reticulation mains are to be as summarised in Table 7.4.

**Table 7.4 Minimum Grades for Gravity Sewers**

Diameter	Minimum Grade	
100mm – Property Connection Branches	1 in 60	1.66%
150mm – Property Connection Branches	1 in 80	1.25%
150mm – First MH Length, head of sewer	1 in 100	1.00%
Second MH Length	1 in 150	0.67%
<b>Remaining MH Lengths</b> <b>(see note below)</b>	1 in 150	0.67%
225mm	1 in 290	0.34%
300mm	1 in 420	0.24%
375mm	1 in 570	0.18%
450mm	1 in 730	0.14%
525mm	1 in 900	0.11%
600mm	1 in 1000	0.10%
675mm	1 in 1200	0.08%
3. > or = 750mm	1 in 1500	0.07%

4. Gravity Sewer Flows in Equivalent Domestic Connections

- Table 7.5 details the maximum allowable Equivalent Domestic Connections for various gravity sewer pipeline grades and diameters.

**Table 7.5 Gravity Sewer Flows in Equivalent Domestic Connections**

Grade	150dia	225dia	300dia	375dia
570				1530
550				1557
500				1633
450				1721
420			983	1782
400			1007	1826
350			1076	1952
300			1163	2108
290		549	1183	2144
250		591	1274	2310
200		661	1424	2582
180	236	697	1501	2722
150	259	763	1644	2982
125	284	836	1801	3266
100	317	935	2014	3652
75	366	1080	2325	4217
50	448	1322	2848	5164

5. Sewer Depths

- Sewers shall be not greater than 3m deep unless approved by the Council; and
- Where sewers are greater than 3m deep, the following requirements shall apply:
- Submit calculations demonstrating sufficiency of the strength of the proposed pipe type and trenching condition.

**D7.09 SEWER ALIGNMENT**

1. The preferred, or standard, alignment of sewer lines in relation to property boundaries is presented in Table 7.6

**Table 7.6 Preferred Alignment of Sewers**

<b>Location</b>	<b>Alignment</b>
Carriageway	Not permitted, crossings only
Verge	Not usually permitted, Subject to Council Approval
Private Property (other than Commercial)	
Side Boundary	0.8m inside allotment
Front and Rear Boundary	1.5m inside allotment
Commercial Property	
Front Boundary	1.5m inside front of allotment

2. Where sewer lines are located along the road frontage of allotments, the preferred alignment is 1.5m inside the allotment. However, to reduce the number of manholes on curved roads and where truncations occur, the sewer alignment may be varied slightly subject to Council approval.
3. Where the allotment is located adjacent to a designated Council Park or Drainage Reserve, and the sewer is proposed to be constructed adjacent to the Park or Drainage Reserve boundary, the sewer shall be constructed on a 0.8m alignment and wholly within the Park or Drainage Reserve. Where the sewer is proposed to be located elsewhere in the park, approval for the location must be obtained from Council.
4. Where sewers are to be located within existing road reserves, the designer shall check that the sewers do not conflict with other utility services and locate the sewers to the satisfaction of Council and in accordance with the services clearances as set out in WSA 02-2014 5.4.
5. Where retaining walls are located on or near the boundary of allotments, sewers, property connection points, manholes etc. must not be constructed under or within the zone of influence of the retaining wall foundations. Consideration is to be given to the difficulty of maintenance excavation on the lower side of retaining walls.
6. Where access for persons is required, adequate clearance must be provided around access structures and property connection points. For access structures, an area within a 1.5 metre radius (on three sides to permit the set up and use of confined space equipment and other maintenance equipment such as jet rodders and remote cameras) must be provided around the central point of the facility.

7. Stubs must be extended a minimum of 0.5m past the property boundary.

#### **D7.10 MANHOLES**

1. Manholes shall be placed on gravity sewers at the following locations:
  - At changes of pipe diameter;
  - At ends of lines where ends are more than 30m from previous manhole;
  - At ends of lines where the line depth is greater than 1.5m;
  - At end of lines servicing greater than one Property Connection Branches; and
  - At council approved connections to trunk sewer.
2. Manhole shall not be constructed across property boundaries. Minimum clearance from the edge of manhole to the property boundary shall be 400mm.
3. The maximum change of angle through a manhole shall be 90° unless specifically approved otherwise by Council.
4. Manholes shall be constructed in accordance with the Standard Drawings S-0020 – S-0026.
5. Rectangular covers shall be provided to manholes less than 1500mm deep measured from the top of the manhole cover to the obvert level of the outlet. This has been derived so that a minimum 1.0m high clear working space is available within the manhole.

#### **D7.11 COVERS AND SURROUNDS**

1. Manhole covers shall be finished flush with the surface in roadways, footpaths and paved surfaces. Elsewhere, unless noted otherwise on the approved Project Drawings, covers shall be finished 50mm above the surface of the ground, in a manner designed to avoid as far as possible, the entry of surface water.
2. Manhole covers are to be gas tight.
3. Manhole covers are to be located such that the position of the access opening is directly over the outlet pipe.
4. The installation of all precast manhole covers shall be in accordance with the manufacturers' recommended procedures and requirements and subject to appropriate conditions agreed with Council.



## **D7.12 DEDICATION OF LAND, EASEMENTS, AND PERMITS TO ENTER**

### **1. General Infrastructure**

- All pumping stations, lift stations, storage tanks and the like are to be located on freehold land that is held by or will be transferred to Council at the time of plan sealing, except that lift stations, and small pumping stations may, with State Government's approval, be located in land that is or will become road reserve. This land shall be provided to Council at no cost as freehold and zoned for sewerage purposes;
- Pumping Stations and lift stations that are not sited beside a road reserve are to be provided with a 5-metre wide access transferred to Council as freehold; and
- Dedicated or freehold land requirements shall include provision for the pump station offset as indicated in D7.16 Pump Stations.

### **2. Pipelines**

- When pipelines and appurtenances relating to pipelines are constructed in land other than in what is or will become, a dedicated road reserve or property owned by Council, Council requires easements to be registered in its favour as follows:
  - All sewage rising (pressure) mains; and
  - All gravity sewers.
- Easements shall be a minimum of 3m wide and located centrally over the pipeline, where no property boundary is common to any easement boundary. In the case where a pipeline is laid on a standard alignment from a proposed property boundary, the following criteria must be met:
  - The boundary of the lot and one boundary of the easement must be coincident; and
  - Where the property boundary is to be created in the future, the boundary must be coincident to the easement boundary.
- Sewers are to be no closer than 1m from an easement boundary except where the sewer is on a preferred alignment; and
- In the event that works are to be constructed through properties not under the control of the Developer, the Developer shall submit with the Operational Works Application:
  - A 'Permit to Enter & Construct' letter, signed by each property owner through whose property the infrastructure is to be constructed, consenting to the construction of the works;
  - Where the property is owned or to be dedicated to Council approval of the relevant section of Council that will manage the property; and
  - Proof of the registration of easements in favour of Council as specified above.

## **D7.13 PROPERTY CONNECTIONS**

1. Property connections shall be installed in accordance with Standard Drawing S-0030 in all allotments.
2. Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.
3. Property connections will not be accepted within 0.5m of a lot boundary.
4. Property connections into manholes will be permitted at ends of line manholes only.

Elsewhere, property connections are required “on line” and not into manholes.

5. Property connections into maintenance shafts require Council approval.
6. Combined Property Drains are not permitted in any development works.
7. For commercial / industrial premises, where the PCB is to be built over, a manhole is to be constructed at the point of connection.
8. Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the Property drain shall extend from the property connection along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet ‘handle’ then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.
9. Property connections sizes shall be as follows:
  - Residential (single Dwelling) – 100mm dia; and
  - Others (i.e. Commercial, Industrial, Multi Residential) – 150mm dia.
10. Property connections to existing sewer mains shall only be permitted when the construction of a new main to service the proposed properties is not possible.
11. All Property connections shall be deep enough to service the entire lot using the following property drain design criteria:
  - 300mm minimum cover at the start of the drain or at any other control point on the allotment, (where property drains are subject to vehicular traffic, cover shall be increased to 600mm);
  - 1 in 60 minimum grade from the most distant corner where any Property or structure can be located on the allotment, on an alignment parallel to the property boundary; and
  - Consideration will be given to the finished level of the lot after all earthworks are complete including likely benching for building platforms.

#### **D7.14 ON-SITE SEWERAGE FACILITIES – TREATMENT AND DISPOSAL**

1. Due to the increased loading of on-site sewerage facilities on the environment and legislative considerations, the Consultant shall submit a report containing a detailed assessment of site and soil factors, an elevation of the site constraints and review of all relevant information available. The report shall consider all major constraints and opportunities relating to the management of wastewater in relation to the development. The report shall also include a cumulative impact on the effects to the existing ground water table, creeks and watercourses so that the development achieves environmental objectives of air, land and water resources.
2. To accommodate the on-site sewerage facility, required for a dwelling with five or less bedrooms and a range of associated facilities, a minimum area of 2000m<sup>2</sup> shall be required. It

should be noted that this area is based on an ideal site and the minimum area shall be located above the Q50 Flood Level and shall not contain any land required for access, or drainage and service easements.

3. The Consultant should refer to the Queensland Plumbing and Wastewater Code, On-Site Sewerage Code and AS/NZ 1547-2012 and Environmental Protection Act, so that the most appropriate on-site sewerage facility can be chosen for the development and, in particular, be of sufficient capacity to receive, treat and absorb all wastewater outputs from premises on a property, complete the treatment, uptake, and absorption of the final effluent within the boundaries of the property, and avoid likelihood of creating unpleasant odours, or the accumulation of offensive matter. In accordance with AS/NZ 1547-2012, on-site sewerage facilities are to be designed for up to 10 equivalent persons. For loading greater than 10 EP additional facilities will be required.
4. The minimum requirements for the wastewater disposal report:
  - Site plan showing dams, creeks and water courses;
  - Contour plan maximum of 1 metre intervals;
  - Areas of each block with proposed Lot No's and property boundaries;
  - Proposed use of the land to be developed;
  - Soil survey, including permeability of soil by either a percolation test or textural classification of soil;
  - Depth of ground water, if any encountered during testing;
  - Estimated daily flows and site evaluation in accordance with AS1547-2012;
  - A daily allowance of 200 litres/person for all waste units (AS/NZ1547-2012:2,4,2,1)
  - Method of disposal, eg. DSTP, split septic system or other;
  - Size of estimated disposal area to suit system;
  - Calculations to justify disposal site; and
  - Assessment of any additional nutrient loadings of the area caused by on-site waste water disposal.

## **PUMPING STATIONS AND PRESSURE MAINS**

### **D7.15 GENERAL**

1. Council should be consulted prior to design to determine specific requirements for pumps, electrical, switchboard and telemetry etc. Outlined below are Council's minimum requirements unless specified otherwise.
2. Council prefers that sewage be conveyed by gravity and a pumping station be used only when all other options have been considered and rejected.
3. Council requires documentary evidence that life cycle costs of all options have been analysed before approving a pumping station.
4. When the use of a pumping station has been approved it must be designed and constructed in accordance with this Manual and WSA 04-2005 and WRC Standard Drawings.
5. A submersible sewage pumping station built to Council requirements and incorporating two

submersible sewage pumps with motor sizes up to 22 kW each will be regarded as a “standard” installation. Any station with pumps larger than 22kW will be regarded as a “non-standard” installation and will need to be specifically designed to suit the design flows. The design of a “non- standard” station must be carried out in consultation with Council.

6. Wet well washers are required in all sewage pumping stations unless otherwise approved by council.

#### **D7.16 PUMP STATIONS**

1. Pump stations shall be designed as detailed on Standard Drawings S-0050 – S-0052 and S-0057 – S-0060. Project specific design drawings are to be provided with the operational works submission which include the following: Relative levels (A through G) as denoted on these drawings as well as all pump start, stop and alarm levels appropriate to operating conditions shall be provided with the pump station design.
2. Operation levels for pump stations to be controlled by ultra-sonic level controllers or hydrostatic probes and not by float switches. Major pump stations as determined by the Council shall be controlled by ultra-sonic level controllers.
3. The pump stations overflow pipe shall be designed to cater for the maximum possible flow. Council and the Department of Environment and Heritage Protection should be consulted to determine emergency storage and overflow requirements.
4. The designer shall be responsible for obtaining all necessary licenses and approvals associated with the provision of pump station emergency overflow.
5. Pump stations shall be located as far as possible away from existing or proposed habitable dwellings. A 100m setback is desirable with absolute minimum of 30m unless otherwise approved by Council for standard pump stations only. New developments are to comply with the setback conditions from existing pump stations.
6. The tenure of property on which pump stations and access roads are situated shall be transferred to Council as freehold title. Pump station sites shall not encroach upon gazetted road areas unless otherwise approved by State Government and Council
7. Access to the pump station site shall be via an appropriate standard sealed 3.5m wide road (within the 5m access reserve) and the pump station site shall accommodate maintenance vehicles and their manoeuvring. An acceptable layout and hard standing area will need to be determined in consultation with council.
8. The sealed access can be either of the following construction:
  - 2 coat seal on 100mm sub-base and 100mm base course, subject to the sub grade strength indicated by the CBR;
  - 30mm asphalt on minimum 100mm base course; and
  - 125mm thick reinforced concrete.
9. Pump stations will be located a minimum 300mm above the ARI 100 year storm event. The finished ground level around the pump station will be shaped to fall away from the pump

station.

10. Detailed calculations of the pump station, Sewerage Pump Station Commissioning Plan and pressure main sizing shall be submitted to Council with the design and/or Operational Works submission in the format required by Council.
11. The Sewerage Pump Station Commissioning Plan shall be completed in accordance with WSA 04- 2005 2.17.
12. Pump Station switchboards are to be painted with a graffiti resistant paint prior to application.
13. New or upgraded pump stations which are or will be part of the trunk main reticulation network or have less than 6 hours emergency storage capacity will be required to have a standby generator as part of the sewer scheme. The standby generator will be located a minimum of 300mm's above the ARI 100 year flood event.

## D7.17 SEWAGE PUMPING SYSTEMS

### 1. Sewage Pumping Station Design Criteria

- Sewage pumping stations shall be designed in accordance with the minimum specific design criteria shown in Table 7.14 and WSA 04-2005.

**Table 7.14 Sewage Pumping Station Design Criteria**

Item	Description	Adopted Design Parameter	Comments
1	Pump Motor Drives	Pump Motor Drives shall be as follows: <ul style="list-style-type: none"> <li>• &lt;15kW – Soft Start</li> <li>• &gt;15 to 22 kW – VFD</li> <li>• &gt;22kW –special design, refer to Council</li> </ul>	Where Variable Frequency Drives (VFD) are used, cables are to be shielded. Where VFD's are used, a magnetic flow meter must be provided with the pump station.
2	Number of Pumps	Two (2)	Pump station controls must allow for automatic alternating duty pumps.
3	Fixed Speed Pumps  Wet Well Operating Volume (kL)	$0.9 \times Q$ N	Where 'Q' is the flow rate (l/s) if a single pump operating and 'N' is the allowable number of pump starts, the number of pump starts (N) should be not more than 10 for pumps less than 50kW rating. For pumps greater than 50kW rating, according to manufactures recommendations.
4	Variable Speed Pumps  We Well Operating Volume (kL)	$0.9 \times Q$ N	Q = Discharge of a single pump (L/s) at 50 Hz. N = Maximum number of starts per hour recommendation by the motor manufacturer.
5	Bottom Water Level (duty pump cut-out)	<ul style="list-style-type: none"> <li>• For fixed speed pumps: 100mm above minimum submergence level of pumps.</li> <li>• For variable speed pumps: minimum of 100mm above top of motor casing.</li> </ul>	In case of variable speed drives a permanent water level must be maintained above the motor casing to ensure continuous cooling of the motor.
6	Well Diameter	Minimum internal well diameter 2100mm internal well diameter may be increased in increments of 300mm depending upon considerations such as: <ul style="list-style-type: none"> <li>• Clearance around pumps and pipework;</li> <li>• Depth of pump station; and</li> <li>• Geotechnical conditions.</li> </ul>	
7	Top Water Level (TWL) (standby start)	Must be set no higher than 300mm below invert level of inlet sewer.  Must be no lower than 100mm above duty start but confirmed by project specific design.	
8	Operating Range (TWL – BWL)	This shall be in accordance with WSA 04, Clause 5.4. Generally this range should be between 1000mm and 2800mm.	

Item	Description	Adopted Design Parameter	Comments
9	Duty Point	<p>With static head corresponding to top water level and pipe friction factors as follows determine Duty Point 1 and 2:</p> <ul style="list-style-type: none"> <li>• Duty Point 1 – Single Pump operation:</li> <li>• <math>C1 \times \text{ADWF (L/s)}</math> vs. Static Head = Friction Head (m)</li> <li>• Duty Point 2 – Duty Pump operating in parallel with Standby Pump:</li> <li>• <math>5 \times \text{ADWF (L/s)}</math> vs. Static Head + Friction Head (m).</li> </ul>	<p>Where:</p> <p>Static Head = Highest Point in Pressure (Rising) Main – Water Level in Wet Well.</p> <p>Friction Head = is a derived from the Hazen Williams formula.</p> <p><math>C1</math> = Peaking Factor from Table 7.2 of this Manual.</p>
10	Pump Selection	<p>Select a pump that is capable of operating at both duty points and which operates within the range of the system resistance curves that are determined by the Conditions detailed below:</p> <ul style="list-style-type: none"> <li>• Where pressure sewers are allowed to interconnect with existing sewers (refer Table 7.15), pumps are to be designed to operate against the ultimate pressure in the receiving main unless otherwise approved by Council;</li> <li>• Condition 1 – Normal Operating Condition lower limit system resistance curve: <ul style="list-style-type: none"> <li>• Static Head corresponding to Top Water Level with pressure (rising) main friction factors as follows: <ul style="list-style-type: none"> <li>• <math>C = 120</math> (dia. &lt;300mm); and</li> <li>•</li> <li>• <math>C = 140</math> (dia. &gt;300mm)</li> </ul> </li> </ul> </li> <li>• Condition 2 – Normal Operating Condition Upper limit system resistance curve: <ul style="list-style-type: none"> <li>• Static Head corresponding to Bottom Water Level with pressure (rising) main friction factors as follows: <ul style="list-style-type: none"> <li>• <math>C = 100</math> (dia. &lt;300mm)</li> </ul> </li> </ul> </li> </ul>	<p>The friction factors used in pump selection depend on Top and Bottom Water Level so as to ensure the fullest possible range of heads are taken into account in the selection of the pumps.</p>
11	Emergency Storage	4 hours ADWF	May vary dependent on location of the overflow. Emergency storage may include gravity sewers, manholes and pump station we well volume above TWL.
12	Duty Pump Capacity	Refer DERM Guidelines (or subsequent department)	Refer DERM Guidelines (or subsequent department)
13	Standby Pump Capacity	Refer DERM Guidelines (or subsequent department)	Refer DERM Guidelines (or subsequent department)
14	Total Pump Station Capacity	Refer DERM Guidelines (or subsequent department)	Refer DERM Guidelines (or subsequent department)

## 2. Pump Information

- The following information shall be provided when the plans are submitted for approval:
- Preliminary pump selection;
- Rating of the motor;
- Weight of the motor;
- Duty Point;
- Estimate of KWh/1000 litres pumped; and
- Performance, power and efficiency curve.

### **D7.18 PRESSURE MAINS**

1. For detailed design of sewer pressure mains (rising mains) the requirements of Design Manual D6 Water Reticulation should be noted and the mains shall be designed as per the procedures relevant to Water Supply Mains with the exception of the following:
  - Air release valving should be provided to high points as required;
  - Scour valving should be provided to low points as required. Scouring must be to a scour manhole or adjacent gravity sewer system;
  - Thrust Block and Trenching Details shall be as per the Standard Drawings W-0040 and W-0041; and
  - Line valves, scours and air valves are to be provided as required to reduce scour volume.
2. Consideration needs to be given to the potential for sulphide generation in pressure mains.
3. Sewer rising mains shall be a minimum 125mm DN HDPE PN16 unless approved otherwise by Council. Sewer rising mains shall be 'cream' in colour.
4. Sewer pressure mains shall be 'cream' in colour.
5. All Discharge manholes shall be fitted with a HDPE or wound PVC manhole liner suitable for exposure to sewerage. Where the discharge manhole is an existing manhole, the manhole internal surfaces shall be adequately dried and then coated with an approved epoxy coating.
6. Sewer pressure mains shall be designed in accordance with the minimum specific design criteria shown in Table 7.15 and WSA 04-2005.



**Table 7.15 Pressure Main Design**

Item	Description	Adopted Design Parameter	Comments
1	Flow Equation	Hazen – Williams	
2	Minimum Diameter	100mm – Unless approved otherwise by Council	
3	Friction Factors	Refer Item 10 in Table 7.14	
4	Minimum Velocity (on a daily basis)	0.75m/s	To prevent the deposition of solid material such as grit
5	Preferred Minimum Velocity	1.5m/s	To provide for slime stripping on a regular basis
6	Maximum Velocity	2.5m/s	To prevent damage to pipe lining
7	Configuration	<p>Pressure Mains should be sized to optimise the balance between reduction of detention times and life cycle cost. Factors to be considered include but not be limited to:</p> <ul style="list-style-type: none"> <li>• Population growth;</li> <li>• Staging;</li> <li>• Operational features to provide for maintenance and replacement activities;</li> <li>• Minimisation of energy costs; and</li> <li>• Detention times (reduction of odours)</li> </ul>	
8	Interconnection of Pressure (rising) Mains from different Pump Stations	Only with the approval of Council. Generally interconnection of pressure (rising) mains from different pump stations will not be approved unless there are substantial economic and operational benefits	Selection of the class of mains shall be for the maximum condition, refer pump selection, Table 7.14

## PRIVATE PUMP STATION AND PRESSURE MAINS

### D7.19 GENERAL

1. Sewage pumping stations serving more than one “Titled” property shall meet the requirements of this Manual and WSA 04–2005.
2. Where a gravity sewer connection is not directly available to a development, Council may approve a private sewage pumping station, which will discharge via a private pressure (rising main) to the property line, after which, it shall be a Council main, and then connected to Council’s reticulation infrastructure. The Developer shall prepare and provide to Council “As Constructed” drawings. A private pressure main is not acceptable within a Council controlled road reserve.
3. All costs associated with connection of a private pressure main to an existing gravity sewer system (system analysis, design and upgrades to provide capacity) shall be met by the Developer.

## **D7.20 CONNECTION TO EXISTING GRAVITY MAIN**

1. The approved connection point for a private pressure (rising) main shall be a discharge manhole that is connected to an existing gravity sewer manhole. Discharge manholes shall conform to Council's Standard Drawing.
2. Council may require the provision of a non-corrosive pipe installed for the length of sewer to the next downstream manhole and will require the provision of an inert lining to all internal surfaces of the pressure main discharge manhole.

## **D7.21 ALTERNATIVE CONNECTION POINTS**

1. Council may consider an alternative connection point. Where an alternative is proposed, the Consultant shall request written approval from Council. The request shall outline the reasons for the alternative connection point and the connection methodology proposed.
2. A private pressure main is not permitted to inject into another private pressure main.
3. If Council approves the alternative connection to be a Council rising main, the conditions outlined in Table 7.15 Item 8 of that table shall apply.

## **D7.22 PRIVATE PUMP STATION SIZING AND OPERATION**

1. Pumping stations shall be designed with sufficient in-system storage (in the well, upstream sewers or a dedicated self-draining high level storage) so that in the event of pump or power failure, 6 hours' emergency storage is provided with inflow at average dry weather flow, provided the scheme is not a low pressure sewer scheme or vacuum system. In system storage shall be measured from duty start level to the level of the lowest relief point. Low pressure sewer or vacuum schemes shall be looked at separately by Council.
2. Less than 6 hours of storage may be provided, as long as a standby generator is part of the sewer scheme
3. The pumps are to be set up to operate automatically as Duty / Standby and should be of the positive displacement electric type.
4. An alarm shall be provided in the form of a prominently positioned flashing red light set to activate at the invert level of the incoming Property drain.

## **D7.23 PRIVATE PRESSURE MAINS**

1. Medium density polyethylene pressure main class PN12 is approved for use with cream colouring.

2. If the pressure main is not readily available in cream colour, the pressure main shall be wrapped in cream coloured tape.

#### **D7.24 SPECIFIC REQUIREMENTS**

1. As the private sewage pumping station is a component of the internal plumbing and drainage, Council's Plumbing and Drainage Services Section shall check the design drawings for compliance with current legislation and relevant standards.
2. Owners of private pumping stations are responsible for all costs and charges associated with the installation, operation and maintenance. Council may consider entering into a service agreement with the owner of the pump station for the ongoing operation and maintenance of the pump station.
3. As constructed details and the location of the pressure main shall be submitted to Council.
4. Where Council accepts a Maintenance Service Agreement with the owner of a private pump station, the following conditions will apply:
  - The pump station control panel should incorporate SCADA equipment for transmission of monitoring data and control of Council's existing master system;
  - Council requirements for integrating the SCADA equipment will not relieve the owner of the responsibility for the operation and maintenance of the pump station during the agreed defect liability period;
  - Council will not accept responsibility under the Service Agreement until the pump station has been accepted "off maintenance" with all defects rectified and the pump station is operating to the satisfaction of Council;
  - Notwithstanding b) and c) above, Council may monitor the operation and performance of the pump station during the defects liability period; and
  - The following information shall be provided when the plans are submitted for approval:
    - Place of Manufacture of all components;
    - Pump Manufacturer, Model, Type, and Impeller diameter (as a cut sheet)
    - Rating of the motor;
    - Weight of the pump and motor;
    - Duty Points;
    - KWh/1000 litres pumped;
    - Performance curves; and
    - Guarantee.
5. Upon commissioning, the following information shall be provided to the Council for checking prior to survey plans being endorsed by Council.
  - Curves with at least four points plotted of the actual performance established in the field, or similar supervised works certificate;
  - Actual KWh/1000 litres pumped;
  - Complete wiring diagrams and details;
  - Mechanical details and parts list of pump and motor;
  - Maintenance catalogue showing daily, weekly, monthly and annual requirements;
  - A complete set of the manufacturers recommended spares delivered to Council; and
  - A set of cover lifters delivered to Council.

## **TELEMETRY SYSTEMS AND MANAGEMENT PLAN**

### **D7.25 TELEMETRY SYSTEMS**

1. All pump stations must be fitted with telemetry system in accordance with Council's Specification for Telemetry Systems. Council should be contacted to obtain a copy of their Technical Specification for Telemetry Systems.
2. It should be noted that where amalgamated Councils have varying telemetry systems, left over from pre-amalgamation Councils, pump station telemetry systems and requirements may vary within that Council and requirements must therefore be reconfirmed as a part of the design

### **D7.26 MANAGEMENT PLAN**

1. Where required, a facility management plan is to be provided which will detail procedures and arrangements in place for routine operation and management of the facility (eg. Service Agreement) The Facility Management Plan shall include:
  - Details of proposed regular maintenance of private sewer systems; and
  - A bi-annual report of sewerage flows to Council's sewer and details of maintenance activities.



# **APPENDIX A**

## **ADDENDUM TO GRAVITY SEWERAGE CODE OF AUSTRALIA**

**WSA 02-2014**

## **APPENDIX A**

### **Addendum to Gravity Sewerage Code of Australia WSA 02-2014**

#### **2.4.1 Loading per Serviced Lot**

Refer to Section D7.08 - Design Criteria of this Manual.

#### **2.3.2 Estimating future catchment loads**

Refer to Section D7.08 - Design Criteria of this Manual.

### **3.2 DESIGN FLOW ESTIMATION**

Refer to Section D7.08 - Design Criteria of this Manual.

### **3.3 DESIGN FLOW ESTIMATION METHOD**

Refer to Section D7.08 – Design Criteria of this Manual.

#### **5.2.8 Easements**

Refer to Section D7.12 – Dedication of Land, Easements and Permits to Enter of this Manual

#### **5.3.7 Horizontal Curves in Sewers**

Horizontal curves in sewers are not permitted.

#### **5.5.3 Minimum Air Space**

Refer to Section D7.08 – Design Criteria of this Manual.

#### **5.5.4 Minimum pipe sizes for maintenance purposes**

Refer to Section D7.13 – Property Connections in this Manual.

#### **5.5.7 Minimum Grades for Self Cleansing**

Refer to Section D7.08 – Design Criteria of this Manual.

#### **5.6.5 Minimum Depth of Sewer Connection Point**

The sewer shall be deep enough to drain the entire lot except where a private pump station is approved on the lot.

#### **5.6.7 Vertical Curves**

Vertical curves are not permitted.

#### **5.6.8 Compound Curves**

Compound curves are not permitted.

## **6.2 LIMITS OF CONNECTION TO SEWERS**

Add: connections into manholes will be permitted at end of lines only, elsewhere connections are required in line only.

## **6.3 METHODS OF PROPERTY CONNECTION**

The methods of property connection shall be as per Council's Standard Drawing No S-0030.

## **6.4 NUMBER OF PROPERTY CONNECTIONS**

### **6.4.2 Multiple Occupancy Lots**

An application shall be made at design stage for determination of servicing method.

## **6.5 LOCATION OF CONNECTION POINTS**

### **6.5.2 Vacant lots**

Replace with:

Property connections should generally be located at the lowest corner of the allotment between 0.5 and 1.5m upstream of the allotment boundary or manhole.

Where a sewer main lies within an adjoining allotment, the property connection is to extend a distance of 1.0m into the allotment. For battle-axe allotments with the property connection located within the access, the property connection shall extend along the access to a point 1.0m within the main part of the allotment or, where a sealed driveway is required for the full length of the hatchet 'handle' then 1m past the extents of the driveway to allow a suitable future point of connection. Where a sewer is contained within a stormwater drainage easement, then the property connection should extend a minimum of 1m past the easement boundary and into the lot it is serving. All property connections should be finished a minimum of 1m clear of any infrastructure.

## **6.7 TYPE 7 SPUR OR Y PROPERTY SEWER CONNECTIONS**

Y-property connections are not permitted.

## **7. MAINTENANCE STRUCTURES**

Table 7.1

The use of horizontal and vertical bends is not permitted.

### **7.3.2 Maintenance Structure Spacing – Reticulation Sewers**

The maximum distance between any two consecutive maintenance structures shall be 90m.

### **7.6.2 Types of Manhole Construction**

Approved PE manholes may be used as a standard manhole for a pumping/lift station or as a discharge manhole for a pressure (rising) main. PE manholes are not permitted in the following locations:

- Within roadway central medians, roundabouts or within kerb & channel;
- As the connection structure for future development stages; and / or
- In an area zoned Industrial or Commercial.

### **7.6.3 Design Parameters for MHs**

External drops are not permitted for use with precast or any other manholes unless otherwise approved by Council.

### **7.6.4 Property Connections in MHs**

Property connections must not be connected into maintenance holes except at end of line.

### **6.6.9 Ladders Step Irons and Landings**

Ladders, step irons and landings are not required.



## **7.7 MAINTENANCE SHAFTS**

### **7.7.1 General**

The use of maintenance shafts is permitted in reticulation sewers subject to the design parameters detailed in this Manual and WSA 02-2014.

### **7.7.2 Design Parameters for MSs and TMSs**

The following design parameters apply to maintenance shafts and terminal maintenance shafts in addition to or instead of those detailed in WSA 02-2002:

- Sizing and installation of maintenance shafts to generally comply with the manufacturers recommendations;
- Maintenance shafts shall be graded to the intersection point of the sewer main and maintenance shaft coupling / fitting;
- Maintenance shafts may be used on 100mm, 150mm and 225mm diameter sewer mains and Property connection branches only;
- Maintenance shafts shall be used to a maximum depth of 3.0m;
- Testing of maintenance shafts shall generally be carried out in conjunction with the testing of the sewer main;
- Property connection branch inspection tees shall be 2000mm clear of the centre of the Maintenance Shaft;
- Property connections must not be made into maintenance shafts;
- Maintenance shafts must be provided with a Council approved 600mm dia. Ductile Iron Class B cover located within a precast surround. The trench bedding material shall extend below the shaft inspection opening surround;
- A maximum of five (5) Maintenance Shafts will be permitted between two conventional maintenance holes with a total length of sewer of not more than 300m between maintenance holes;
- Maintenance Shafts are to be located with a maximum spacing of 60 metres to a maintenance hole or shaft;
- The combined flow entering a MS will not exceed 22 L/s;
- The flow to be redirected at an angle greater than 45 degrees will not exceed 12 L/s; and

- The vertical distance a sewer connection entering the riser and the invert of a MS will be a minimum of 1100mm. Where this distance is less than 1100mm the incoming sewer will enter at the invert of the MS.

Maintenance shafts and terminal maintenance shafts are not permitted in the following

locations:

- As the receiving manhole at a pumping / lift station;
- As a discharge manhole for a pressure (rising) main;
- Within roadway central medians, roundabouts or within kerb and channel;
- As the connection structure for future development stages; and
- In an area zoned Industrial, Commercial, or Multi-unit.

## **8.2 WATER SEALS, BOUNDARY TRAPS AND WATER – SEALED MH'S AND GAS CHECK MHs**

Water seals are not required.

### **8.2.3.3 GAS CHECK MH'S**

Gas check MH's are not required.

## **8.3 VERTICAL AND NEAR VERTICAL SEWERS**

Prior approval must be obtained from Council for the use of vertical or near vertical sewers.

## **8.5 VORTEX INLETS AND WATER CUSHIONS**

Prior approval must be obtained from Council for the use of water inlets and water cushions

## **8.6 INVERTED SYPHONS**

The use of inverted syphons is not permitted.

## **8.8 FLOW MEASURING DEVICES**

Flow measuring devices are not required to be installed. Notwithstanding this provision

shall be made in the design of the valve chamber to allow the future installation of an electromagnetic flowmeter.

## **8.9 WET WEATHER STORAGE**

Prior approval must be obtained from Council for using wet weather storage as a means of reducing downstream infrastructure.



# **APPENDIX B**

## **ADDENDUM TO SEWERAGE PUMPING STATION CODE OF AUSTRALIA**

**WSA 04-2005**

## **APPENDIX B**

### **Addendum to Sewerage Pumping Station Code of Australia WSA 04-2005**

#### **Part 3 – Construction**

To the specification 25. Metalwork, add the following:

##### **25.1 Pump Lifting Chains**

- Lifting chains shall be fitted to each pump and shall be in accordance with AS 2321;
- Eyebolts shall be in accordance with AS 2317 – galvanised;
- Shackles in accordance with AS 2741 – galvanised;
- Lifting eyes in accordance with AS 3776 – galvanised;
- Lifting chain to be grade L – galvanised;
- The lifting chain for pumps less than 1 tonne shall be 10mm link as a uniform standard;
- Lifting chain for pumps weighing greater than 1 tonne shall be sized accordingly;
- Provide a suitable bracket and hook in an out of the way location for hanging the chain; and
- For checking and chain replacement, each pump station shall have an easily visible plaque mounted adjacent to the wet well stating length and weight of chain and the weight of the pump to which it is attached.

##### **25.2 Brackets**

- Provide stainless steel brackets for mounting of floats; and
- Provide stainless steel brackets for fastening the level sensor stilling well.



# **APPENDIX C**

## **ADDENDUM TO THE VACUUM SEWERAGE CODE OF AUSTRALIA**

**WSA 06-2008**

## **APPENDIX C**

### **Addendum to the Vacuum Sewerage Code of Australia WSA 06-2008**

#### **PART 1 – PLANNING AND DESIGN**

To the specification 5.3 Vacuum Sewer Design Flows, amend the following:

##### **5.3.1 General**

Remove references to PVC-U and PVC-M – use PE pipe only.

#### **Specification 6.6 VACUUM GENERATORS AND PIPE WORK**

Clause 6.6.3 Generator Types, add the following:

In larger stations (>20 l/s), Liquid ring vacuum generators shall not be used. Oil filled vacuum generators are required. For stations < 20 l/s, dry run vacuum generators are preferred.

Add new Clause 6.6.9 Air Handling Pipe Material, as follows:

Any pipe within the Vacuum Station designated for the handling of air or air sewage / water mixture shall be Stainless Steel 316L with wall thickness designed for the application.

#### **Specification 6.10 NOISE**

Add the following:

- In addition to noise environmental regulations to be met, the noise level in residential areas, measured as the Adjusted Maximum sound pressure level LA10adj, 10mins shall not be greater than the background noise level plus 3 dB(A) at the boundary of vacuum station lot;
- In Industrial or Commercial areas it shall not be greater than the background noise level plus 8 dB(A). It will likely be necessary to provide sound attenuation construction within the building, sound rated doors and mufflers on pipes leading to the exterior of the building in order to meet requirements.; and
- The developer shall perform noise studies before and after commissioning to demonstrate that requirements have been met.

## **Specification 6.11 ODOUR CONTROL**

Clause 6.11.2 Bio-filters add the following:

- The odour control bed shall be roofed; and
- The odour control bed shall have fitted over it an automatic sprinkler system with moisture control, to ensure that the bed operates at an operator selectable moisture content

## **Specification 8.3 ALARMS**

TABLE 8.1

Add to the list of Alarms required:

- Vacuum Generator HIGH TEMPERATURE. Provide a high temperature sensor for each of the Vacuum Generators which will both alarm and shut down the unit in the event of the temperature rising to a manufacturer recommended maximum set point.

## **Specification 9.5 PIPEWORK AND FITTINGS FOR VACUUM SEWERS**

Remove references to PVC-U and PVC-M – use PE pipe only.

## **Specification 16 SUPPORTING SYSTEMS**

### **16.1 SERVICES**

Add a new Clause:

16.1.5 Tool Kit and Special Tools, as follows:

Provide a tool kit with the station containing a range of tools which will allow the operator to perform the duties required to operate and maintain the system. Provide also any specialized tools required for the same purpose.

### **16.2 VACUUM STATION FIXTURES**

Add a new Clause:

16.2.4 Vacuum Testing Station as follows:

Provide a vacuum testing station on the workbench utilising the station vacuum in order



to test valves and vacuum equipment after repair. Pipe and valve the test station appropriately.

### **PART 3 - CONSTRUCTION**

#### **C26.2 SWITCHBOARD INSTALLATION**

Clause 25.6.4.4 Cubicle Labels, add the following:

- Ensure pump labels match with the labelling of the pumps on the floor.

#### **C28.3 INSTALLATION OF PUMPING AND VACUUM GENERATOR UNITS**

Clause 28.3.3 Unit Numbers, add the following:

- Ensure that Unit numbers match with the labelling numbers on the switchboard.

### **PART 4 – STANDARD DRAWINGS**

Chamber series of drawings, VAC 1200, VAC 1201, VAC 1202, VAC 1203, VAC 1204 and VAC 1205:

- Remove references to brickwork risers in the construction of the collection chambers. Brickwork is not permitted; and
- To the vacuum layout series of drawings, VAC 1300 and VAC 1301, add the following: provide an appropriately sized suction line (minimum DN 200), from the Vacuum Vessel to the outside of the building for a sucker truck connection. The suction line shall be valved outside the building to permit the draining of the Vacuum Vessel without the operator of the suction truck having to enter the building.

# DESIGN GUIDELINES

## D8 - UTILITIES

### GENERAL

#### D8.01 SCOPE

1. This section sets out the minimum standards for the provision of utility services within new subdivisions and developments.
2. The designer needs to coordinate the provision of services within the confines of the road verge in consultation with and to the requirements of the Service Authorities / Providers.

#### D8.02 OBJECTIVE

1. The objective of the Manual is to assist the designer in making provision for the following utility services within the design of new subdivisions and developments:
  - Telecommunications;
  - Electricity Supply;
  - Road Lighting; and
  - Gas

#### D8.03 REFERENCE DOCUMENTS

**Note: Where Acts or reference documents are updated, reference should be made to the current version.**

AS/NZS 1158-2010 Lighting for Roads and Public Spaces

Ergon Energy Standard Drawings

- Standard Drawing 5162/1 - Joint Electricity, Gas and Telecommunications; and
- Standard Drawing 5162/2 - Joint Electricity, Gas and Multiple Telecommunications

Civil Aviation Safety Authority Australia – Manual of Standards Part 139 Aerodromes

Ergon Energy Lighting Construction Manual

Ergon Energy Underground Construction Manual

G645:2011 Fibre Ready Pit and Pipe Specification for Real Estate Development Projects / NBN Co  
Installing Pit and Conduit Infrastructure – Guidelines for Developers

#### **D8.04 SERVICE AUTHORITY'S GENERAL REQUIREMENTS**

1. Prior to an application to reconfigure a lot, the Service Authorities should be consulted to confirm that the provision of services to the proposed development would be provided. Eg Telstra, Ergon and NBN Co.
2. Following receipt of Development Approval from Council the designer shall make application to both Authorities for "Offer of Connection Services" for electricity and telecommunication services.
3. Approved proposal plans shall be supplied to both Authorities, for staged developments, this shall include an overall concept layout outlining stages and expected timing for each stage.
4. Should any amendment occur in the design, both Authorities are to be notified immediately together with an amended plan.
5. Where a development includes lots that may have higher service demands (i.e. Industrial, Commercial, Multi Residential etc.), details of the expected yields and the maximum permissible development yield for each lot in accordance with its current zoning shall also be provided to both Authorities.
6. Underground telecommunication services shall be provided to all new developments.
7. Unless otherwise approved by Council, an underground electricity supply is to be provided to all new developments and all new consumer mains connections to developments to be supplied from a pillar.
8. The designer shall be responsible for coordinating and checking the locations of all telecommunication and electrical services to avoid conflicts with other services (i.e. Stormwater pits etc).
9. Layout plans for telecommunication and electrical services including the road lighting design shall be submitted to Council with the design submission.
10. Evidence of the agreement to provide an electricity supply and telecommunication services must be given to Council prior to the sealing of plans of survey.

## **D8.05 TELECOMMUNICATION SERVICES**

1. Installing of underground telecommunication conduits shall be in accordance with the Service Authority's requirements.
2. Consideration shall be given to the location of any roadside cabinets, pillars and pits within the subdivision design.
3. Where an underground telecommunication service is to be provided, telecommunication conduits shall be placed in a shared trenching arrangement, refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trench arrangement that incorporates telecommunication, electrical and gas services.
4. Unless approved otherwise by Council, all telecommunication services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.
5. The developer is responsible for the provision of telecommunication conduits across roads, existing roads are to be bored.
6. Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.

## **D8.06 ELECTRICITY SUPPLY**

### **Underground Supply**

1. Unless otherwise approved by Council, electricity reticulation is to be placed underground.
2. Where an underground electrical service is to be provided it shall be placed in a shared trench arrangement. Refer relevant Ergon Energy Standard Drawings for shared trenching arrangements that incorporates telecommunication, electrical and gas services.
3. Sharing of trenches with sewerage and water mains shall not be permitted. Where existing or proposed services are likely to impede on standard electricity alignments, Council and the Ergon Energy are to be consulted to confirm service alignments and clearances.
4. Unless approved otherwise by Council, all electrical services shall be located within the road reserve at a distance of 0.3m – 1.2m from the property boundary.
5. The developer is to liaise with the Ergon Energy in relation to any requirement for an electrical substation with a view to providing sufficient suitable land on which to site the infrastructure.


6. Where a pad-mount substation is to be located within the frontage of a proposed or existing parkland, the location shall be subject to Council's approval.
7. No other services shall pass beneath the Ergon Energy pillars or substations.
8. The developer is responsible for the provision of electrical conduits across roads, existing roads are to be bored.
9. Permanent non-ferrous cable markers are to be installed in the kerb to mark the location of all road crossings.
10. Electrical pillars shall generally be located at an alternate boundary to water meters and gas service crossings. Exceptions may be considered in individual circumstances where unusual conditions or lot layouts exist and where approved by Council and the Ergon Energy.
11. Pillars shall be located at property boundaries exceptions can occur where there are stormwater easements or other constraints. The Ergon Energy should be consulted to determine alternate locations in these cases.
12. The Ergon Energy conditions of connection including contributions for initial cable installation works shall be met prior to the acceptance of the works "On Maintenance" by Council.
13. Where advised by the Ergon Energy an additional communication conduit supplied by the service provider shall be laid to Ergon Energy requirements.

### **Overhead Supply**

1. The overhead electrical reticulation shall be designed in accordance with the Ergon Energy requirements.
2. Power poles shall be placed on an appropriate alignment as approved by Council and the Ergon Energy.

### **D8.07 ROAD LIGHTING**

1. All road lighting designs shall be prepared by an approved Engineering Consultant i.e. a Registered Professional Engineer Queensland and shall be included in the design submission for acceptance by Council.
2. Road lighting design must be in accordance with this manual and AS/NZS 1158 and the Ergon Energy Lighting Construction Manual and Underground Construction Manual. Specific consideration must be given to identification and lighting of Local Area Traffic Management devices (LATM's) and intersections.

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3. All light columns, luminaries and lamps are to be specified from the Ergon Energy Lighting Construction Manual and Underground Construction Manual.
  4. All installation works shall be in accordance with the Ergon Energy Lighting Construction Manual.
  5. Lighting on declared roads shall be designed and installed to the requirements of the Department of Transport and Main Roads.
  6. It is a Council requirement that road lighting be installed under Rate 2 conditions of Tariff 71 - Public Lamps at all new subdivisions and developments.
  7. The required lighting category for a particular road hierarchy shall be determined from Table D8.1.

**Table D8.1 Lighting Categories**

Category	Application <sup>1</sup>	Luminaire Type	Lamp Type	Rate <sup>2</sup>
V3	Sub Arterial Road	Aeroscreen	150 – 400 Watt HPS	2
V5	Major Collector Road	Aeroscreen	150 – 400 Watt HPS	2
P3	Minor Collector Road	Normal	80 Watt MV <sup>4</sup>	2
P4	Residential Street Access Street Access Place	Normal <sup>3</sup>	50 Watt MV <sup>4</sup>	2
P4	Industrial Collector Street Industrial Access Street	Normal	80 Watt MV <sup>4</sup>	2
P1 – P3	Pathway and Cycleway	Normal <sup>5</sup>	80 Watt MV	2
		OR Council Specific	Council Specified	3
P3	Bus Stop	Aeroscreen	Wattage as required	2
		OR	HPS – Cat V Lighting	
		Normal	MV - Cat P Lighting	

Notes:

1. Roadway Classifications are contained in Table D1.1 “Street and Road Hierarchy – Deemed to Comply Requirements” of Design Manual “D1 Road Geometry”. Where discrepancies exist between No. of Dwellings, Traffic Generation and Roadway Classification, lighting design shall be based on the Council designated Roadway
2. Rate 2 – Lighting owned and maintained by the Ergon Energy. Rate 3 – Lighting owned and maintained by Council
3. Where “Nostalgia” luminaires are used, the lamp type is to be an 80 Watt MV. The “Nostalgia” luminaire must meet the glare control requirement stipulated in AS/NZS 1158.3.1:2005, design is to be based on “I” table 201262.CIE and the luminaire sourced directly from Sylvania.
4. Once permitted by the Electricity Authority, T5 fluorescent or compact fluorescent lamps shall be used where they offer a lower energy consumption or lower cost solution than the lamps nominated.
5. Where lighting is located next to residences (on a pathway or cycleway) then a Type 4 – Aeroscreen luminaire is required.
6. In general, street lighting poles are to be located opposite common allotment boundaries, to minimise potential interference with vehicle access, access to services (i.e. hydrants) and glare complaints from residents. It is desirable that poles not be located opposite boundaries of “battle axe” allotments due to a higher potential for vehicle collision.
7. Council may consider a lesser standard for subdivisions with lots greater than 4000m<sup>2</sup> and outside the designated urban footprint. e.g. Category P5 or lighting at intersections, cul-de-sac’s and other hazardous locations.

8. Lighting shall be provided at the following locations in accordance with the development approval conditions and AS/NZS 1158:
  - Straight Sections;
  - Curves;
  - Intersections and Junctions;
  - Pedestrian Refuges;
  - Cul-de-sacs; and
  - Local Area Traffic Management Devices including Roundabouts. (The maintained horizontal illuminance is not to be less than 3.5 lux).

**Note**

Where a pedestrian crossing has been installed it shall be lit in accordance with AS 1158.4 – 2009, Lighting of Pedestrian Crossings.

9. Lighting of entry points to pathways and cycleways shall be achieved by the selected

placement of a road light nearby.

10. Additional lighting shall be provided at a designated bus stop facility; the design shall include the entry and exit lengths of the bus stop.
11. Lighting columns are to be offset a minimum of 820mm (+/- 20mm) from the invert of kerb and channel to centre of the pole. For a road with a flush kerb or a low density residential road that has a table drain instead of layback kerb and channel, the lighting column is to be offset 1300mm (+/- 20mm) from the outer edge of traffic lane to centre of the pole.
12. Where required to clear conflicts e.g. stormwater, sub-soil drain flushing points, water supply infrastructure, sewerage infrastructure, lighting columns can be located up to 0.5m in either direction from boundary prolongation along the roadway and at an alignment up to 1.1m from the invert of the kerb and channel.
13. The placement of lighting columns shall not occur within 1m of any water main that crosses the road.
14. Lighting columns that are to be installed at all new subdivisions and developments are to be a four hole base plate mounted steel pole as specified in the Ergon Energy Lighting Construction Manual.
15. When joining to an existing installation or extending a subdivision in stages, lighting columns and luminaires shall match as near as possible with the existing infrastructure.
16. The use of aeroscreen luminaires may be required when road lighting is installed near airports, refer to the Civil Aviation Safety Authority Australia – Manual of Standards Part 139.
17. Documentation shall be submitted to Council with the design submission demonstrating compliance with the AS/NZS 1158.
18. Foundation footing for minor road lighting must be cast in situ, a precast concrete foundation is not permitted without prior approval of council.
19. Existing timber street light poles are to be replaced with a steel lighting column when overhead powerlines are augmented underground.



## **D8.08 PARK LIGHTING**

1. Lighting requirements in parks will be advised by Council in accordance with the classification of the park.
2. A point of supply is required to all parks location will be advised by Council in consultation with Ergon Energy
3. Pathways or cycle ways within parks that require lighting shall be lit to the minimum lighting category P3 or above as deemed appropriate from the selection criteria tabled in AS/NZS 1158.

## **D8.09 GAS**

1. Gas reticulation within a new subdivision or development may be installed subject to Council's approval.
2. Where reticulated gas is approved by Council, the gas service shall be located in the shared trench arrangement. Refer Ergon Energy Standard Drawings 5162/1 and 5162/2 for shared trenching arrangements that incorporates telecommunications, electrical and gas services.
3. The location of a central storage facility shall be on a separate freehold parcel of land with appropriate security to the satisfaction of the Council.
4. The Developer shall be responsible for obtaining all relevant approvals and licences necessary for installation.

# DESIGN GUIDELINES

## D9 - LANDSCAPING

### GENERAL

#### D9.01 SCOPE

1. This section sets out the minimum standards for landscaping within new subdivisions and on-street works for private developments.
2. This manual contains procedures for the design of:
  - On-street landscaping works, including buffers mounds, traffic islands and roundabouts; and
  - Public Open Spaces including, signage, furniture and playgrounds.

#### D9.02 OBJECTIVE

1. The objective of this manual is to define Councils minimum landscaping requirements and to assist the designer in achieving the following:
  - Visually enhancement of the streetscapes;
  - Enlargement of the habitat and plant diversity in order to provide a food source for indigenous fauna;
  - Enhanced living environments by reducing the impacts of noise, fumes and car headlights;
  - Provision of shade trees; and
  - Crime prevention through environmental design (CPTED).

#### D9.03 REFERENCE DOCUMENTS

**Note: Where Acts or reference documents are updated, reference should be made to the current version.**

Whitsunday Regional Council

- Planning Scheme
- Local Laws and Policies

Australian Standards

- AS/NZS 1158.3-2005 Pedestrian area (Category P) lighting
- AS 3500 National Plumbing and Drainage, Part 1.2 Water Supply – Acceptable Solutions
- AS/NZS 4486 Playgrounds and playground equipment - Development, installation, inspection, maintenance and operation

Wet Tropics Management Authority

- [Weed Pocket Guide of Agricultural and Environmental weeds for Far North](#)

## **ON-STREET LANDSCAPING WORKS**

### **D9.04 GENERAL**

1. At the time of development, the developer shall provide all on-street landscaping, this shall include street tree planting, grass establishment to road verges, and landscaping of traffic islands and buffer mounds.
2. Council should be consulted prior to commencement of the design to ascertain whether there are any site specific design requirements.
3. Some Local Authorities have plant selection guidelines and suburban planting themes designers are encouraged to consult with Council in the preparation of the landscaping design.
4. Landscaping plans shall be prepared by a person of professional standing in the field of Landscape architecture or landscape design, at a standard acceptable to Council.
5. CCA treated timber is not to be used for the construction of Council assets.
6. ACQ, Copper Azole, LOSP, or another alternative timber treatment, will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, eg 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

### **D9.05 EXISTING VEGETATION**

1. In order to retain any established landscape character, all trees located within existing road reserves shall be protected and retained unless approved otherwise by Council.
2. Significant trees located within the verge of new road reserves shall be protected wherever possible and where advised by Council. This may require the adoption of non-standard utility service alignments therefore designers are encouraged to discuss proposed solutions with Council.

### **D9.06 VERGES**

1. All verges shall be covered full width with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils minimum standards and Specifications.
2. In order to guarantee a high standard of maintenance all verges are to be in a mowable condition, free from rocks and loose stones, and graded to even-running contours.
3. Aside from grass establishment and tree planting, landscaping of the verge between the property boundary and kerb is not a Council requirement. However, additional landscaping

within the verge may be considered subject to Council approval. Generally, any additional landscaping shall be clear of underground services or alternatively limited to ground covers or small shrubs less than in 500mm height.

4. Should any excavation of the underground services in this vicinity of the additional verge landscaping be required, thus destroying the vegetation, Council will not be held responsible for plant replacement. Maintenance of planting in this vicinity will be the sole responsibility of the adjacent property owner/occupier.

## **D9.07 STREET TREE PLANTING**

1. The ultimate aim of street tree planting is to provide:
  - An attractive streetscape with character and charm. An individual character may be obtained by using a specific tree species for each street;
  - Shade, and the reduction of heat and glare from the road pavement. Parked cars may remain cool during the summer months; and
  - Habitat provision and enhancement. Native flowering trees provide a source of food and shelter for insects, birds and animals.
2. An avenue of trees of identical species and size planted at regular intervals has far greater visual and aesthetic impact than a mis-matched selection of incompatible trees. In order to promote continuity in new streetscapes, a single species should be nominated for each street.
3. Where a development is occurring in an established street setting, an assessment of the existing trees should be made, and the most prevalent and healthy species chosen for verge planting.
4. Tree species shall be selected for their suitability to the site conditions (eg. small trees under power lines, drought resistance, soil suitability) and shall be in accordance with any relevant Council plant selection guidelines and suburban planting themes.
5. To ensure consistency in growth rate and form all trees shall be no less than two (2) metres in height and shall be well established in their root and branch formation. A minimum 45 litre container should ensure a good survival factor.
6. The alignment and placement of street trees measured from the tree at the estimated ultimate size shall be in accordance with the following:
  - Greater than 4.0 metres from electricity or telecommunication poles or pillars;
  - Greater than 7.5 metres from streetlights to ensure effective street lighting;
  - Greater than 4.0 metre radius from high voltage transmission lines;
  - Greater than 2.0 metres from stormwater drainage pits;
  - Trees are to be planted in the front of properties at the centre of the lot at a rate of one per lot, or at the necessary rate to provide a maximum 20 metre spacing;
  - Trees are to be placed a minimum 1000mm from the back of kerb where achievable;
  - Trees are to be placed a minimum of three (3) metres from driveway;
  - At intersections trees are to be placed a minimum of ten (10) metres back from the face of the kerb of the adjoining street;
  - Trees are to be located so as not to obstruct access to any services or signage; and
  - Trees are to be located so as not to obstruct pedestrian or vehicular traffic, nor create traffic hazard or cause damage to existing trees.
7. Street trees shall be planted in accordance with Standard Drawings SEQ G-010 – SEQ G-012 and installed in accordance with Council Specifications.
8. Street trees should not be a plant listed in:

- Land Protection (Pest and Stock Route Management) Regulation;
- Pest Management Plan; or
- Wet Tropics Management Authority Publication Agricultural and Environmental Weeds.

## **D9.08 BUFFER ZONES**

1. Mounds / Buffers adjacent to major roads controlled by the Department of Main Roads must comply with the requirements as specified by the Department of Main Roads and as detailed herein. Generally, these buffers are ten (10) metres wide along the full frontage of the major road.
2. The aim of the Buffer Mound landscaping is to:
  - Reduce the visual impact of adjacent development by screening rooflines;
  - Reduce the visual impact of proposed noise attenuation barriers, which may be constructed at some time in the future on the mound crest;
  - Reduce the visual impact of the mound's severe geometric landform by screening with foliage to ground level;
  - Introduce a "natural" vegetated landscape appearance by replacing open agricultural land with a facade of dense planting;
  - Reinforce the local character by indigenous tree and shrub species; and
  - Provide additional functions, ie. shade over adjacent bikeways.
3. In order to accomplish the above aims, the species mix of plant selection should incorporate a range of species to provide variation in form, colour and texture, to contribute to a natural appearance. The front line of planting should have foliage down to ground level.
4. To ensure that buffer mounds are given the best possible chance of successful establishment and prolonged survival, a temporary irrigation system is required to be installed to the mounding. The preferred system is with a drip-style irrigation system or similar below the surface of the mulch, which reduces the chances of vandalism and reduces excess water loss as a result of runoff and evaporation.
5. Strong recognisable character is further reinforced by repetition of some suitable species as street and park trees in the adjacent subdivision
6. Use of disciplined plant selection based on themes such as colour, texture, or natural species associations, in addition to site suitability, creates higher quality landscapes than random assortments of nursery stock chosen solely for short notice availability and growth suitability.
7. Advance ordering and growing on contracts are desirable to ensure availability of desired species in the large quantities required.
8. Local rainforest species, which typify and reinforce the regions image, are preferred. Most are hardy, long-lived and have dense growth, which suppress weeds and reduce long-term maintenance.
9. The landscaping shall be designed so as not to create a safety risk to people using the mound and adjacent areas (i.e. no thorns, heavy nuts or poisonous fruits or berries).
10. No tree planting shall be done higher than 1/3 from the base of mound i.e. no trees on top of the mound.

## **PUBLIC OPEN SPACE**

### **D9.09 GENERAL**

1. At the time of development, the developer shall landscape all public open spaces to the satisfaction of Council and in accordance with this manual.
2. Where a development is proposing to undertake any work within existing or proposed park a landscaping plan shall be prepared for consideration by Council.
3. Landscaping plans shall be prepared by a person of professional standing in the field of landscape architecture or landscape design, at a standard acceptable to Council.
4. CCA treated timber is not to be used for the construction of Council assets.
5. ACQ, Copper Azole, LOSP, or another alternative timber treatment will be considered for approval by Council, so long as each individual piece of timber is clearly marked to show the treatment type, eg 'ACQ, Copper Azole, LOSP' or other similar text as appropriate. In some instances, (e.g. high use public areas), Council will require these markings to be burn branded into exposed timber areas also. In this regard reference should also be made to Council specific standard drawings for additional marking of treated timber elements that are used in the construction of Council assets in high use public areas.

### **D9.10 CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN**

1. It is important when designing parks that the principles of crime prevention through environmental design are considered, in particular:
  - Dense stands of vegetation should be confined to park peripheries, and should not be located alongside paths and play equipment. Vegetation should not block casual surveillance of picnic and play areas from adjacent residences;
  - Landscaping should not restrict sightlines and opportunities for natural surveillance within and of a site therefore all new vegetation around centres of activity should be single clean trunked trees with shrubs which do not grow beyond 500 mm height. This will avoid the problem of concealment and allow a greater area of surveillance from the road;
  - Lighting where required should be sufficient to deter loitering and vandalism;
  - Large shrubs and trees should be planted in such a way as to prevent or reduce illicit access to buildings and neighbouring properties; and
  - Safety in large parks or areas of vegetation within a development may be enhanced by planting trees in thin strips which maximises the number of trees planted but which also restricts the ability of offenders to hide within a “mass” of vegetation.

### **D9.11 TREATMENT TO PARK BOUNDARIES**

1. Vehicles should be prevented from driving into parks, drainage reserves and public open spaces by the provision of barriers along the road frontages. These may be log barriers, bollards or natural features such as existing vegetation or newly planted and staked trees. Access for maintenance vehicles shall be provided through a lockable gate or removable bollard.

2. Definition of the park side boundaries should be indicated by installing log barrier fencing or bollards at approximately 20 metre centres, down each side. These should be offset from the surveyed boundary by 100 mm in order to allow future erection of private fencing without having to remove Council's markers. Definition of the park boundary is intended to deter encroachment onto park by adjacent private properties and to define the park limits.
3. Log barriers and bollards shall be in accordance with Standard Drawing SEQ G-0042 unless otherwise approved by Council.

#### **D9.12 INTERNAL CIRCULATION**

1. The park layout should be designed to ensure that internal circulation or movement within the park is:
  - Safe;
  - Unencumbered;
  - Highly visible internally and externally; and
  - Linked to external cycle and pedestrian networks.
2. Design features including access points, street frontages, carparks, pedestrian/bike paths, park equipment and lighting should be considered.
3. Design of paths, car parking and access points should consider the needs of people with mobility challenges. Pathways shall be in accordance with Design manual D1 and comply with accessibility standards.

#### **D9.13 PLANTING**

1. Council parks seek to provide a range of recreation opportunities and there is scope to utilise planting design to help achieve this objective, options include:
  - Shade trees evenly planted throughout the site to maximise protection from the sun;
  - Island or corridor planting to concentrate trees for easy maintenance and encourage bird life for pleasure viewing;
  - Grouped planting will also provide shade adjacent to open space to allow unencumbered active play areas; and
  - Lines of tree planting to define edges of informal kick-about areas.
2. A minimum 75% of the proposed tree planting should be endemic, and species should be selected on their adaptability to site conditions, and their value to local fauna. Where the proposed park adjoins an area of established native vegetation, an extension of this habitat into the park should be implemented by using compatible species. The designer should also be encouraged to use rare and endangered plant species, or species proven to have excellent bird, butterfly and insect attracting qualities.
3. In order to promote the unique landscape characteristics of the region exotic flowering trees and non-native palms should only be used as features or emphasis, where necessary.
4. Some Local Authorities have plant selection guidelines and suburban planting themes and designers are encouraged to consult with Council in the preparation of the landscaping design.
5. Street trees should not be a plant listed in:
  - Land Protection (Pest and Stock Route Management) Regulation;
  - Local governments Pest Management Plan; and
  - Publication, Agricultural and Environmental Weeds (Wet Tropics Management

Authority).

#### **D9.14 GRASSING**

1. All parks shall be covered with topsoil to a depth of not less than 50mm and shall be lightly compacted and grassed in accordance with Councils' minimum standards and Specifications.
2. In order to guarantee a high standard of maintenance all parks shall be in a mowable condition, free from rocks and loose stones, and graded to even-running contours.
3. Grass should be established within the proposed park as quickly as possible in order to avoid erosion and sedimentation to the local waterways, and prevent the establishment of weeds in accordance with Council's Manuals and Specifications.

#### **D9.15 MOUNDING**

1. Mounding may be used within the park design to provide topographical interest, to emphasise views, to help screen adjacent properties or eyesores, or as part of the internal design. The mounds should not exceed a gradient of 25% (1 in 4) in order to reduce erosion and allow mowing. Planting of trees and shrubs over the mound will further emphasise height and shape.
2. Care should be given to ensuring that the mound does not restrict visibility into and out of the park thus threatening the safety of users or provide unwanted visibility into private properties.

#### **D9.16 FURNITURE**

1. Park furniture should reflect the intended function of the park and compliment any distinguishing features present eg. seating situated to maximise a view scape. Some preferred features of furniture include:
  - Park benches located under a natural or built shade structure to allow day long use. If the shade is built, it should have an impervious roof eg.colourbond to provide shelter during rain;
  - Well drained ground and hard surfacing below any structure. Surface material could be pavers, coloured or exposed aggregate concrete etc;
  - Shade structures should maximise protection from the sun during the hours of 11 am - 3 pm; and
  - Refuse bins should be located for ease of use and pickup by refuse trucks eg adjacent to playgrounds or picnic areas, at park exits.
2. Designs of furniture should reflect a strong aesthetic and vandal resistant appearance.
3. Where possible, natural features may be used eg. mounding for seating, trees or natural rock for bollards to simulate park furniture; and
4. Some Local Authorities have park furniture themes and master plans designers are encouraged to consult with Council in the preparation of the landscaping design.



## **D9.17 SIGNAGE AND INTERPRETATION**

1. A park name sign is to be provided. The park name is to be submitted to Council for approval with the landscaping drawings. The proposed name is to preferably have the same theme as the subdivision's street names. The name is to be creative and imaginative in order to appeal to children for local parks and to adults for district and regional parks.
2. If the park has any historic, cultural or natural value the provision of interpretive signage will provide further interest to local users. Council can provide assistance in developing interpretive concepts.

## **D9.18 LIGHTING**

1. Lighting requirements within parks will be advised by Council in accordance with the classification of the park.
2. As a guide 2 park lights on poles shall be provided for every park of 4,000 square metres. However, this may vary depending upon the shape and alignment of the park, and the presence of existing vegetation. Generally, parks should be well lit providing a safe nocturnal environment for local users. Council will consider the relaxation of one or both lights where existing street lights are adjacent to the park area. Underground power should be provided to each pole. Light fittings should be vandal resistant.
3. Pathways within parks that require lighting shall be lit to the lighting category determined from the road Lighting Standards AS/NZS 1158.3 Pedestrian area (Category P) lighting.

## **D9.19 PROVISION OF WATER**

1. Facilities for drinking, such as drinking tap / bubbler, shall be provided for each park area, and should be located near active recreational areas, adjacent to a well-used access route, and within an area serviceable from the road frontage. A soak-away trench shall be provided to the base of each tap to prevent ponding and waterlogging.
2. In order to irrigate the park 1 water service connection in a cast iron valve box should be provided for each 2,000 square metre of park and should be a minimum 40 mm diameter with hose connection.
3. As an alternative, irrigation may be provided, on condition that the proposed system complies with the Council Standard Specification for Irrigation.

## **D9.20 WATER FEATURES**

1. Water features should not be included in infrastructure to be adopted by Council.

## **D9.21 PLAYGROUNDS**

1. To ensure play equipment is as safe as possible and appropriate for the intended users, it should conform to the current and relevant Australian Standards for playgrounds and play areas and additional standards as may be established by Council.
2. Where playground equipment is required by Council as a condition of the development permit of the subdivision, or proposed to be installed by the developer, the following requirements should be considered and incorporated into the design:
  - Type of play equipment proposed should be selected in consultation with Council;
  - The age range of the users should influence the type of equipment provided; and
  - The siting of the playground should not infringe upon adjacent residential properties; a minimum
    - distance of 10 metres between equipment and park boundaries should be provided and suitably landscaped with a minimum of 3 metre of screen planting to reduce noise and visual impact. Such landscaping is to be consistent with CPTED Principles.
3. To conform to safety requirements impact absorbing surfacing should be installed to the play area, eg sand, continuous rubberised matting, shredded car tyres.
4. Shade cover over playgrounds is to be provided, in order to encourage day long use. Preferably this should be a permanent shade structure approved by Council, however shade trees planted at maximum 6 metre centres around the safety area are acceptable.
5. The provision of seating overlooking the playground will be required.
6. Bench seating should be of the recycled plastic or aluminium type.

## **D9.22 MAINTENANCE**

1. The design of a park should carefully consider long-term maintenance requirements. Mulched garden beds containing trees and shrubs are easier to mow around than numerous small trees and shrubs planted individually throughout the grassed areas.
2. Where single shade trees occur they should be mulched to 200 mm depth in a minimum 1.2 metre diameter circle, thus avoiding damage to trunks by mowers or whipper snippers.
3. Access to the parks, drainage reserves and public open spaces for maintenance vehicles should be via a lockable gate or removable bollards.
4. A maintenance programme is required to be submitted to Council with the submission of the landscape designs. The programme should be prepared by the Landscape Architect / Designer and should detail all proposed maintenance works.

## IRRIGATION

### D9.23 GENERAL

1. All irrigation systems connected to Council's water supply shall be installed to satisfaction of Council. The installation of water meters, backflow prevention device and isolation valves are mandatory in all irrigation system. Refer AS 3500.
2. The installation of an irrigation system to all landscaped traffic islands and roundabouts is mandatory.
3. An irrigation plan prepared by an irrigation consultant, shall be submitted to Council for approval together with the landscaping plans, and the proposed planting plans for the traffic islands / roundabouts.
4. The design of all watering systems must ensure an efficient and economical application of water. Such systems are to be designed to use low water application, and shall run only during Council's nominated times.
5. The irrigation system shall use the following components and shall be installed in accordance with Council Specifications:
  - A backflow prevention unit, installed to the requirements of AS 3500;
  - 20mm, 25mm or 32mm or 40mm diameter blue line poly pipework (as required) to garden bed areas; laid in a ring around the periphery of each garden bed;
  - Pop-up sprinklers to periphery of garden beds. Fixed shrub heads to centre of islands only; and
  - Automatically operated controller in PVC box laid flush with finished ground level.
6. All irrigation pipework installed under roadways shall be laid in minimum 100mm dia. uPVC Class 9 conduit.
7. The water connection and installation of the irrigation system shall be carried out by Council personnel or an approved contractor at the developers / applicants cost. The maintenance period for irrigation works shall be 12 months and shall run concurrently with the "On Maintenance" / establishment period for landscaping works. Thereafter all maintenance and watering will be the responsibility of the Council.
8. The installation of an irrigation system on Council property, other than buffer mounds, traffic islands and roundabouts, eg. verges will not be permitted unless:
  - The system is separate from the development and all pipework is located adjacent to the kerb and channel; and
  - Or the verge is irrigated from sprinklers that fall within the development property boundaries.
9. These requirements have come about in order to prohibit the installation of water lines across the underground services located within the verge. These water lines would not appear in Council records and are therefore at risk of breakage during service repair work/trench excavation.
10. If a separate irrigation system within the verge is desired, the developer will be required to pay all installation costs, which include:
  - Tapping into main;
  - Installation of 25mm diameter (typical) backflow prevention device;
  - Installation of pipework and pop-up sprinklers; and
  - Installation of solenoid valves and automatic controller.

Std. Dwg. No.	Descriptions
	<b>ACCESS CHAMBERS</b>
	ACCESS CHAMBER
D-0010	DETAILS DIA 1050 TO 1500
D-0011	ROOF SLABS DIA 1050 TO 1500
D-0012	ROOF SLABS DIA 1500 EXTENDED 600 AND 900
D-0013	ROOF SLAB RECTANGULAR
D-0014	CAST IRON COVER AND FRAME CI CONCRETE FILLED COVER
D-0015	CAST IRON COVER AND FRAME BOLT DOWN
	<b>BEDDING AND BACKFILLING</b>
D-0030	EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE/FIBRE REINFORCED DRAINAGE PIPES
D-0031	EXCAVATION, BEDDING AND BACKFILLING OF PRECAST BOX CULVERTS
	<b>FIELD INLET</b>
D-0050	FIELD INLET AND OVERFLOW GULLY TYPE 1 AND TYPE 2
	<b>GULLY</b>
	GULLY – ROADWAY TYPE
D-0061	PRECAST LINTEL DETAILS KERB IN LINE
D-0062	GRATE AND FRAME
D-0063	GULLY – ROADWAY TYPE CHANNEL LIP IN LINE DRAINWAY STORMWATER INLET COMPONENTS
D-0064	COMPONENTS
D-0065	CAST IRON GRATE COVER AND FRAME
D-0066	TEST LOAD PROCEDURE
D-0067	CONSTRUCTION SETTING OUT BARRIER/MOUNTABLE KERB & CHANNEL
D-0068	GULLY – ANTI-PONDING DEPRESSED 17mm
D-0069	ROCLA/BROPIT SYSTEM
	<b>INLETS AND OUTLETS</b>
D-0080	INLETS AND OUTLETS TO STORMWATER DRAINS (CONCRETE)
	<b>ROOF WATER DRAINAGE</b>
D-0110	ROOFWATER INSPECTION CHAMBER

REVISIONS	DATE	
D	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
C	GENERAL UPDATES	27/2/12
B	DWG D-0020 ADDED	10/3/98
A	ORIGINAL ISSUE	1/3/97



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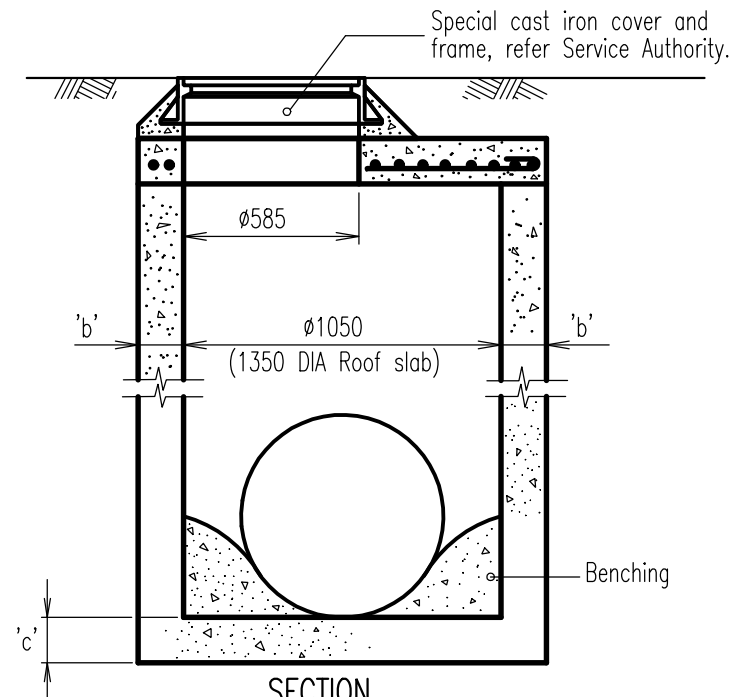
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<b>INDEX</b>
<b>STANDARD DRAWINGS</b>
<b>DRAINAGE</b>

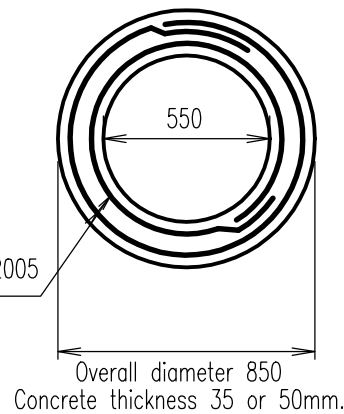
<b>DRAINAGE</b>
<b>Standard</b>
<b>Drawing</b>
<b>D-0001</b>
A   B   C   D



SECTION  
ALTERNATIVE 1  
1050 DIA MH.

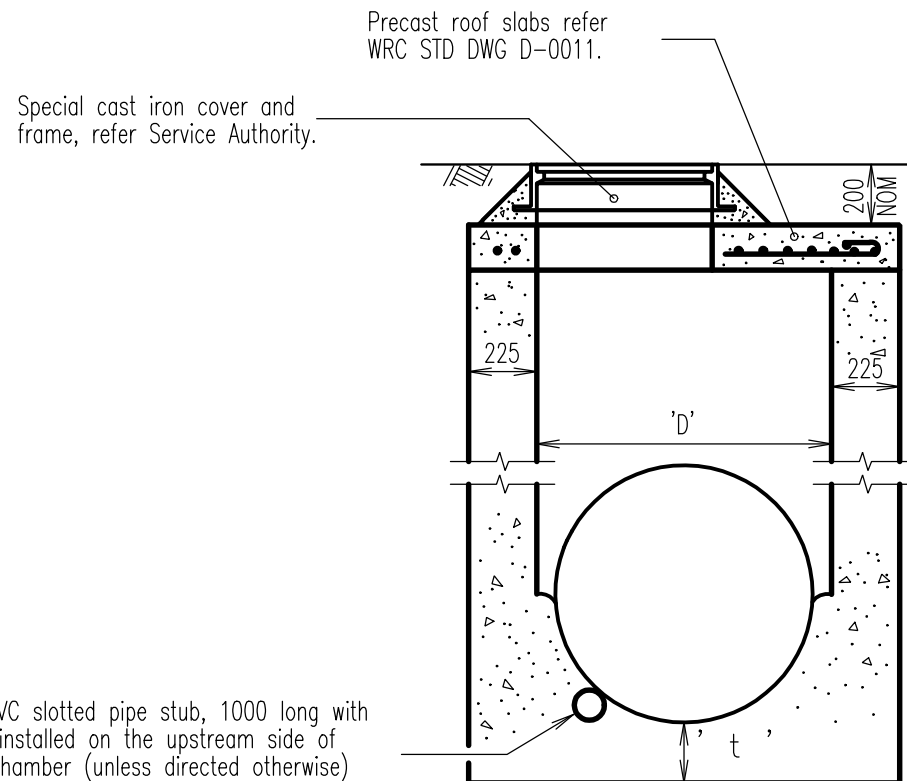
CRITICAL DIMENSIONS		
Depth to outlet invert	Thickness	
	'b'	'c'
Minimum to 3000	150	150
3000 to 6000	225	300

2-R6 bars Grade 400 to AS 1302:2005 placed centrally in ring with 40 side cover. Lap 250.



PLAN  
ROOF RING

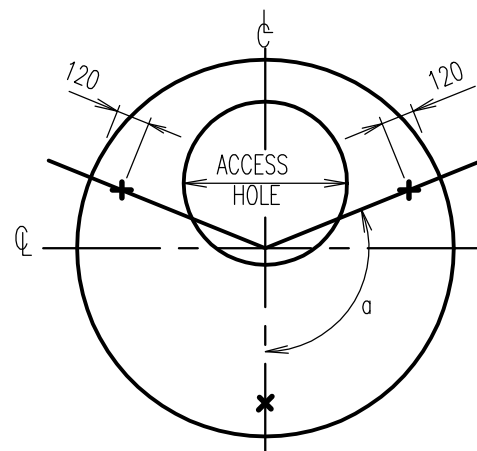
For use in raising covers and frames of existing access chambers



'D' { 1200 (1650 DIA roof slab)  
1350 (1800 DIA roof slab)  
1500 (1950 DIA roof slab)

TYPICAL SECTION  
>1050 DIA MH.

### ACCESS CHAMBER DETAILS



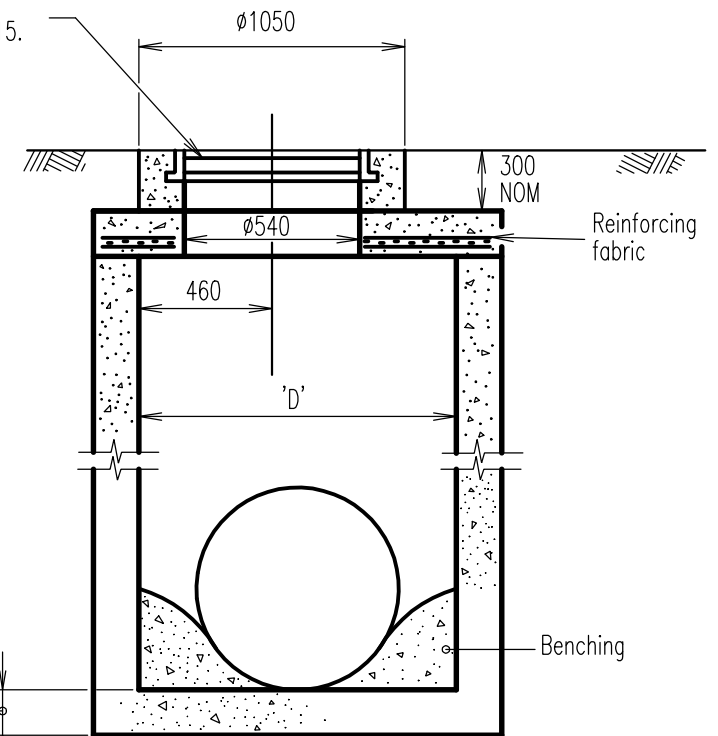
LIFTING ANCHOR LOCATIONS

(Refer Note 5)

$a = 112^\circ$  For  $\phi 1350$

$a = 120^\circ$  For  $\phi 1650-1950$

Cast iron cover and frame, refer WRC STD DWG D-0014 and D-0015.



SECTION  
ALTERNATIVE 2  
>1050 DIA MH.

INVERT GRADE DIMENSION 't' (MIN)

Access chamber DIA	FLOOR THICKNESS 't'	
	INLET	OUTLET
1200	250	225
1350	250	225
1500	250	225

#### NOTES:

- Structural concrete N25, benching N10 in accordance with AS 1379:2007 and AS 3600:2009.
- Refer WRC STD DWG D-0011 and D-0012 for roof slab reinforcement details.
- Alternatives :-  
For access hole location refer Service Authority.  
For turent type refer Service Authority.
- Refer Project Drawings for size and level of culverts, and chamber cover level.
- Lifting anchors to be "swiflift" or equivalent 1.8 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturer's specifications.
- Access chambers deeper than 3.0m to have an access ladder to AS 1657:2013 in lieu of step irons.
- All dimensions in millimetres.

REVISIONS	DATE
D UPDATE TO WALL AND BASE THICKNESS FOR MANHOLE DEPTH	9/6/16
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
B GENERAL UPDATES	27/2/12
A ORIGINAL ISSUE	1/3/97



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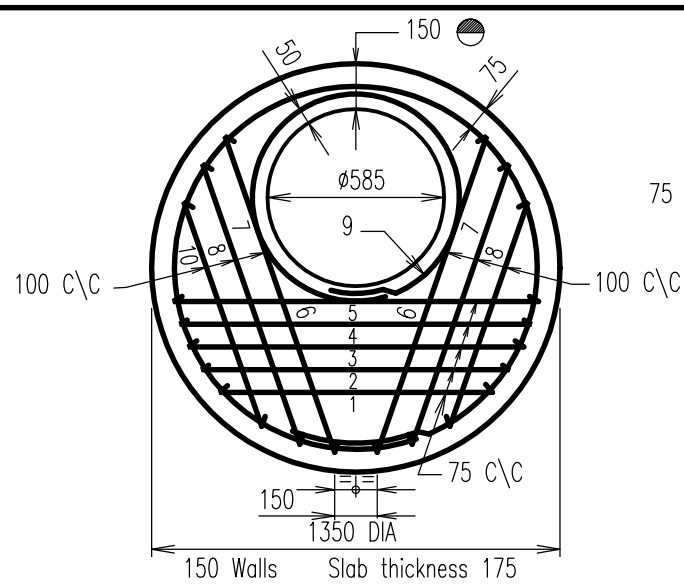
## ACCESS CHAMBER DETAILS

DIA 1050 TO 1500

DRAINAGE  
Standard  
Drawing

D-0010

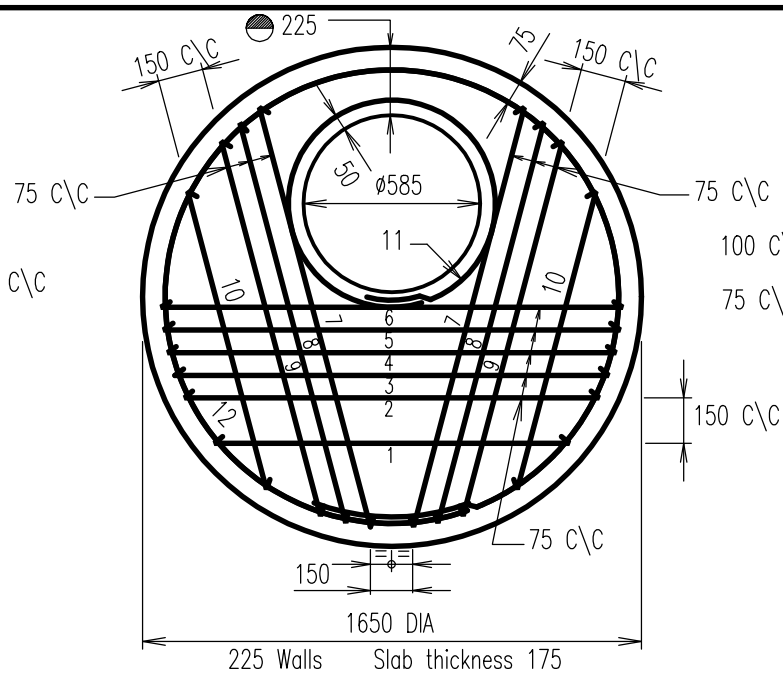
A B C D



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		937	1175	1	1175
2		1030	1255	1	1255
3		1125	1350	1	1350
4	'a'	1175	1400	1	1400
5	'a'	1225	1450	1	1450
6	'a'	1125	1350	2	2700
7	'a'	1000	1225	2	2450
8	'a'	812	1050	2	2100
9	'b'	685	2550	1	2550
10	'b'	1200	4200	1	4200
TOTAL					20630

STEEL MASS : 19kg  
 CONCRETE : 0.20m³  
 TOTAL MASS : 508kg

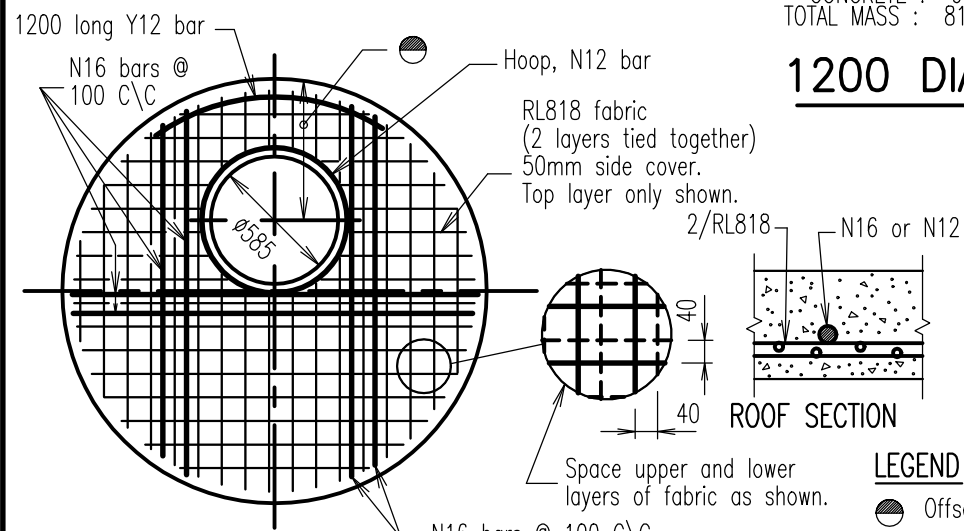
### 1050 DIA ACCESS CHAMBER



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1200	1425	1	1425
2		1400	1625	1	1625
3		1450	1675	1	1675
4	'a'	1500	1725	1	1725
5	'a'	1520	1745	1	1745
6	'a'	1537	1775	1	1775
7	'a'	1450	1675	2	3350
8	'a'	1375	1600	2	3200
9	'a'	1300	1525	2	3050
10	'a'	1050	1275	2	2550
11	'b'	685	2550	1	2550
12	'b'	1500	5150	1	5150
TOTAL					23200

STEEL MASS : 27kg  
 CONCRETE : 0.33m³  
 TOTAL MASS : 818kg

### 1200 DIA ACCESS CHAMBER



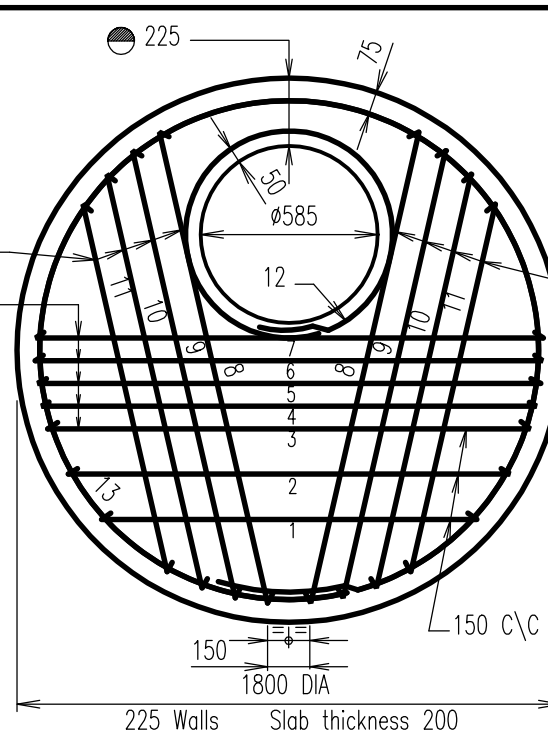
#### FABRIC REINFORCED SLAB

NOM DIA	ROOF THICKNESS
1050	175
1200	175
1350	200
1500	250

#### LEGEND

- Offset to access hole varies :-
  - Hole in line with chamber wall, or
  - Hole offset from wall 460mm (refer Alternative 2 on WRC STD DWG D-0010).

### FABRIC REINFORCEMENT ALTERNATIVE



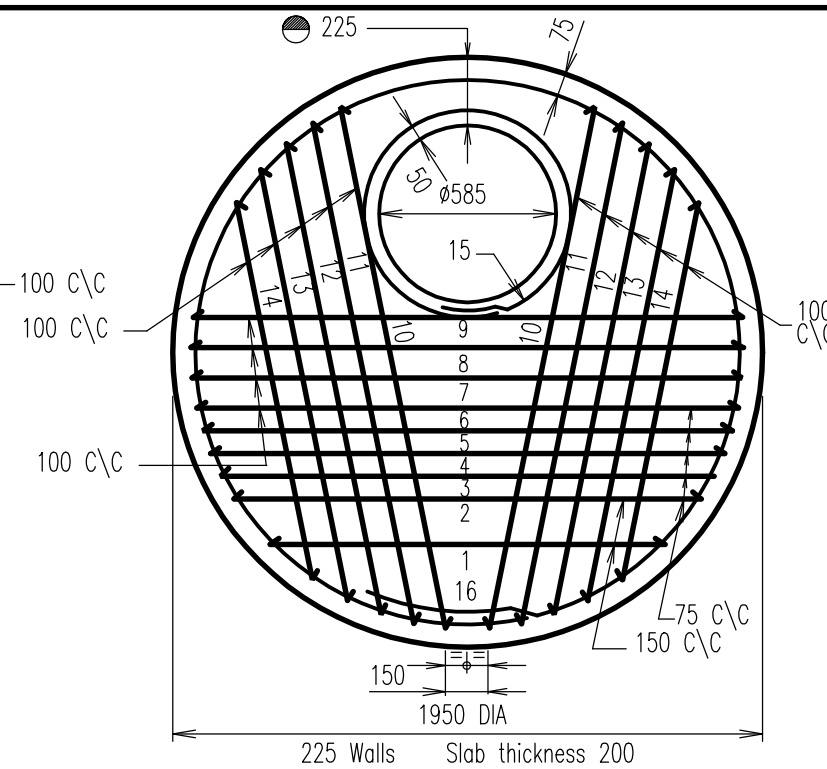
BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1275	1500	1	1500
2		1488	1725	1	1725
3		1612	1850	1	1850
4	'a'	1645	1870	1	1870
5	'a'	1675	1900	1	1900
6	'a'	1675	1900	1	1900
7	'a'	1675	1900	1	1900
8	'a'	1600	1825	2	3650
9	'a'	1525	1750	2	3500
10	'a'	1412	1650	2	3300
11	'a'	1262	1500	2	3000
12	'b'	685	2550	1	2550
13	'b'	1650	5625	1	5625
TOTAL					34270

STEEL MASS : 31kg  
 CONCRETE : 0.45m³  
 TOTAL MASS : 1138kg

### 1350 DIA ACCESS CHAMBER

#### NOTES:

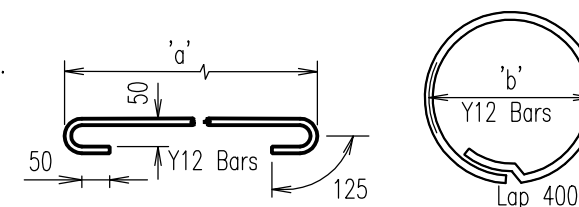
- Concrete N40 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement cover 30 MIN (bottom cover)
- Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001
- For lifting anchor locations and details, refer WRC STD DWG D-0010.
- Roof design based on Austroads bridge code, W7 wheel load, dynamic factor 0.4.
- All dimensions in millimetres.



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1337	1575	1	1575
2		1575	1800	1	1800
3		1645	1870	1	1870
4	'a'	1712	1950	1	1950
5	'a'	1756	1980	1	1980
6	'a'	1800	2025	1	2025
7	'a'	1825	2050	1	2050
8	'a'	1837	2075	1	2075
9	'a'	1825	2050	1	2050
10	'a'	1762	2000	2	4000
11	'a'	1700	1925	2	3850
12	'a'	1600	1825	2	3650
13	'a'	1462	1700	2	3400
14	'a'	1275	1500	2	3000
15	'b'	685	2550	1	2550
16	'b'	1800	6100	1	6100
TOTAL					43925

STEEL MASS : 39kg  
 CONCRETE : 0.55m³  
 TOTAL MASS : 1360kg

### 1500 DIA ACCESS CHAMBER



### REINFORCEMENT DIMENSIONS

REVISIONS	DATE	
C	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
B	GENERAL UPDATES	27/2/12
A	ORIGINAL ISSUE	1/3/97



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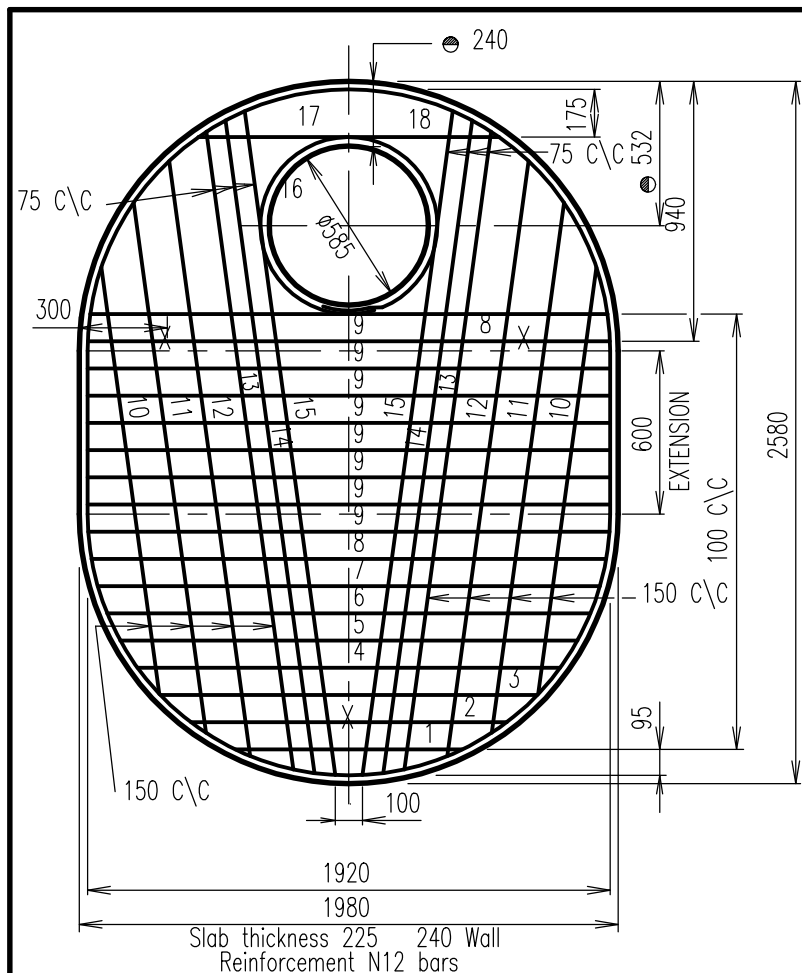
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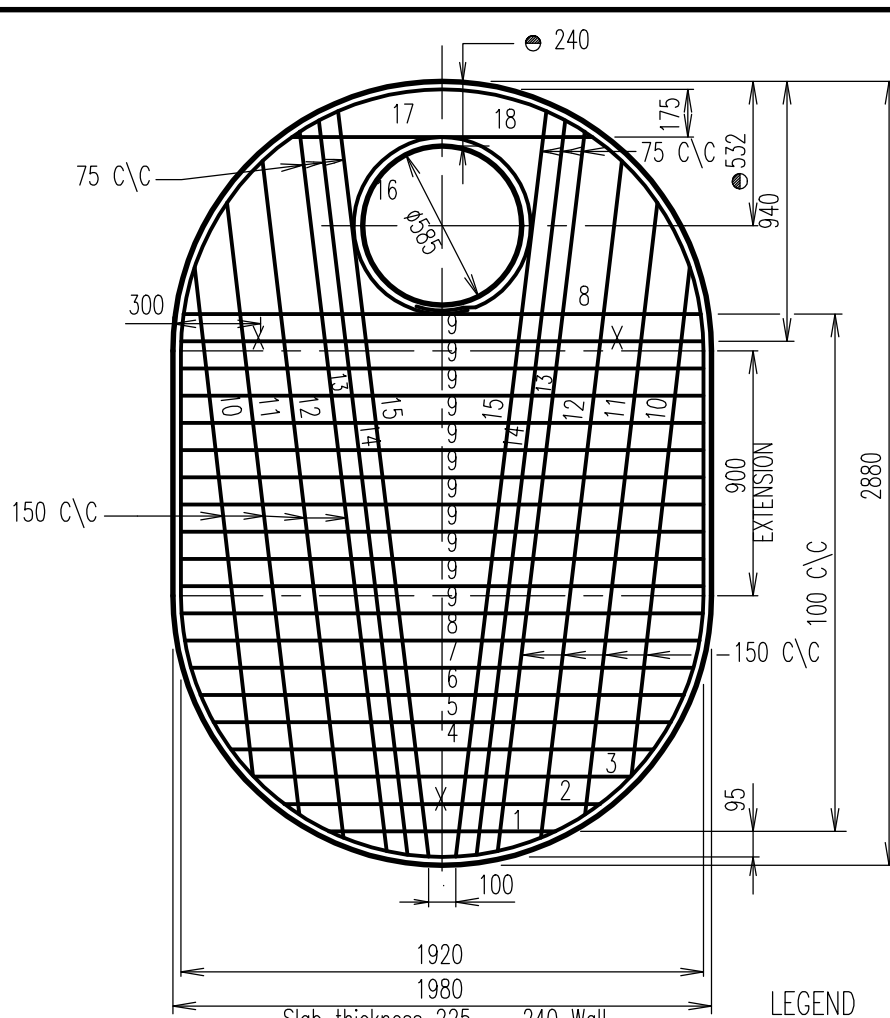
**ACCESS CHAMBER  
 ROOF SLABS  
 DIA 1050 - 1500**

**DRAINAGE  
 Standard  
 Drawing  
 D-0011**

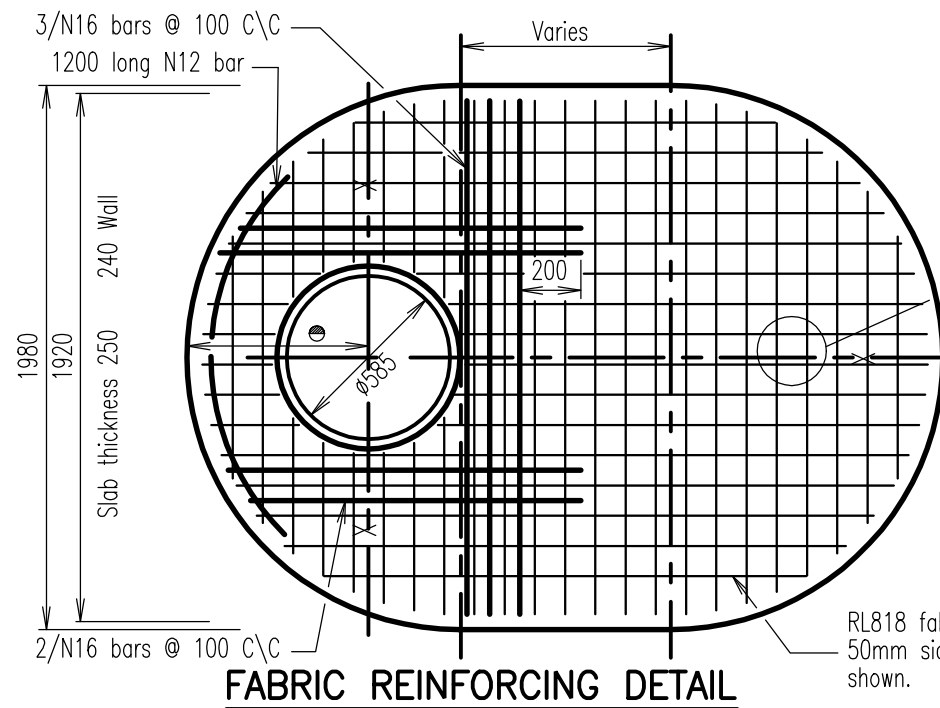
A B C



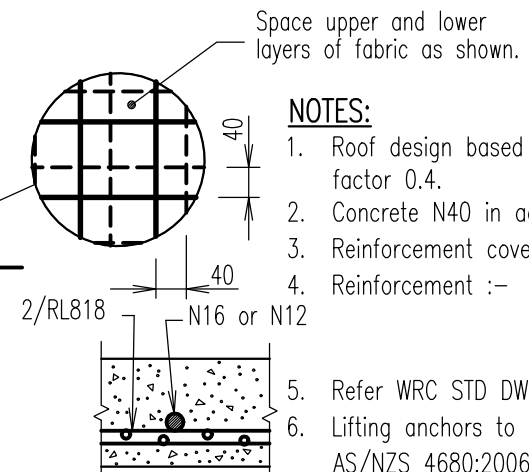
**1500 DIA ACCESS CHAMBER  
EXTENDED 600**



**1500 DIA ACCESS CHAMBER  
EXTENDED 900**



**FABRIC REINFORCING DETAIL**



**ROOF SECTION**

**NOTES:**

1. Roof design based on Austroads Bridge code, W7 wheel load, dynamic factor 0.4.
2. Concrete N40 in accordance with AS 1379:2007 and AS 3600:2009.
3. Reinforcement cover 30 MIN (bottom face).
4. Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001
5. Refer WRC STD DWG D-0011 for 'reinforcement dimensions'.
6. Lifting anchors to be "swiftlift" or equivalent. 1.8 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturer's specification at points shown 'X'.
7. Lifting capacity of mechanical devices to be no less than 4 tonnes.
8. All dimensions in millimetres.

**LEGEND**

- Offset to access hole varies :-  
a) Hole in line with chamber wall, or  
b) Hole offset from wall 460mm (refer Alternative 2 on WRC STD DWG D-0010).

**1500 DIA ACCESS CHAMBER  
EXTENDED 600**

BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1	—	835	1	835
2	—	1160	1	1160
3	—	1385	1	1385
4	—	1550	1	1550
5	—	1680	1	1680
6	—	1775	1	1775
7	—	1845	1	1845
8	—	1890	2	3780
9	—	1920	8	15360
10	—	1560	2	3120
11	—	1920	2	3840
12	—	2170	2	4340
13	—	2300	2	4600
14	—	2375	2	4750
15	—	2450	2	4900
16	○	2550	1	2550
17	—	7195	1	7195
18	—	1105	1	1105

Steel Mass 59 kg  
Concrete Volume 0.90 m<sup>3</sup>  
Total Mass 2250 kg

TOTAL LENGTH 65770

**1500 DIA ACCESS CHAMBER  
EXTENDED 900**

BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1	—	835	1	835
2	—	1160	1	1160
3	—	1385	1	1385
4	—	1550	1	1550
5	—	1680	1	1680
6	—	1775	1	1775
7	—	1845	1	1845
8	—	1890	2	3780
9	—	1920	11	21120
10	—	1800	2	3600
11	—	2200	2	4400
12	—	2470	2	4940
13	—	2650	2	5300
14	—	2700	2	5400
15	—	2750	2	5500
16	○	2550	1	2550
17	—	7795	1	7795
18	—	1105	1	1105

Steel Mass 67 kg  
Concrete Volume 1.03 m<sup>3</sup>  
Total Mass 2575 kg

TOTAL LENGTH 75720

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
B GENERAL UPDATES	27/2/12
A ORIGINAL ISSUE	1/3/97



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83-85 Main St  
Proserpine 4800 Q  
Ph 07 4945 0200

**ACCESS CHAMBER  
ROOF SLABS  
DIA. 1500 EXTENDED 600 AND 900**

**DRAINAGE  
Standard  
Drawing  
D-0012**

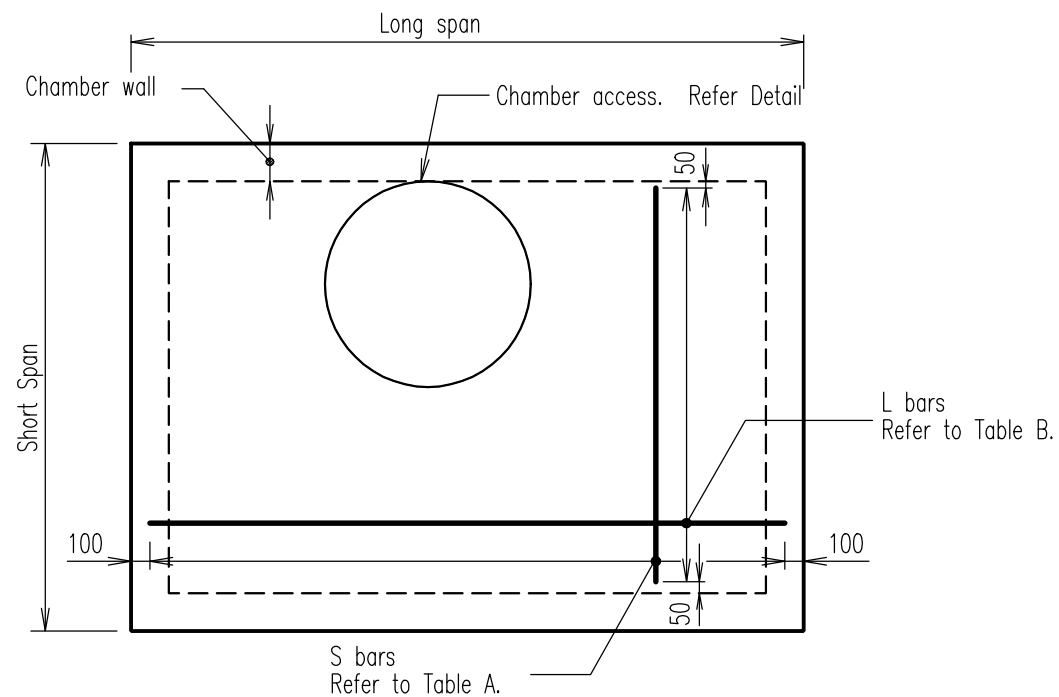
A	B	C
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SHORT SPAN	LONG SPAN										SLAB DEPTH
	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	
1200	N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	200
1400		N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	N16 AT 150	200
1600			N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	N16 AT 150	200
1800				N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 175	225
2000					N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	225
2200						N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	225
2400							N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	225
2600								N16 AT 200	N16 AT 200	N16 AT 175	250
2800									N16 AT 200	N16 AT 175	250
3000										N16 AT 175	250

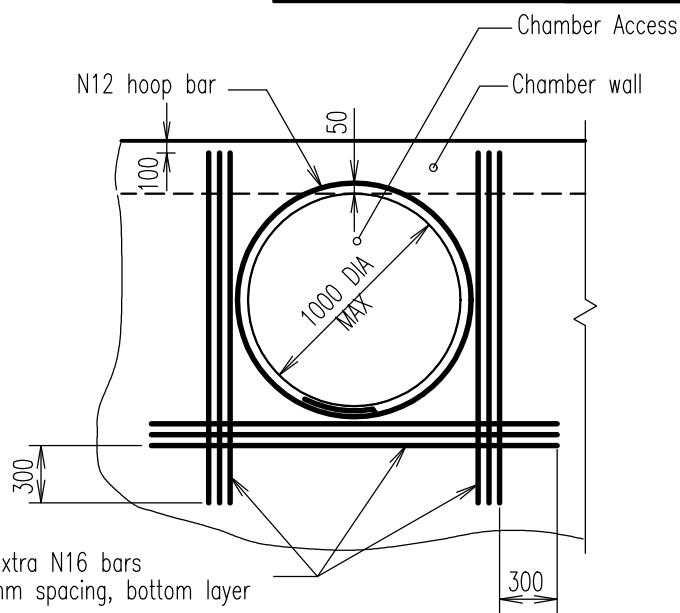
**TABLE A : S BARS**

SHORT SPAN	LONG SPAN										SLAB DEPTH
	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	
1200	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1400		N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1600			N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1800				N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	225
2000					N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	225
2200						N12 AT 150	N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	225
2400							N16 AT 200	N12 AT 150	N12 AT 150	N16 AT 150	225
2600								N16 AT 200	N16 AT 200	N16 AT 200	250
2800									N16 AT 200	N16 AT 200	250
3000										N16 AT 175	250

**TABLE B : L BARS**



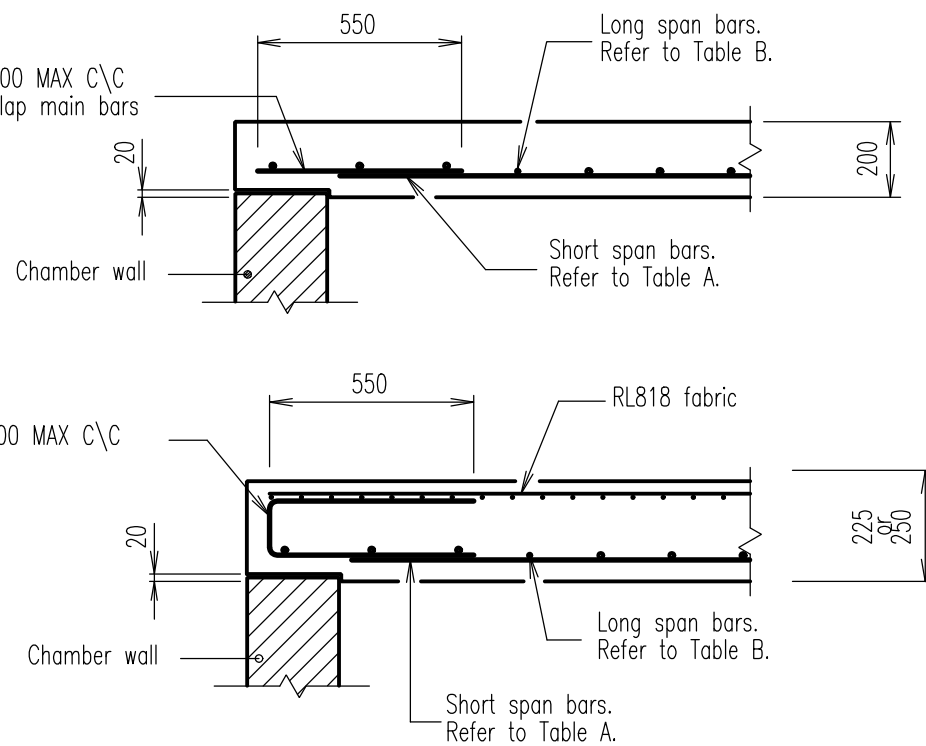
**TYPICAL SLAB REINFORCEMENT**



**SLAB REINFORCEMENT AROUND CHAMBER ACCESS**

N12 U-bars at 300 MAX C/C laid flat, legs to lap main bars

N12 U-bars at 300 MAX C/C



**TYPICAL SECTIONS**

**NOTES:**

- Concrete N32/20 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001.
- All laps in reinforcement shall be :-  
N12 - 300, N16 - 400
- Formwork in accordance with AS 3610:1995.
- Designed to Austroads Bridge Code, W7 wheel load, dynamic factor 0.4.
- Maximum fill over roof slab shall be 3000mm.
- Reinforcement cover 45 MIN.
- Refer Service Authority for access hole alternative to be adopted.
- Refer project drawings for details of chamber walls and floors.
- For sections at chamber access refer WRC STD DWG D-0010.
- All dimensions in millimetres.

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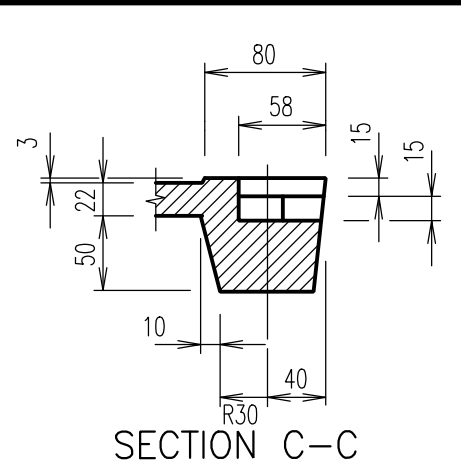
**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
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**ACCESS CHAMBER  
ROOF SLAB  
RECTANGULAR**

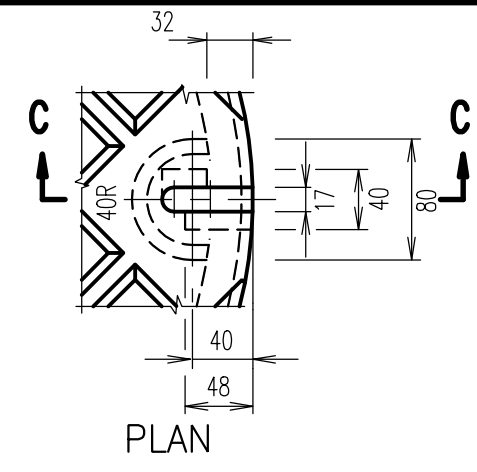
**DRAINAGE  
Standard  
Drawing  
D-0013**

A	B	C
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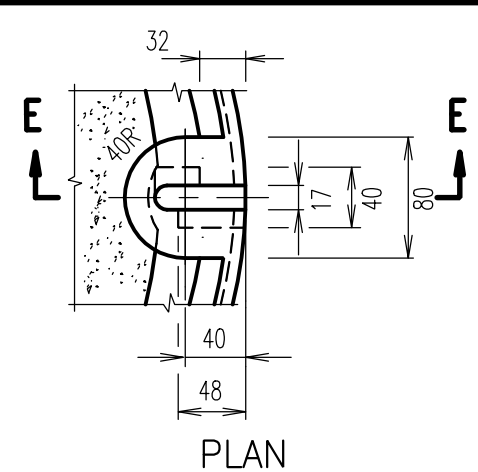




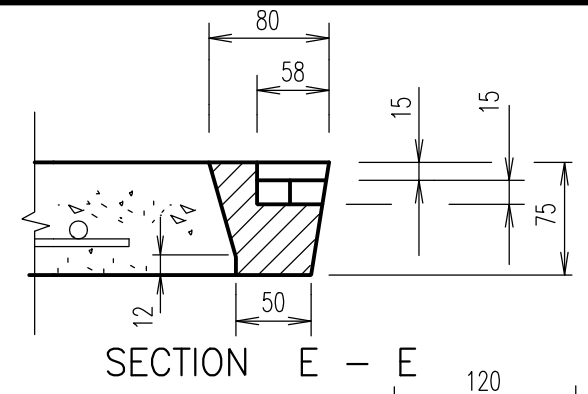
SECTION C-C  
**LIFTING SLOTS - DETAIL A**



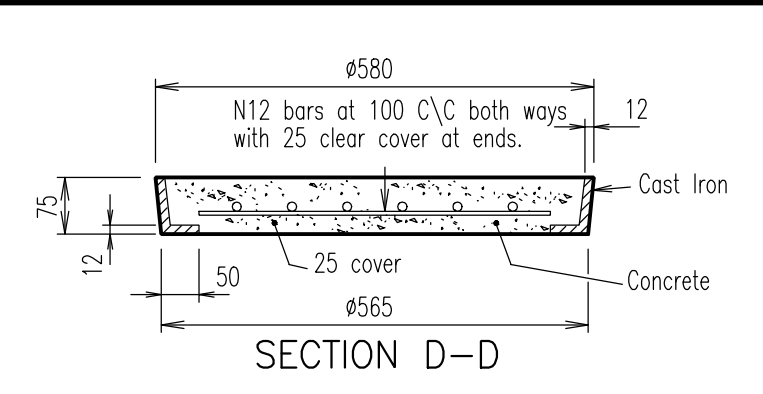
PLAN



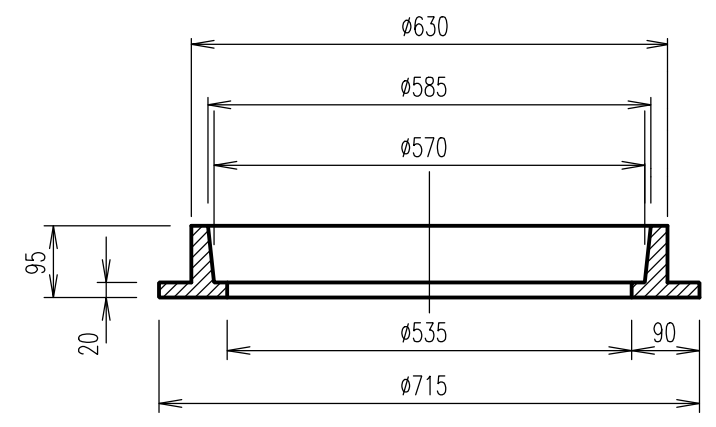
PLAN  
**SLOTS - DETAIL B**



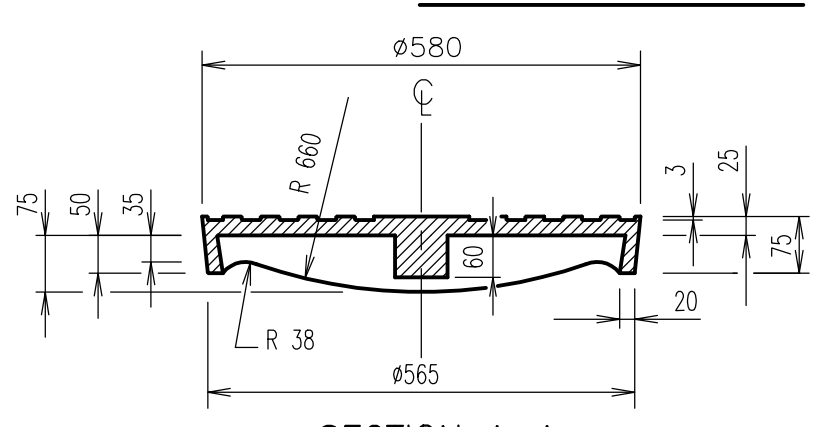
SECTION E - E



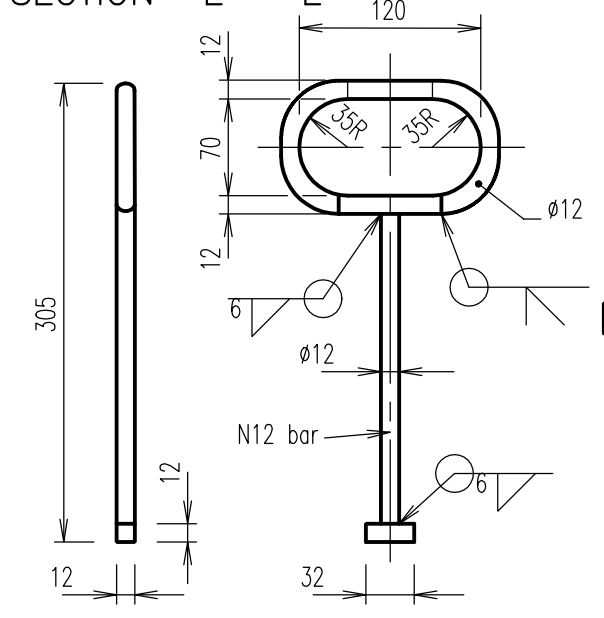
SECTION D-D



SECTION B-B

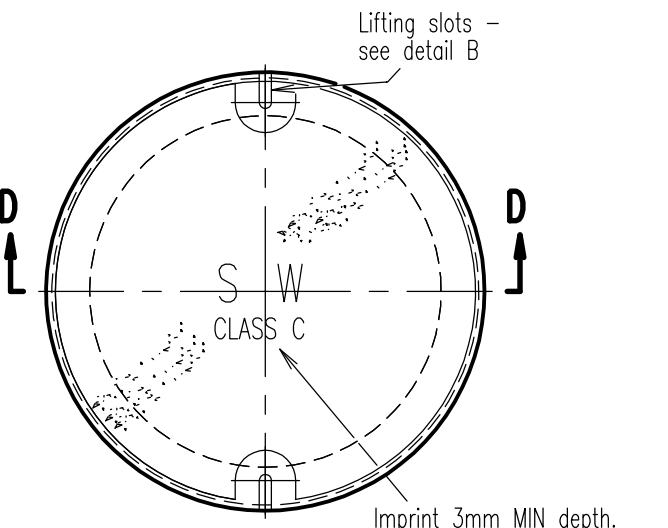


SECTION A-A



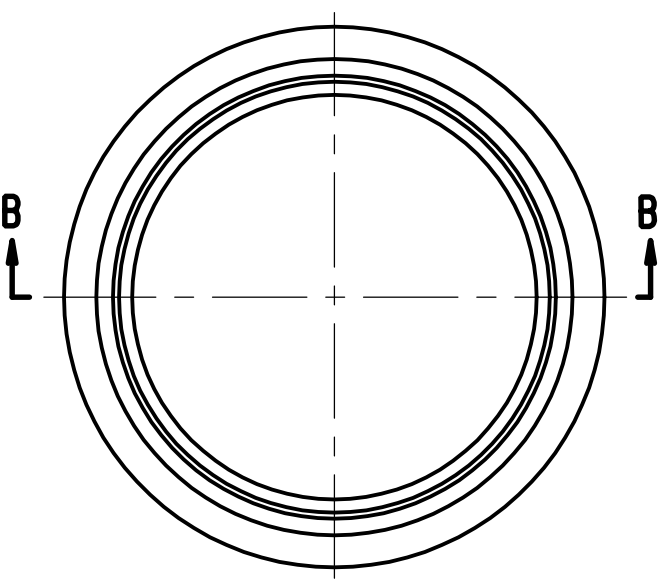
**STEEL LIFTING KEY**

Hot dip galvanized to AS/NZS 4534:2006

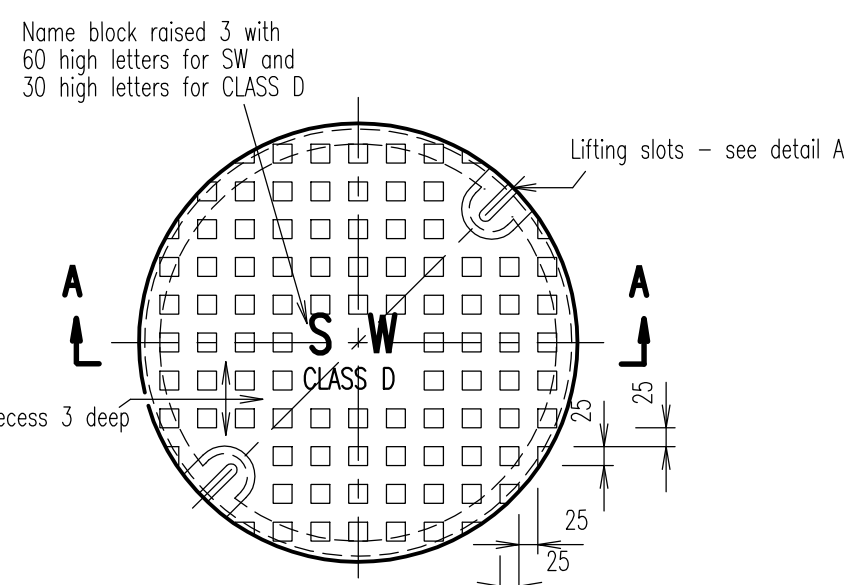


PLAN

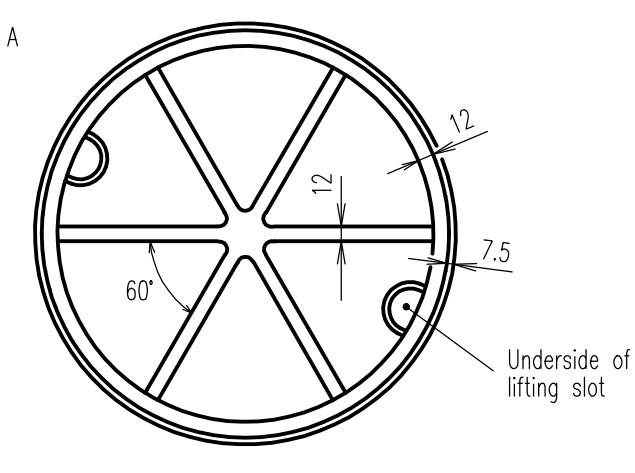
**PLAN - C.I. CONCRETE FILLED COVER**



**PLAN - FRAME**



**PLAN - C.I. COVER**



**UNDERSIDE OF C.I. COVER**

- NOTES:**
1. Mass of C.I. frames = 42 kg approx.
  2. Mass of C.I. cover = 46 kg approx.
  3. Cover and frame, grey cast iron, Grade  $\geq$  T220 to AS 1830:2007
  4. All steel Grade 500 to AS 3679.1:2016.
  5. Concrete infill N32/10 in accordance with AS 1379:2007 and AS 3600:2009.
  6. All welds to AS 1554.1:2014. Welding symbols to AS 1101.3:2005
  7. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
  8. Bitumen paint cover & frame to AS/NZS 3750.4:1994.
  9. Covers and frames to AS 3996:2006.
  10. All dimensions in millimetres.

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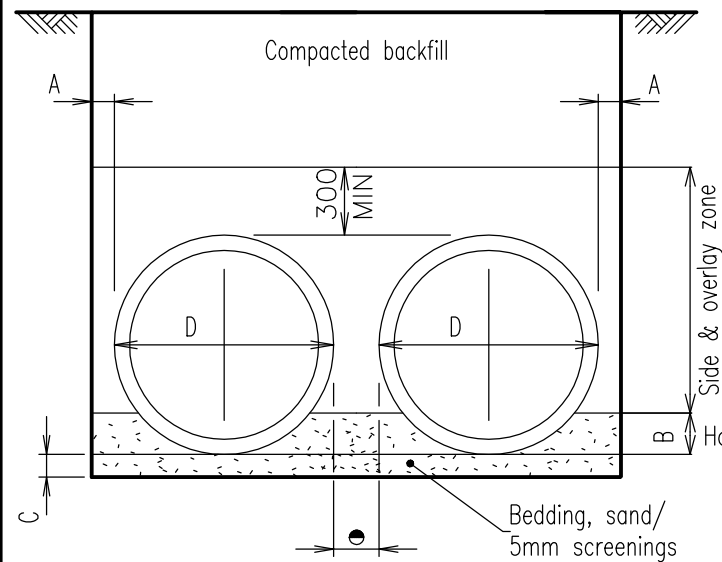
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**ACCESS CHAMBER  
CAST IRON COVER AND FRAME  
C.I. CONCRETE FILLED COVER**

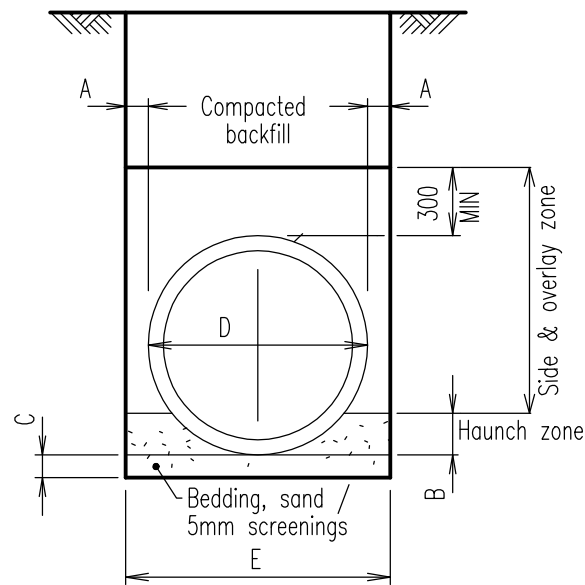
**DRAINAGE  
Standard  
Drawing  
D-0014**

A B C

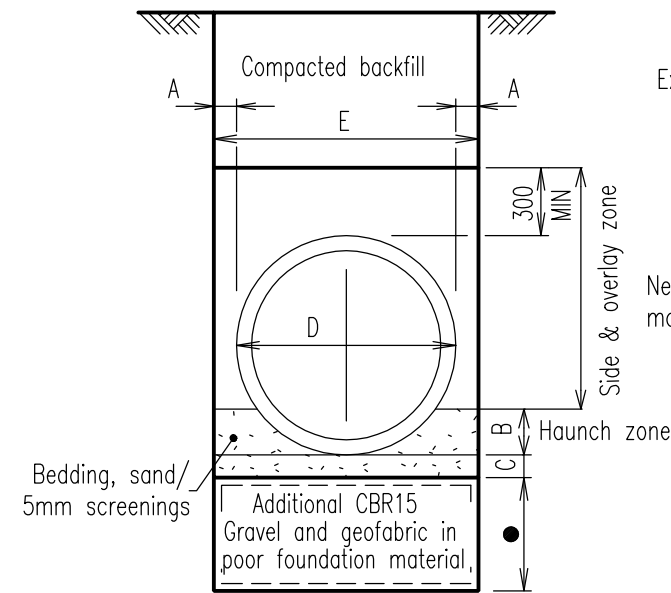




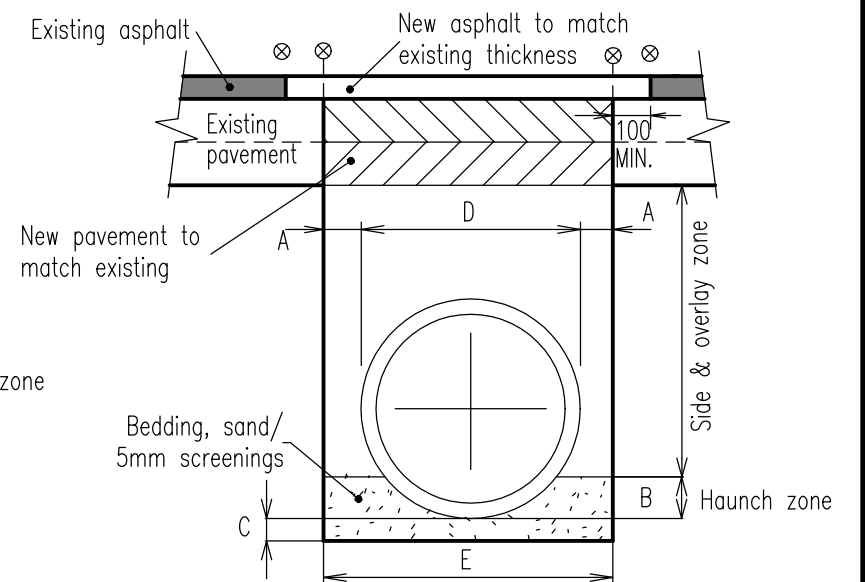
**TYPICAL BEDDING OF MULTIPLE PIPES**



**TYPICAL BEDDING**  
Conforms to Support Type H1 AS/NZS 3725:2007



**TYPICAL BEDDING IN POOR GROUND**



**TYPICAL BEDDING UNDER EXISTING PAVEMENT**

**NOTES:**

- Selected backfill in all cases shall be carried through to the wings and continued 300 thick for the length and height of wings.
- Bedding compaction (Compacted selected fill / sand bedding)  
Cohesive material – 95% standard compaction  
Non-cohesive material – density index of 70 MIN, refer AS 1289.5.5.1:1998.  
Sand – compact by flooding and use of vibrators.
- Backfill compaction  
Compacted gravel (300mm) layer under road pavement 95% standard compaction.  
Compacted ordinary fill / CBR15 Gravel 90% standard compaction – below 300mm zone.  
Compacted backfill – at footpaths / private property 90% standard compaction.  
MAX. densities determined by standard compaction tests to AS 1289.5.1.1:1998.
- Refer project drawings for types and/or alternatives to be adopted.
- Type U & Type H1 to conform to AS/NZS 3725:2007.
- All dimensions in millimetres.

**LEGEND**

- ⊗ Saw cut at existing pavement
- Pipes : 300 when NOMINAL D ≤ 600  
600 when NOMINAL D 600 – 1800  
900 when NOMINAL D ≥ 1800
- Depth to be approved by the Superintendent

**Bedding & Haunch material**  
(Gravel, loam, sand or mixture) grading

AS Sieve Size	% Passing by mass	
	Bedding & haunch zone	Side/overlay zone
19.0	100	–
2.36	40 – 100	30–100
0.425	15 – 70	15–50
0.075	3 – 30	0–25

NOMINAL ∅ culvert D(mm)	MINIMUM width A (mm)	HAUNCH depth B	Bedding depth C	Allowable width,E(m)	
				DES	MAX
300	300	36	100	1.0	1.1
375	300	45	100	1.1	1.2
450	300	53	100	1.1	1.3
525	300	61	100	1.2	1.5
600	300	69	100	1.3	1.6
750	300	85	100	1.5	1.8
900	300	103	100	1.6	1.9
1050	300	120	100	1.8	2.1
1200	300	135	100	2.0	2.2
1350	300	150	100	2.1	2.4
1500	300	169	100	2.3	2.7
1650	330	184	150	2.6	2.9
1800	360	200	150	2.8	3.1
1950	390	222	150	3.1	3.3
2100	420	239	150	3.4	3.5
2400	480	270	150	3.9	4.2
2700	540	303	150	4.3	4.6
3000	600	335	150	4.9	5.0

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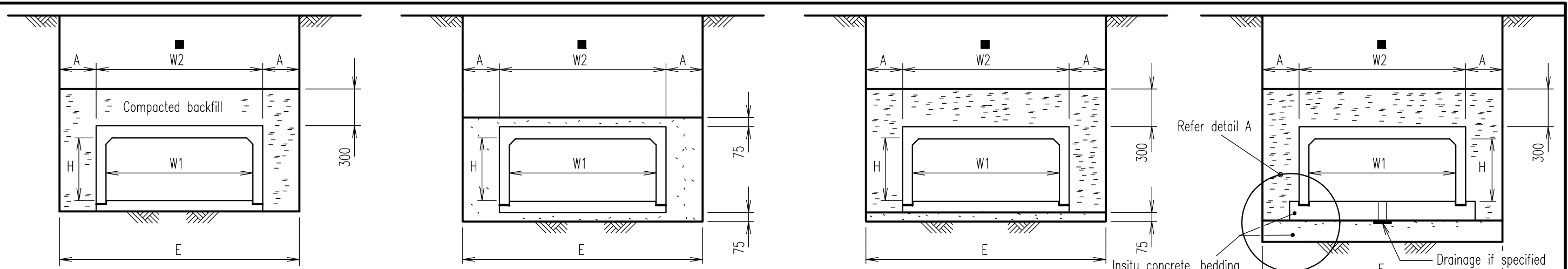
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**EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE/ FIBRE REINFORCED DRAINAGE PIPES**

**DRAINAGE Standard Drawing D-0030**

A	B	C		
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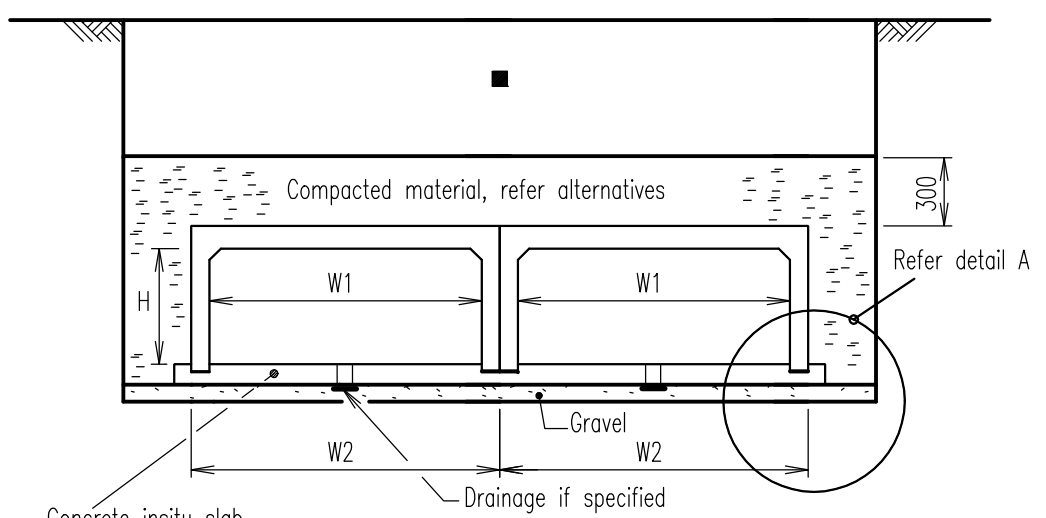


**TYPE 1  
NATURAL BEDDING**

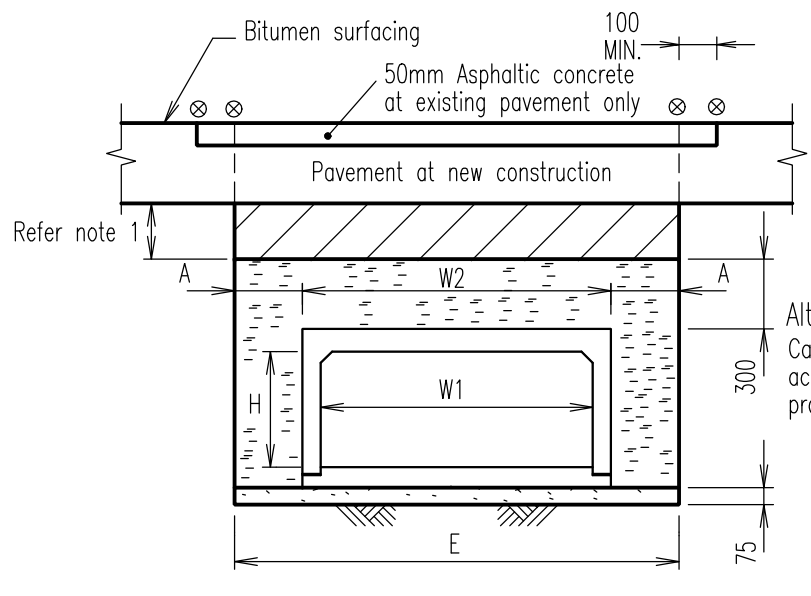
**TYPE 2  
SAND SURROUND**

**TYPE 3  
SAND BEDDING**

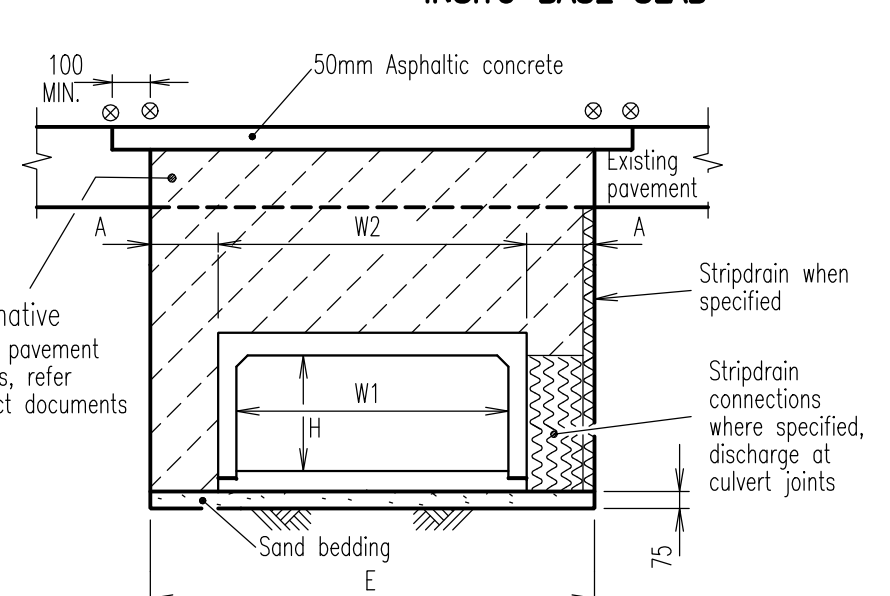
**TYPE 4  
INSITU BASE SLAB**



**MULTIPLE CULVERTS**



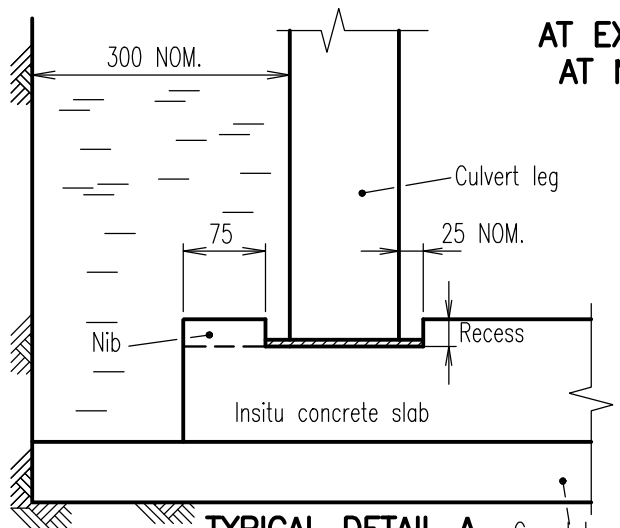
**ALTERNATIVE A  
AT EXISTING SURFACED PAVEMENTS OR  
AT NEW PAVEMENTS ON RESIDENTIAL  
STREETS & RURAL ROADS**



**ALTERNATIVE B  
AT EXISTING SURFACED PAVEMENTS  
ON INDUSTRIAL, TRUNK COLLECTOR,  
SUB-ARTERIAL & ARTERIAL STREETS / ROADS**

W1	W2	E NOM.
300	420	1000
375	500	1100
450	570	1200
600	730	1300
750	890	1500
900	1050	1700
1200	1360	2000
1520	1700	2300
1820	2010	2600
2130	2340	3000
2440	2670	3300

**EXCAVATION WIDTH**



**TYPICAL DETAIL A** Gravel base, site specific design

**LEGEND**

- A 300mm NOMINAL
- Refer Alternative A for backfill requirements at new pavement
- ⊗ Saw cut at existing pavement
- ▨ Gravel (MIN CBR15) or 75mm crusher run backfill
- ▧ Lean mix concrete backfill (1:15 mix)
- ▬ 10mm Cement mortar bed, 1:3 mix

**NOTES:**

1. Backfill compaction Approved fill / approved bedding / compacted backfill / CBR15 Gravel 90%  
Compacted gravel (300mm layer) under road pavement 95%  
Compacted fill - at footpaths / private property 90%  
MAX. densities determined by Standard compaction tests to AS 1289.5.5.1:1998
2. Tape all joints with 75mm wide Denso (600) Tape or equivalent.
3. All dimensions in millimetres.

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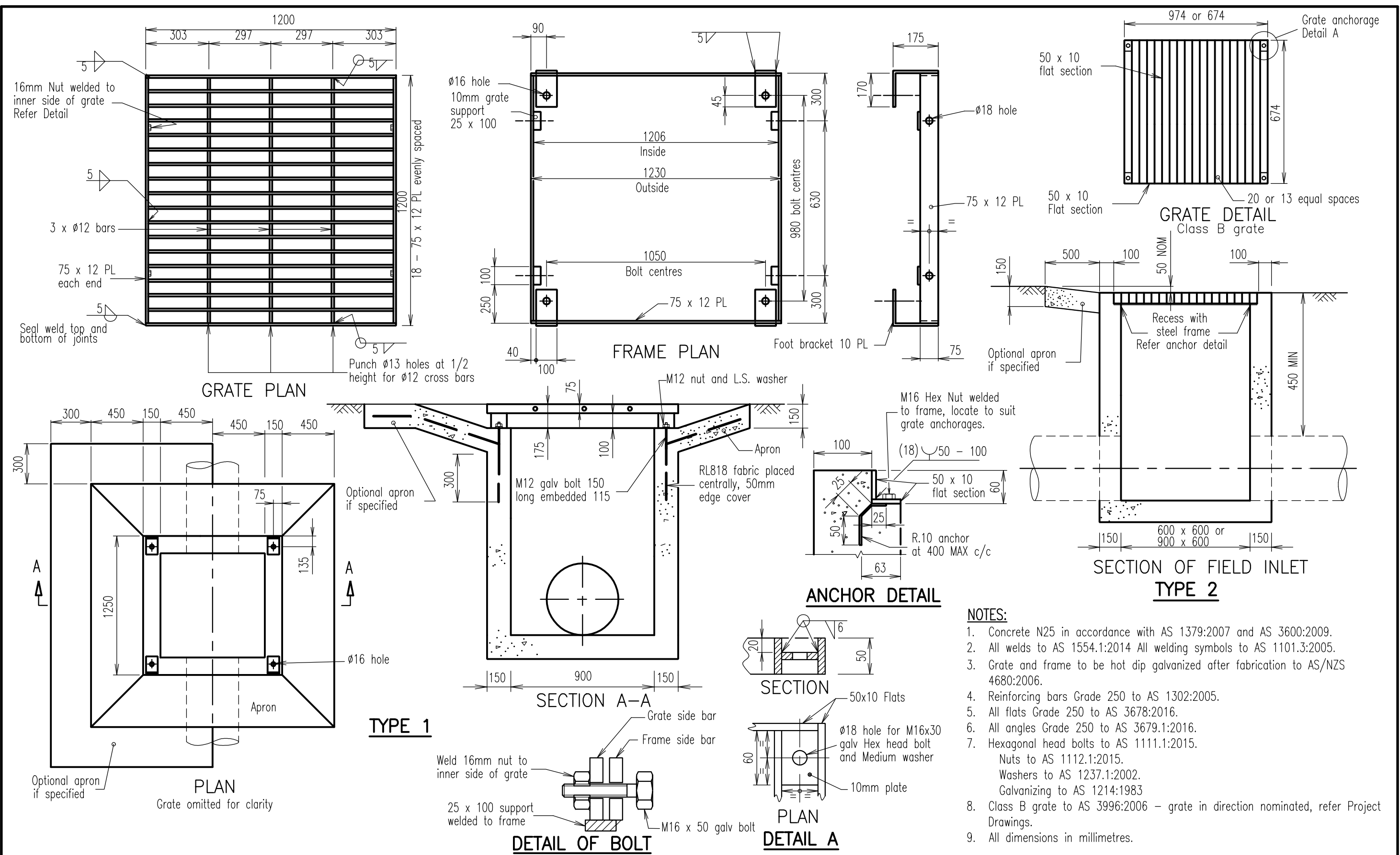
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**EXCAVATION, BEDDING  
AND BACKFILLING OF  
PRECAST BOX CULVERTS**

**DRAINAGE  
Standard  
Drawing  
D-0031**

A	B	C
---	---	---



- NOTES:**
1. Concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
  2. All welds to AS 1554.1:2014 All welding symbols to AS 1101.3:2005.
  3. Grate and frame to be hot dip galvanized after fabrication to AS/NZS 4680:2006.
  4. Reinforcing bars Grade 250 to AS 1302:2005.
  5. All flats Grade 250 to AS 3678:2016.
  6. All angles Grade 250 to AS 3679.1:2016.
  7. Hexagonal head bolts to AS 1111.1:2015.  
Nuts to AS 1112.1:2015.  
Washers to AS 1237.1:2002.  
Galvanizing to AS 1214:1983
  8. Class B grate to AS 3996:2006 – grate in direction nominated, refer Project Drawings.
  9. All dimensions in millimetres.

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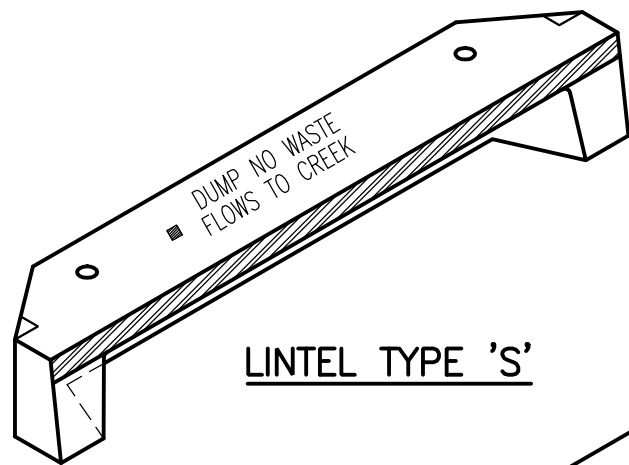
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Collinsville 4804 Q  
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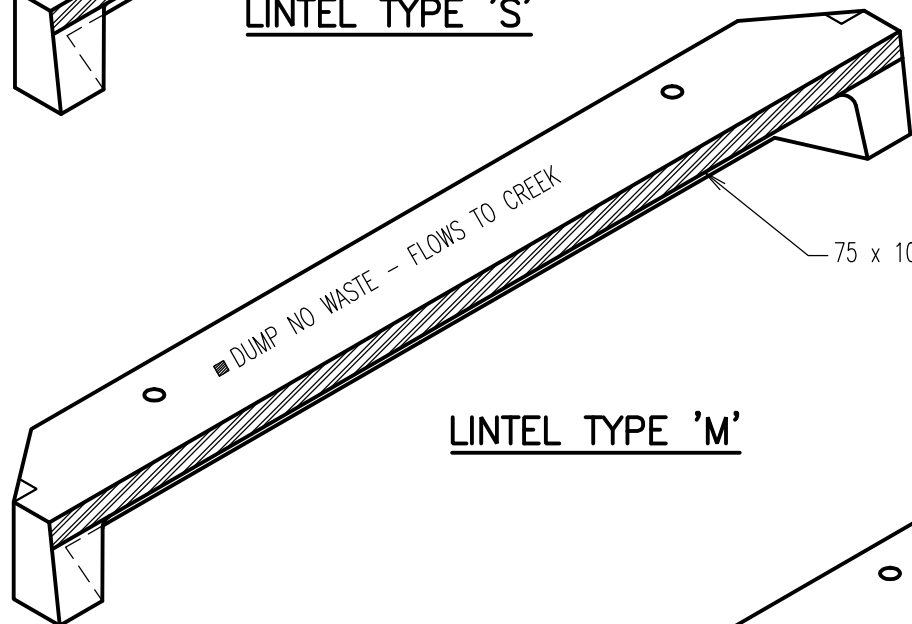
**FIELD INLET AND OVERFLOW GULLY  
TYPE 1 AND TYPE 2**

**DRAINAGE  
Standard  
Drawing  
D-0050**

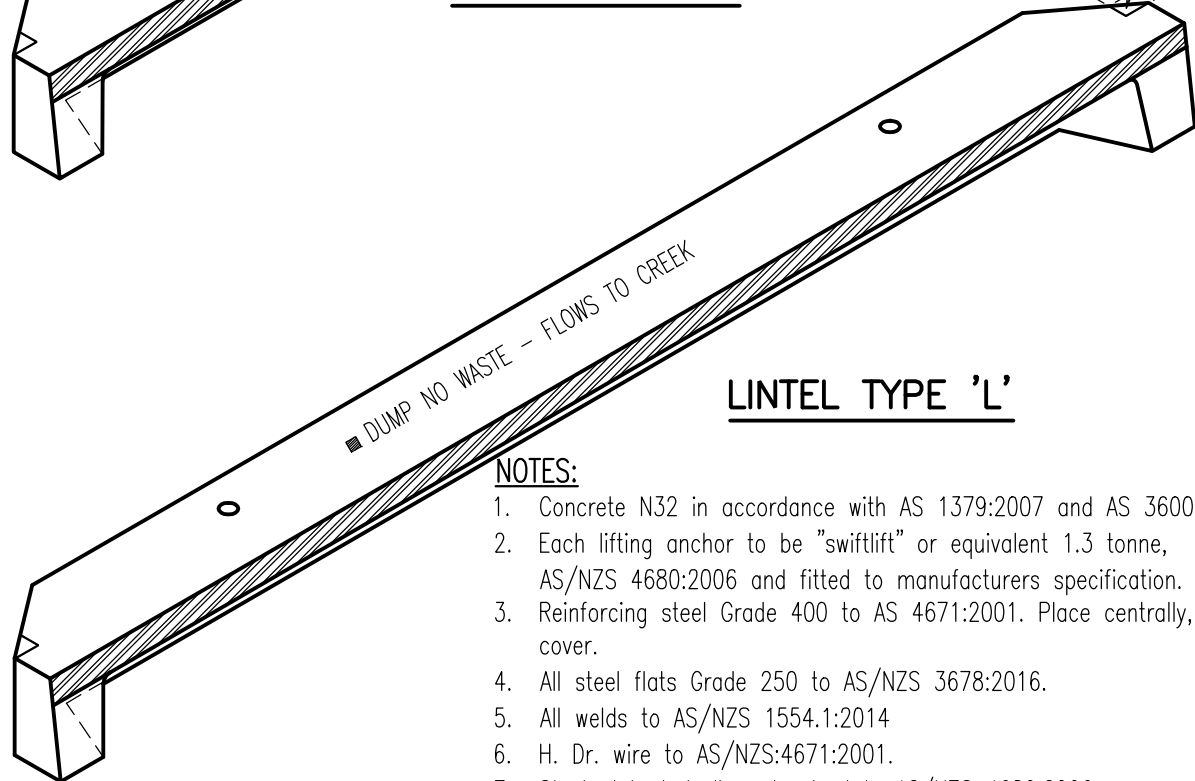
A	B	C
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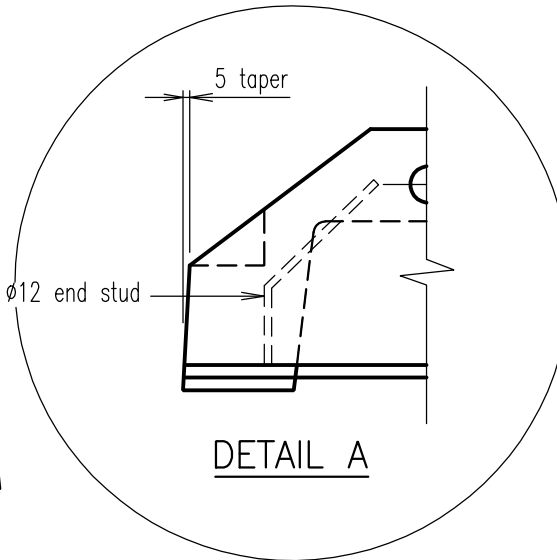
**LINTEL TYPE 'S'**



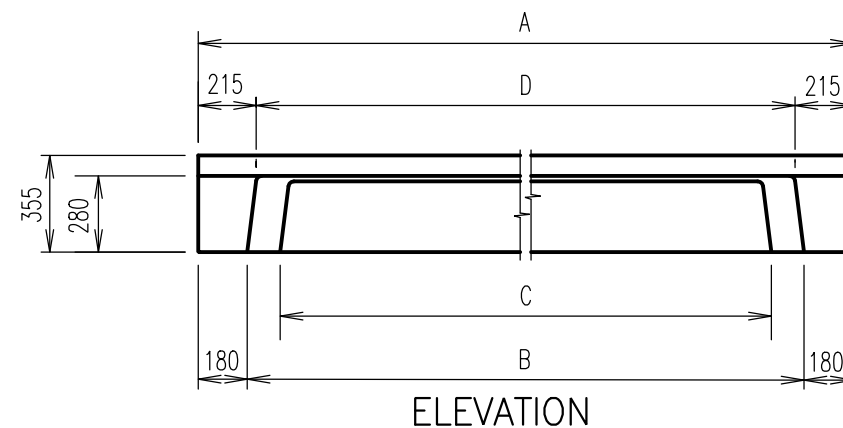
**LINTEL TYPE 'M'**



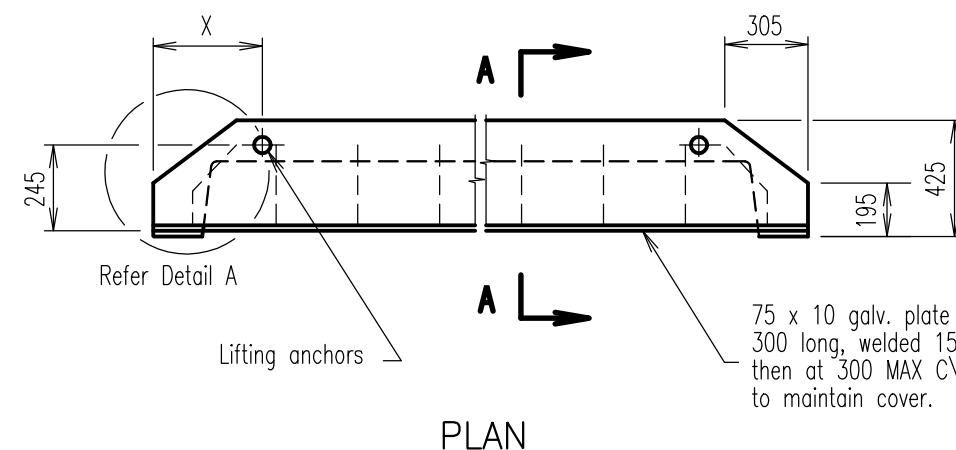
**LINTEL TYPE 'L'**



**DETAIL A**

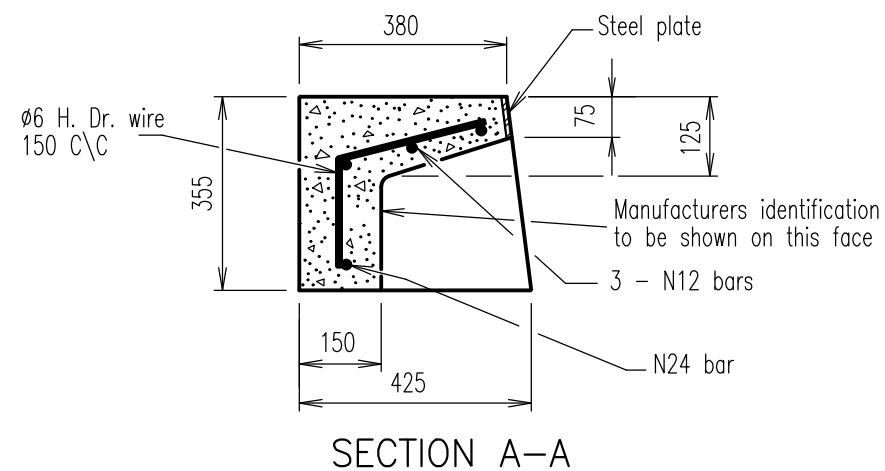


**ELEVATION**



**PLAN**

75 x 10 galv. plate with Ø12 studs, 300 long, welded 150 from the end, then at 300 MAX C/C, bend end studs to maintain cover.



**SECTION A-A**

**NOTES:**

1. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
2. Each lifting anchor to be "swiftlift" or equivalent 1.3 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturers specification.
3. Reinforcing steel Grade 400 to AS 4671:2001. Place centrally, 40 MIN end cover.
4. All steel flats Grade 250 to AS/NZS 3678:2016.
5. All welds to AS/NZS 1554.1:2014
6. H. Dr. wire to AS/NZS:4671:2001.
7. Steel plate hot dip galvanized to AS/NZS 4680:2006.
8. All dimensions in millimeters.

**LEGEND**

■ Text 40mm high letters imprinted 5mm into concrete.

LINTEL	A	B	C	D	X	MASS (kg)
S	2400	2040	1800	1970	400	445
M	3600	3240	3000	3170	690	550
L	4800	4440	4200	4370	1000	725

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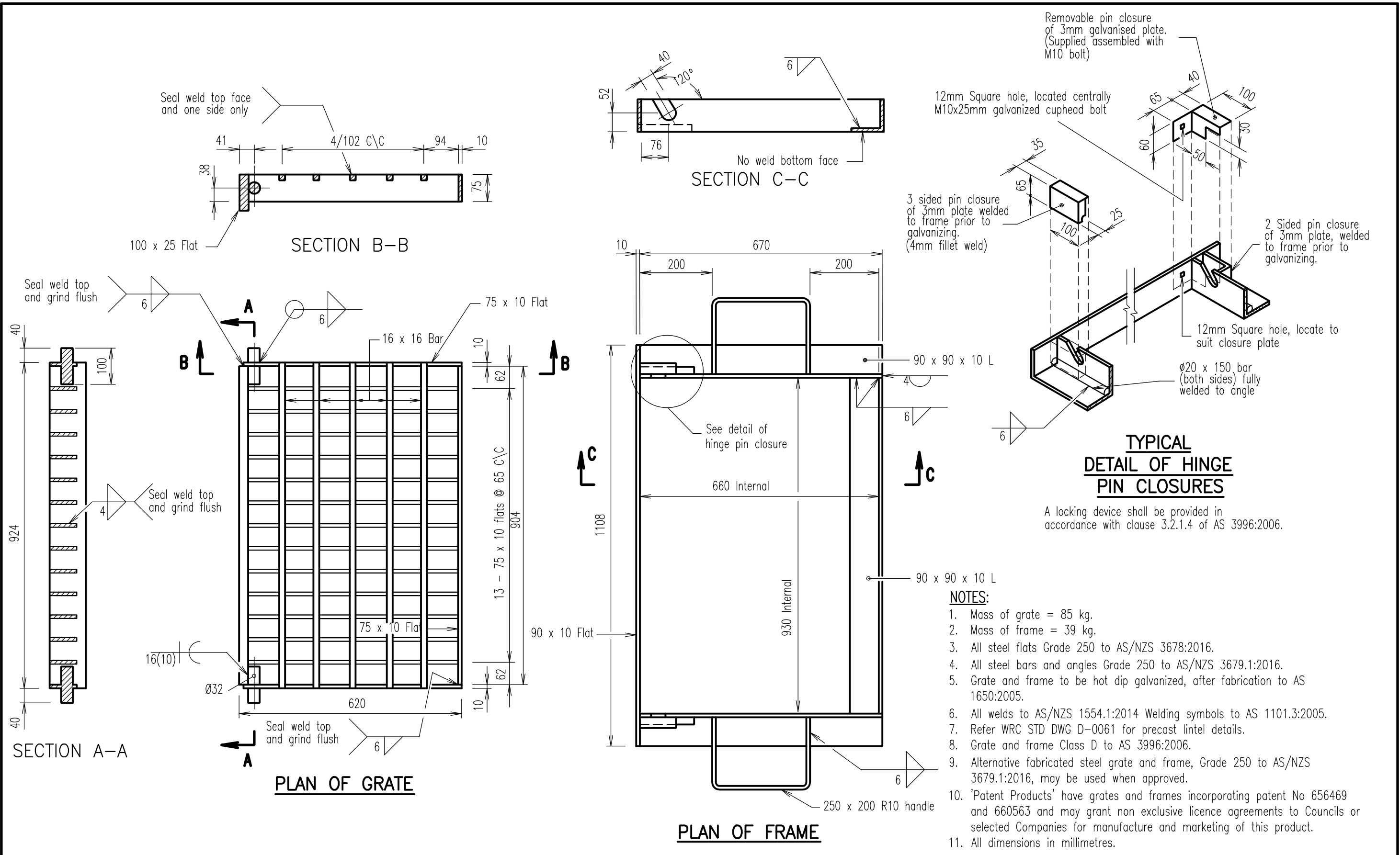
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Proserpine 4800 Q  
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**GULLY – ROADWAY TYPE  
PRECAST LINTEL DETAILS  
KERB IN LINE**

**DRAINAGE  
Standard  
Drawing  
D-0061**

A	B	C	
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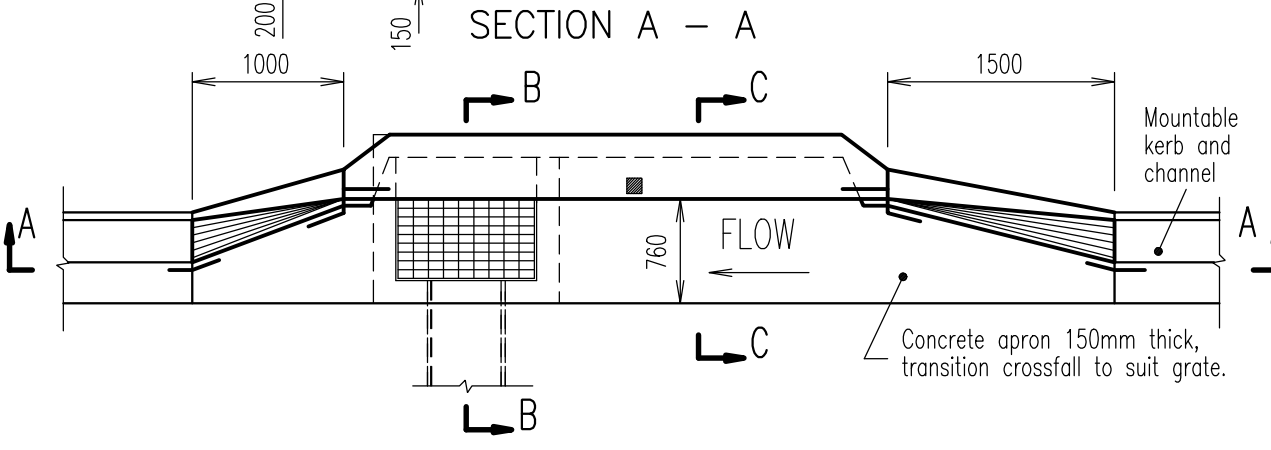
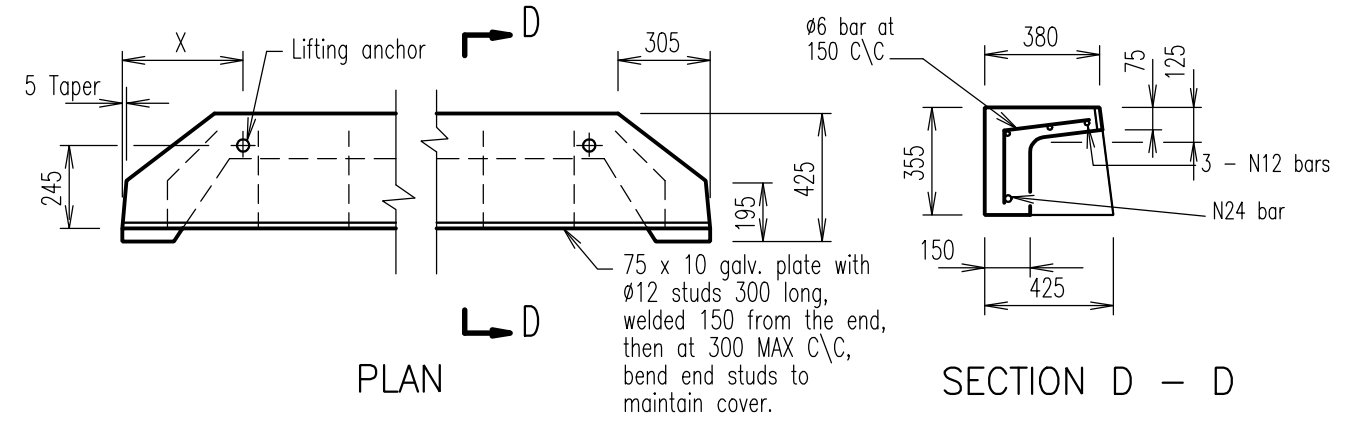
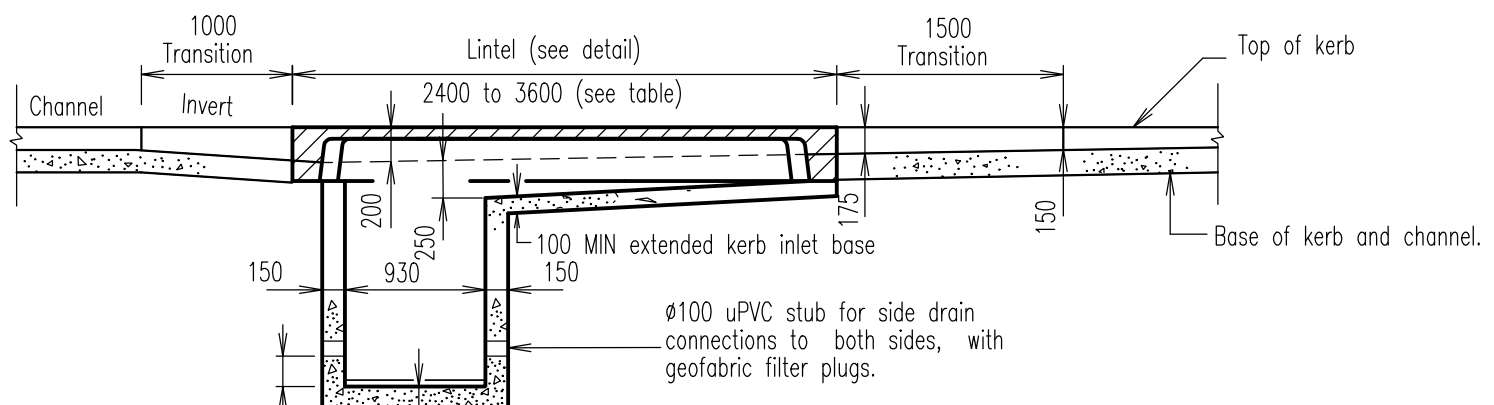
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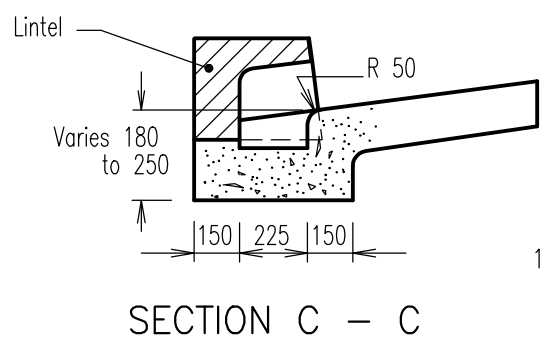
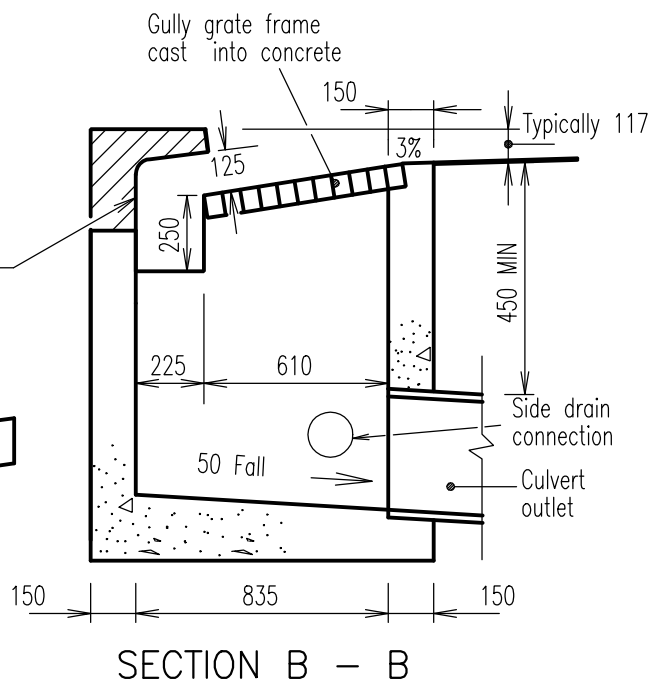
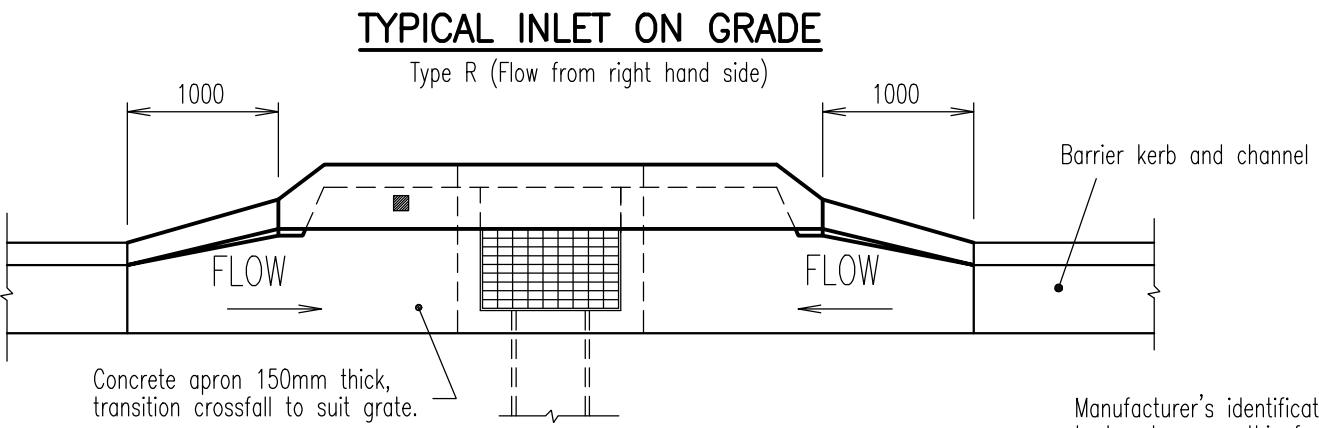
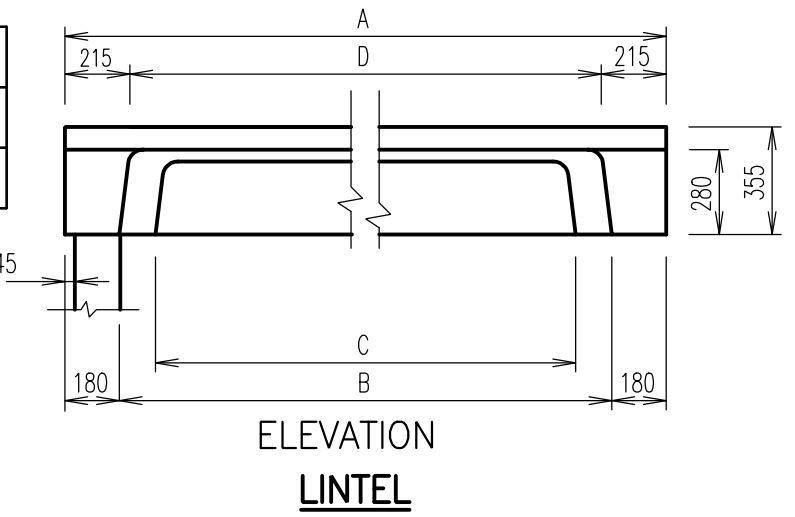
**GULLY - ROADWAY TYPE**  
**GRATE AND FRAME**

**DRAINAGE**  
 Standard  
 Drawing  
**D-0062**

A B C



TYPE	A	B	C	D	X	MASS(kg)
S	2400	2040	1800	1970	400	445
M	3600	3240	3000	3170	690	550



- NOTES:**
1. The catchpit may be cast-in-situ or precast. This drawing indicates a cast-in-situ catchpit with a precast lintel.
  2. Precast concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  3. Cast in-situ concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
  4. Each lifting anchor to be "Swiftlift" or equivalent 1.3 tonne, galvanised to AS/NZS 4680:2006 and fitted to manufacturer's specification.
  5. Reinforcing bars Grade 400 to AS ISO 1302:2005, place centrally, 40 MIN end cover.
  6. Refer WRC STD DWG D-0062 for grate and frame details.
  7. Grate and frame Class D to AS 3996:2006. Patent Products have grades and frames incorporating Patent No 656469 and 660563 and may grant non exclusive licence agreements to Councils or selected Companies for manufacture and marketing of this product.
  8. Steel plate hot dip galvanized to AS/NZS 4680:2006.
  9. All dimensions in millimetres.

**LEGEND**

■ Text 'DUMP NO WASTE - FLOWS TO CREEK' (40 high letters, imprinted 5 mm into concrete)

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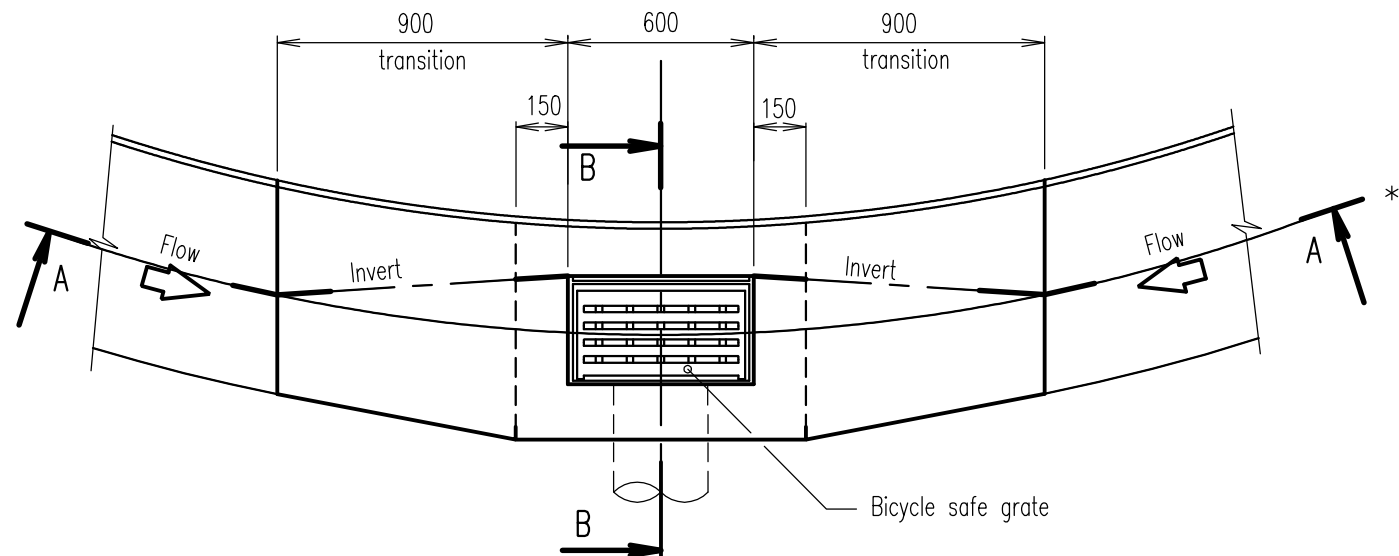
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**GULLY - ROADWAY TYPE  
CHANNEL LIP IN LINE**

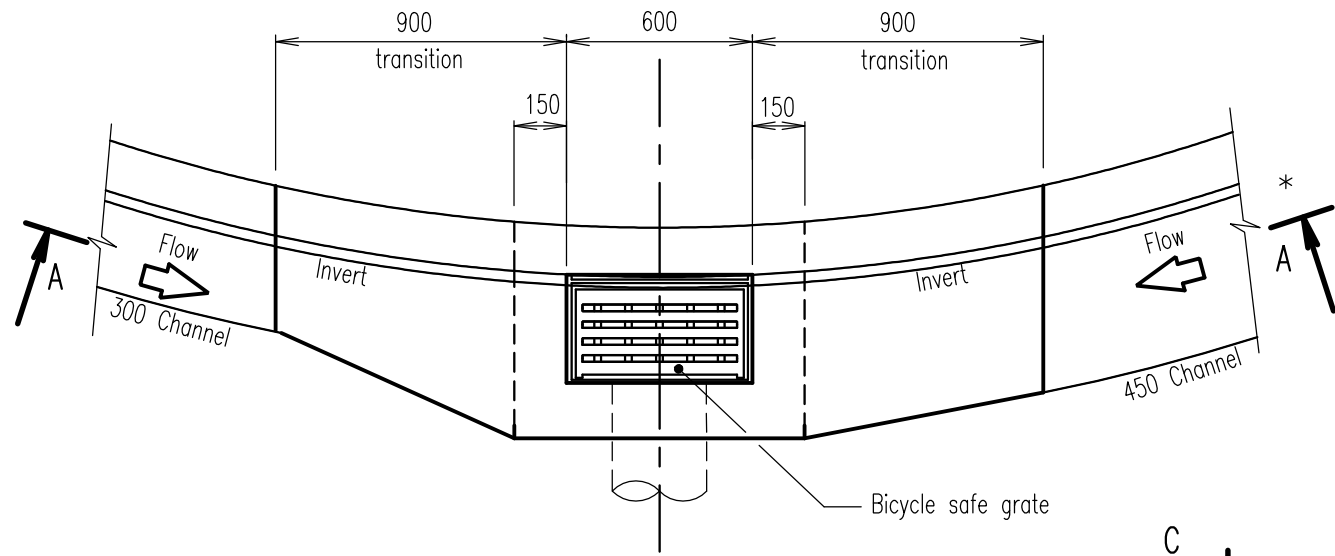
**DRAINAGE  
Standard  
Drawing  
D-0063**

A	B	C
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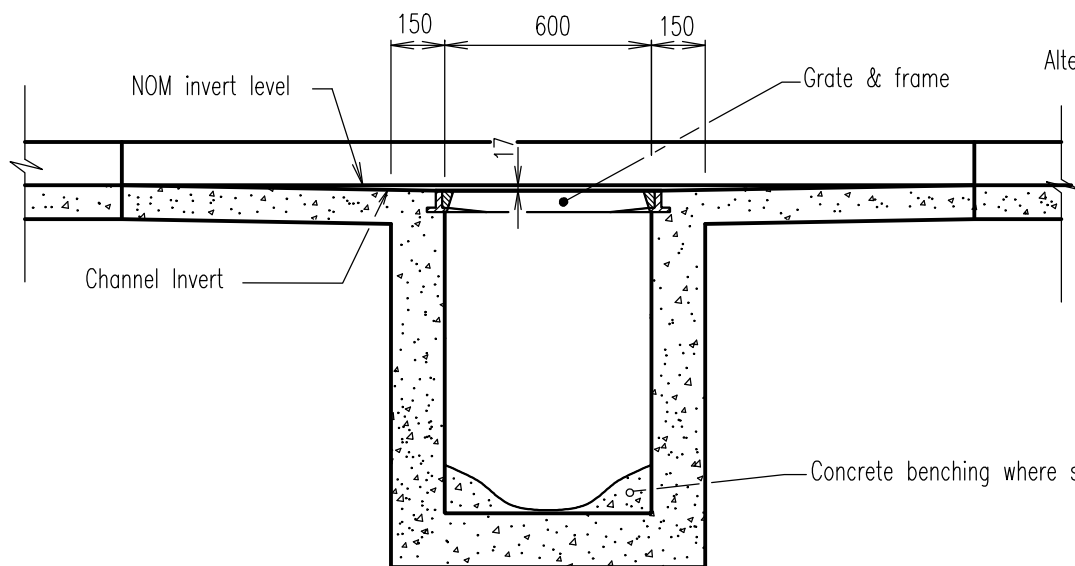




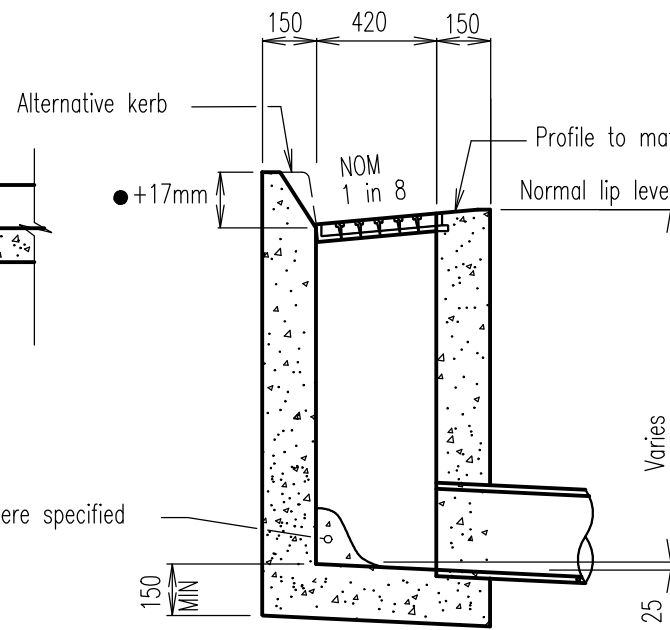
**MOUNTABLE KERB AND CHANNEL  
PLAN**



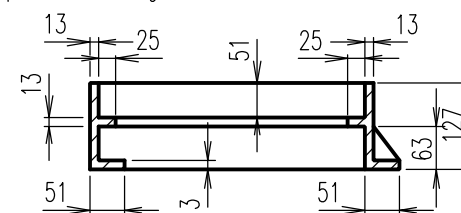
**BARRIER KERB AND CHANNEL  
PLAN**



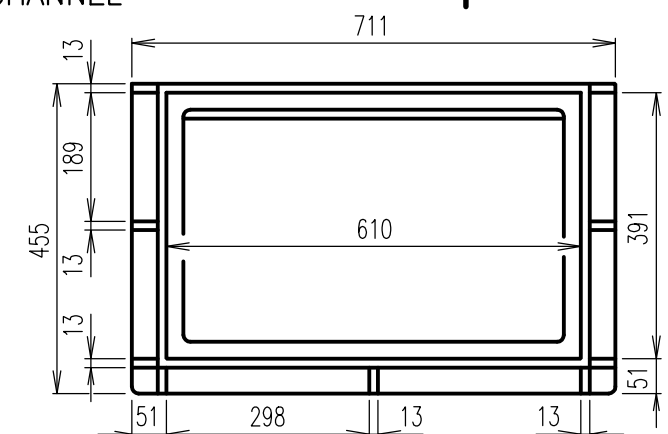
**SECTION A - A**



**SECTION B - B**



**SECTION C-C**



**PLAN  
C.I. FRAME OR  
FABRICATED GALV. STEEL**

**ANTI-PONDING GULLY**

**LEGEND**

- \* NOM kerb line
- NOMINAL kerb height, see note 6.

**NOTES:**

1. Dimensions of grate and frame may be varied subject to approval.
2. Design load for grate and frame shall be in accordance with AUSTRROADS Bridge Design Specification, W7 wheel load.
3. All grates bicycle safe to AS 3996:2006.
4. Grate and frame, grey cast iron Grade  $\geq$  T220 to AS 1830:2007 or alternatively fabricated steel Grade 250 to AS/NZS 3678:2016 & AS/NZS 3679.1:2016 and hot dip galvanized to AS/NZS 4680:2006 may be used when approved.
5. Concrete : Benching N10, Structural N20 in accordance with AS 1379 and AS 3600.
6. Examples indicates M1 and B1 Kerb and channel types. Refer Standard Drawing R-0080, adjust for other alternatives.
7. Bitumen paint C.I. cover and frame to AS/NZS 3750.4:1994.
8. Grate hinges and locking device must conform to AS 3996:2006. 'Patent Products' have grates and frames incorporating patent No 656469 and 660563 and may grant non exclusive licence agreements to Councils or selected Companies for manufacture and marketing of this product.
9. All dimensions in millimetres.

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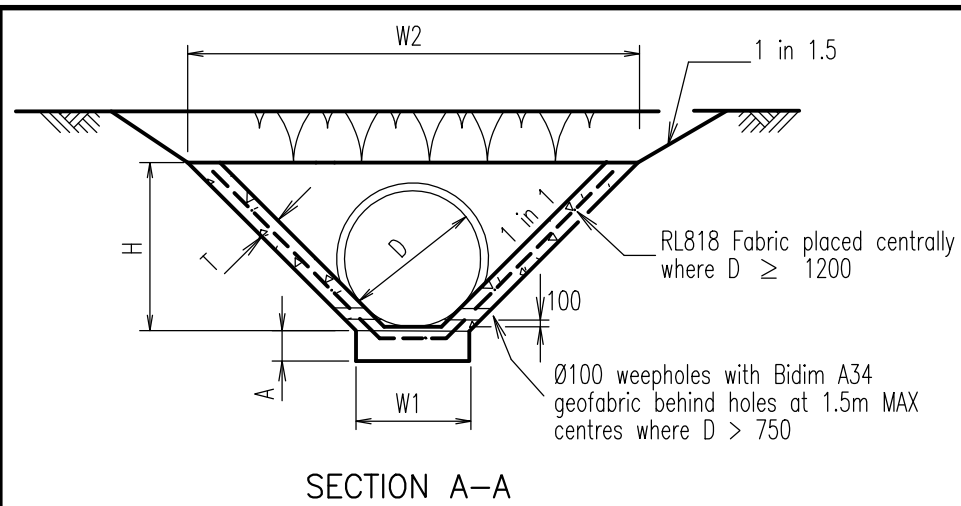
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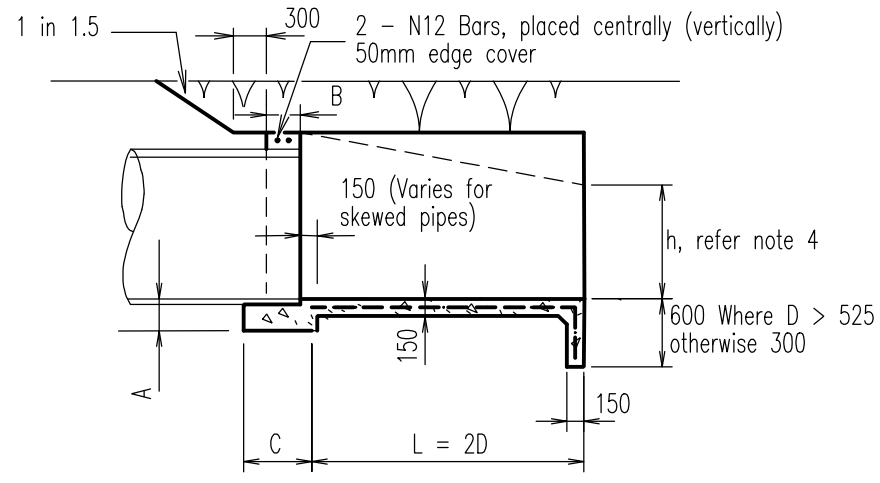
**GULLY - ANTI-PONDING  
DEPRESSED 17mm**

**DRAINAGE  
Standard  
Drawing  
D-0068**

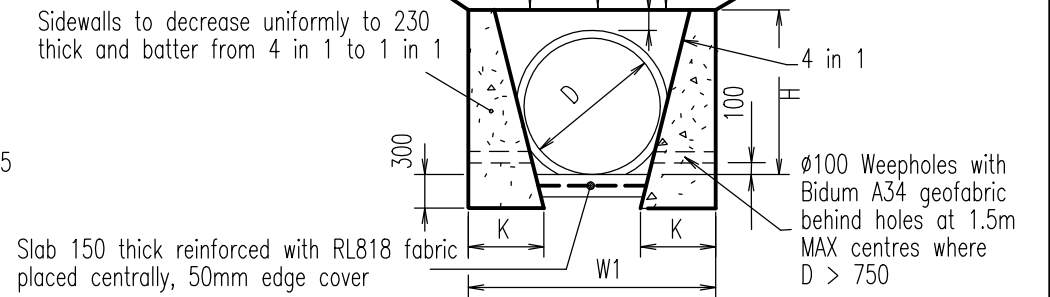
A B C



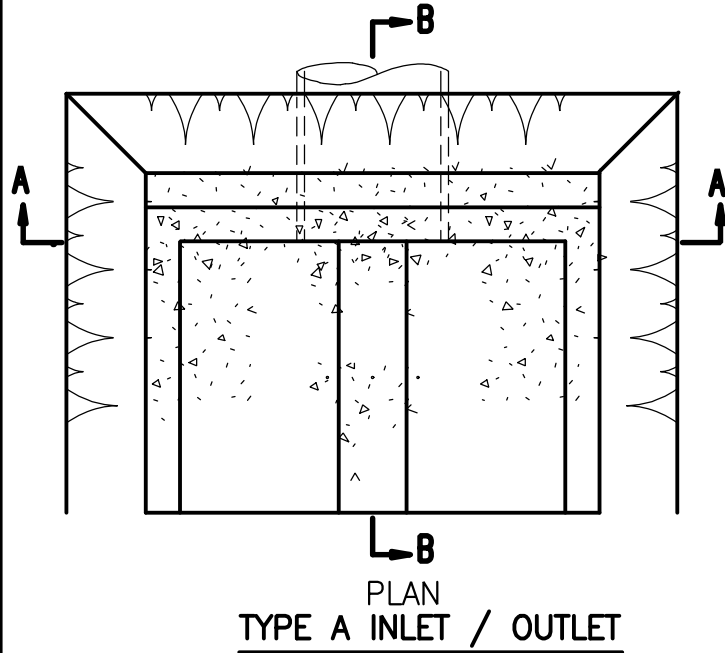
SECTION A-A



SECTION B-B



SECTION C-C



PLAN TYPE A INLET / OUTLET

Pipe skew	5° - 15°	16° - 25°	26° - 35°	36° - 45°
Skew factor	1.02	1.07	1.16	1.32

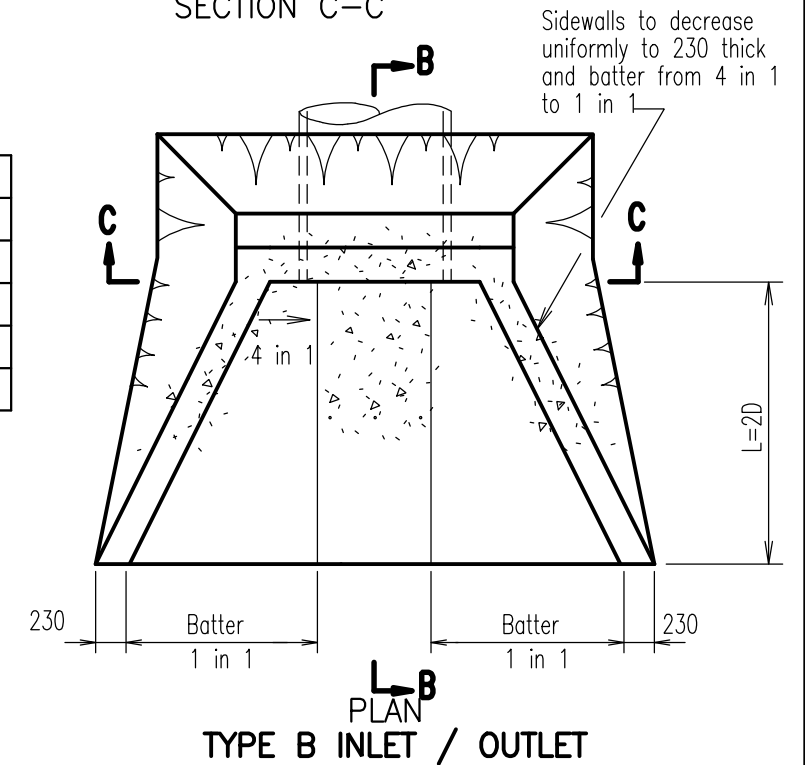
For multiple pipes - increase W1 and W2 for each additional pipe by the external diameter + : 300 when NOMINAL D < 600  
600 when NOMINAL D 600 - 1800  
900 when NOMINAL D > 1800

For skewed pipes - multiply W1 and W2 by skew factor

**MULTIPLE / SKEW PIPES**

DIMENSION	PIPE DIAMETER D				
	1350	1500	1650	1800	1950
K	800	840	875	920	960
H	2000	2160	2300	2460	2640
W1	2060	2250	2440	2630	2840
W2	2060	2250	2440	2630	2840

**DIMENSIONS TYPE B INLET AND OUTLET**  
DIA. = 1350 to 1950



PLAN TYPE B INLET / OUTLET

DIMENSION	PIPE DIAMETER D															
	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1650	1800	1950
A	150	150	150	200	200	200	250	250	250	250	250	300	300	300	300	300
B	225	225	225	300	300	300	300	300	300	300	300	300	300	300	300	300
C	450	450	450	450	450	450	600	600	600	600	600	600	600	600	600	600
H	580	670	750	830	900	980	1060	1140	1220	1370	1530	1690	1840	2000	2160	2340
T	150	150	150	200	200	200	200	200	200	200	200	200	200	200	200	200
W1	700	730	760	790	820	850	880	920	950	1010	1070	1140	1200	1260	1320	1380
W2	1860	2070	2260	2450	2620	2810	3000	3200	3390	3750	4130	4520	4880	5260	5640	6060

**DIMENSIONS**

TYPE A INLET DIA. = 300 to 1200  
TYPE A OUTLET DIA. = 300 to 1950

**NOTES:**

- Design bearing pressure 75 KPa. Where this bearing pressure cannot be obtained, the Superintendent may direct that a wider footing be used.
- Concrete N20 or Grade S32/10 shotcrete may be used in accordance with AS 1379:2007 and AS 3600:2009.
- In tidal areas where fabric reinforcement is specified, concrete is to be sulphate resistant Grade S40 to AS 1379:2007 and AS 3600:2009.
- In embankment situations, the height of the wingwall at the toe should be reduced to "h" so that the slope of the top of the wingwall equals the adjacent embankment batter. Refer project drawings.
- See project drawings for the following : No. and diameter of pipes; Skew angles of pipes if applicable; Invert levels of pipes; Height of wingwall "h" at toe if applicable.
- If directed (by the Superintendent), the apron slab to a Type A outlet may be lowered by the pipe wall thickness to allow for future pipe extension.
- At inlets or outlets, transition uniformly from concrete to open channel over 5m to 10m.
- Refer project drawings for protection proposed between end of outlet structure and open drain / creek.
- Reinforcement : Bars Grade 400 to AS ISO 1302:2005. Fabric to AS/NZS 4671:2001.
- All dimensions in millimetres, unless shown otherwise.

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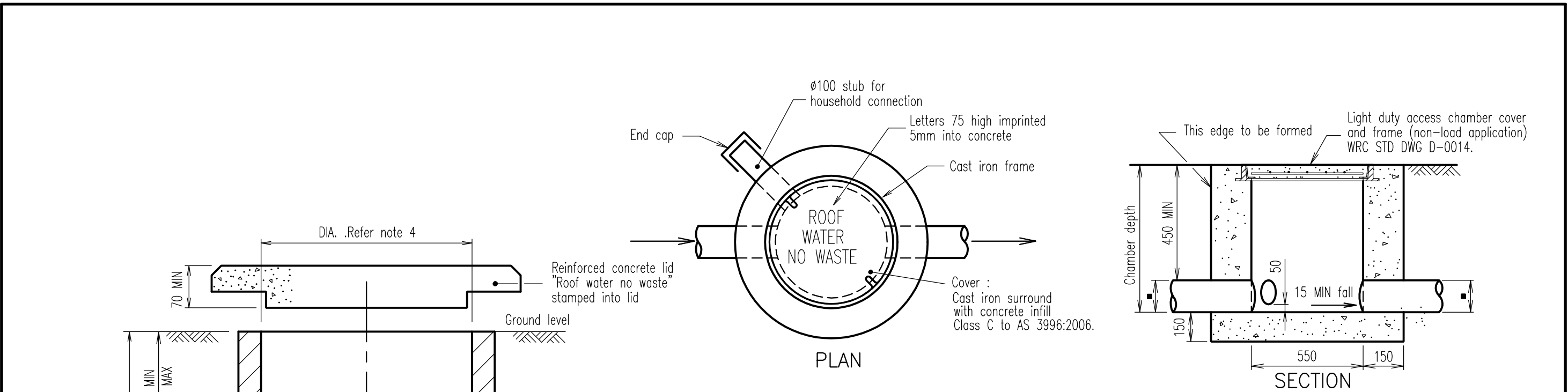
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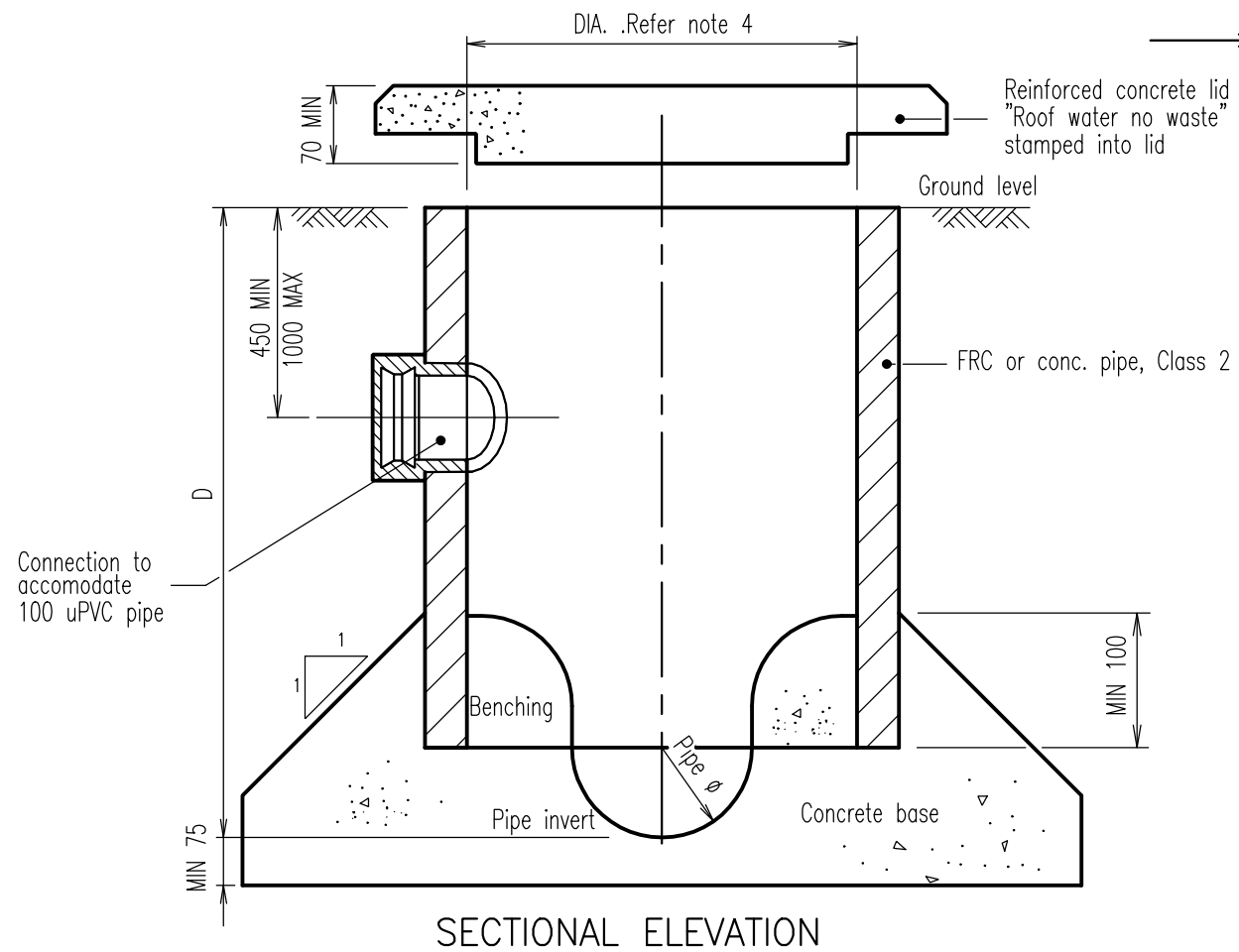
**INLETS AND OUTLETS TO STORMWATER DRAINS (CONCRETE)**

**DRAINAGE Standard Drawing D-0080**

A	B	C
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**TYPE 1  
CAST INSITU**



**SECTIONAL ELEVATION  
TYPE 2  
PRECAST / INSITU**

**NOTES:**

- Roofwater systems are to be connected to stormwater gullies or access chambers. Where the system is to be connected to kerb and channel one property can be connected via a 100 Class SH uPVC pipe or a 100 x 75 galvanized R.H.S. to a kerb adaptor. A maximum of two properties can be connected via a 200 x 75 galvanized R.H.S.
- The pipe materials and joint types shall be as follows:

Material	Aust. Std	Joint Type	Restrictions
Fibre reinforced, Class 2	AS 4139:2003	Rubber ring	N/A
Concrete, Class 2	AS/NZS 4058:2007	Rubber ring	N/A
uPVC, sewer Class SH	AS/NZS 1260:2009	Solvent welded	Not to be used in easements
- Minimum cover to roofwater pipes to be 450mm except where less cover is necessary to discharge to kerb and channel.
- The access chamber depths and minimum diameters shall be as follows :  
Depth < 600 – MIN  $\phi$ 300, Depth 600 – 750 – MIN  $\phi$ 550, Depth > 750 – MIN  $\phi$ 900 ●
- Alternative designs, materials and methods of construction will be considered for approval including precast roofwater chambers available from various manufacturers. Alternative precast units will require to be bedded and encased in 150 thick concrete (Grade N25) up to 150 above crown of the inlet pipe with all subsequent backfill compacted to 95% MDD (modified compaction to AS 1289:2014) to ensure stability and robustness.
- Alternative covers and frames proposed for approval must be circular, and be designed as Class C to AS 3996:2006.
- Concrete, base N25, cover infill N32 in accordance with AS 1379:2007 and AS 3600:2009.
- The roofwater drainage system shall be shown on the stormwater drainage plans for the development.
- The following 'as constructed' information shall be submitted to Superintendent, refer Sewerage Sample as constructed plan WRC STD DWG S-0010.
  - Offsets of the main line to property boundary
  - The locations of access chambers and Y junctions measured from the property boundary.
- Where individual lots can directly discharge to the kerb and channel, kerb adaptors shall be used. Refer WRC STD DWG R-0081.
- All dimensions in millimetres.

**LEGEND**

- Refer project drawings for pipe diameter and type
- At  $\phi$ 900 chambers adopt roof design off WRC STD DWG D-0011.

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**ROOFWATER  
INSPECTION CHAMBER**

**DRAINAGE  
Standard  
Drawing  
D-0110**

A B C

Std. Dwg. No.	Descriptions	Std. Dwg. No.	Descriptions
	<b>CROSS SECTIONS</b>		<b>KERB AND CHANNEL</b>
R-0031	TYPE CROSS SECTIONS BI-LEVEL STREET AND VERGE PROFILE FOR ACCESS PLACE, ACCESS STREET AND COLLECTOR STREETS	R-0080	KERBS AND CHANNELS, PROFILES AND DIMENSIONS, INCL EDGE RESTRAINTS, MEDIAN AND INVERT
R-0032	COMMERCIAL / INDUSTRIAL, URBAN RESIDENTIAL AND LOW DENSITY RESIDENTIAL < 1.0 HA STREETS	R-0081	KERB AND CHANNEL, DRAINAGE CONNECTIONS
R-0033	RURAL ROADS AND LOW DENSITY RESIDENTIAL > 1.0 HA ROADS	R-0084	KERB RAMP
	<b>CULVERTS</b>		<b>PUBLIC UTILITIES</b>
QT 1303	RC BOX CULVERTS AND SLAB LINK BOX CULVERTS	R-0100	PUBLIC UTILITIES IN SUBDIVISIONS, TYPICAL SERVICE CORRIDOR AND SECTIONS
QT 1316	CONSTRUCTION OF RC WINGWALLS AND HEADWALLS		<b>RELIEVING SLAB</b>
QT 1317	INSTALLATION OF PRECAST UNITS	QT 1505	BRIDGE APPROACHES - RELIEVING SLAB 3 METRE SPAN
QT 1318	CONSTRUCTION OF BASES WITH NIBS AND APRONS	QT 1506	BRIDGE APPROACHES - RELIEVING SLAB 6 METRE SPAN
			<b>ROAD EDGE GUIDE POSTS</b>
QT 1320	CROWN UNIT HOLDING DOWN ANCHORS	QT 1356	ROAD EDGE GUIDE POSTS TIMBER AND TUBULAR STEEL POST AND INSTALLATION DETAILS
QT 1304	RC PIPE CULVERTS - CONSTRUCTION OF RC WINGWALLS & APRONS FOR PIPE DIA 750 TO 2400		<b>SIGNS</b>
QT 1305	PIPE CULVERTS - HEADWALLS AND APRONS FOR PIPE DIA 375 TO 675	R-0130	STREET NAME SIGN
QT 1359	CULVERTS - INSTALLATION, BEDDING AND FILLING / BACKFILLING AGAINST / OVER CULVERTS	R-0131	TRAFFIC CONTROL DEVICES
	<b>DRIVEWAYS</b>		<b>SUBSURFACE DRAINAGE</b>
R-0050	RESIDENTIAL DRIVEWAY - SLAB AND TRACKS	R-0140	SUBSURFACE DRAINAGE
R-0051	COMMERCIAL DRIVEWAY SLAB - TYPE A - TWO WAY ACCESS	R-0141	SUBSOIL DRAINAGE DETAILS AT MEDIANS / ISLANDS
R-0052	COMMERCIAL DRIVEWAY SLAB - TYPE B - TWO LANES ACCESS	QT 1116	SUBSOIL DRAINS - OUTLETS AND CLEANOUTS
R-0053	TYPICAL MINOR ACCESS DETAILS FOR COUNCIL RURAL ROADS		<b>WATER SERVICE CONDUITS</b>
	<b>FLOODWAYS</b>		
QT 1170	FLOOD DEPTH INDICATORS	R-0160	WATER SERVICE CONDUITS
	<b>FOOTPATHS</b>		
R-0065	CONCRETE STRIP FOOTPATHS		
	<b>GATES AND GRIDS</b>		
QT 1601	RURAL FENCE AND GATES - CHS POSTS AND STAYS		
QT 1561	MOTOR GRID - GENERAL ARRANGEMENT		
	<b>GUARD RAILS AND BARRIERS</b>		
QT 1474	STEEL BEAM GUARD RAILS		
QT 1475	INSTALLATION AND SETOUT		
QT 1476	INSTALLATION OF BRIDGE AND BARRIER APPROACHES		
QT 1341	TERMINAL AND COMPONENTS		
QT 1479	INSTALLATION OF BACK TO BACK GUARDRAIL		
QT 1480	BOLTS, NUTS, SCREWS AND WASHERS CABLE ASSEMBLY WITH FASTENERS		
QT 1481	DETAILS FOR W BEAM RAILS AND RAIL COMPONENTS		
QT 1482	DETAILS FOR THRIE BEAM RAILS AND RAIL COMPONENTS		
QT 1483	W BEAM AND THRIE BEAM ASSEMBLIES		
QT 1484	DETAILS FOR ANCHOR CABLE ASSEMBLY AND SUPPORTING PLATES		
QT 1485	DETAILS FOR GUARDRAIL DELINEATOR BRACKET		
	CONCRETE BARRIERS, EXTRUDED AND PRECAST BARRIERS		

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C Dwg R-066 DELETED	10/3/98
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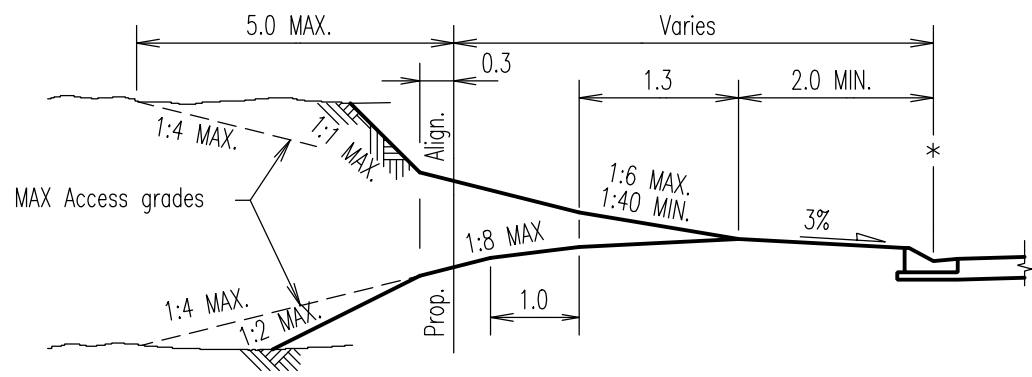
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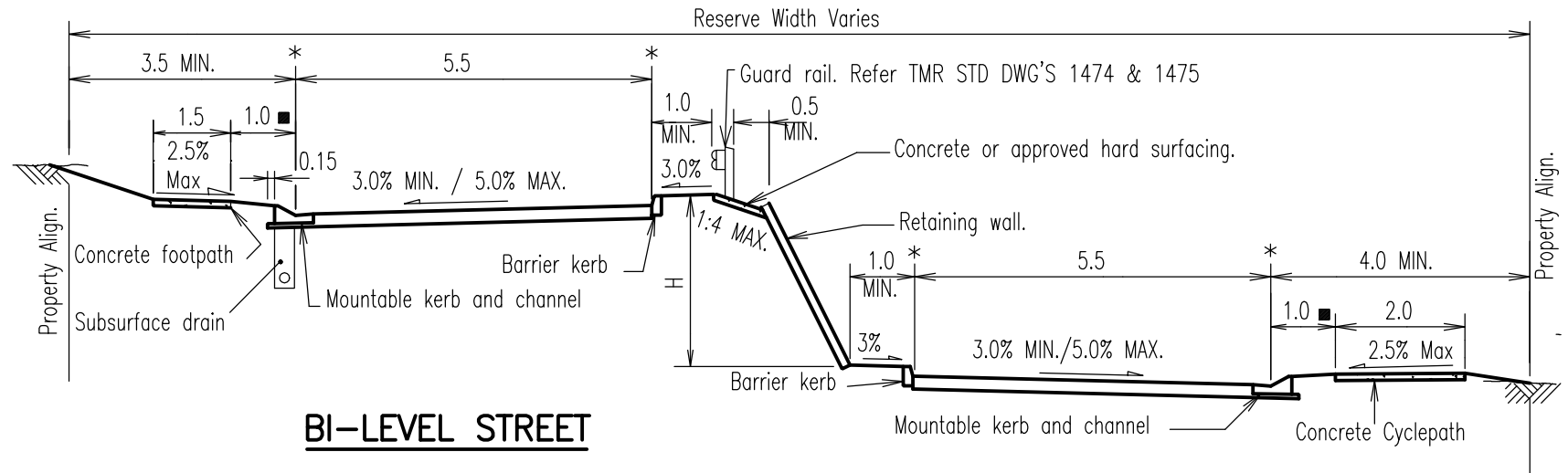
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<b>INDEX</b>
<b>STANDARD DRAWINGS</b>
<b>ROAD / STREET</b>

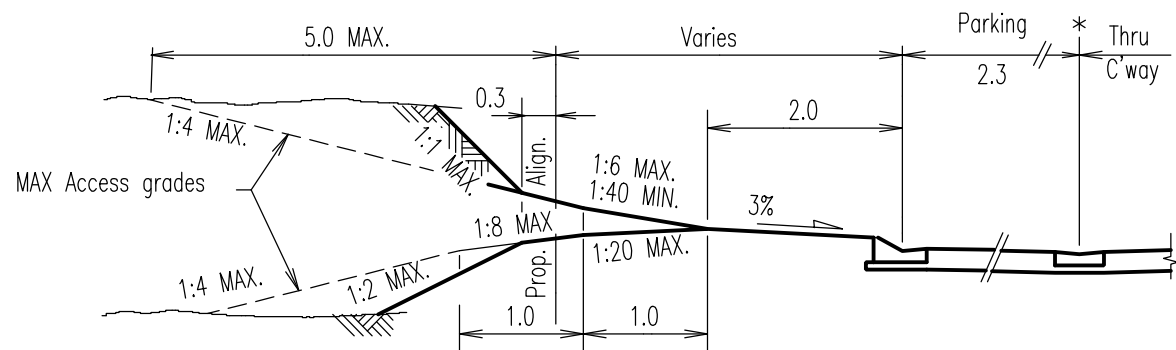
<b>ROAD/STREET</b>
<b>Standard</b>
<b>Drawing</b>
<b>R-0001</b>
A   B   C   D



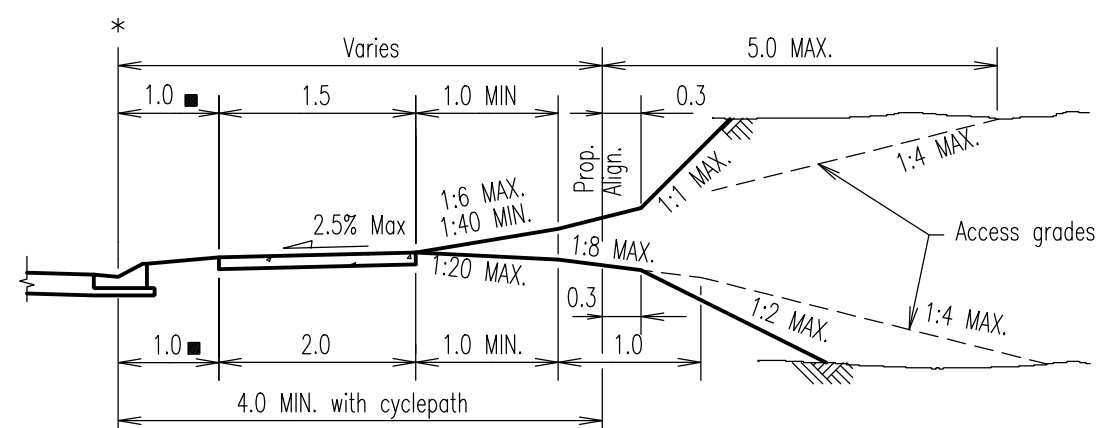
**VERGE WITHOUT PATHWAYS**



**BI-LEVEL STREET**



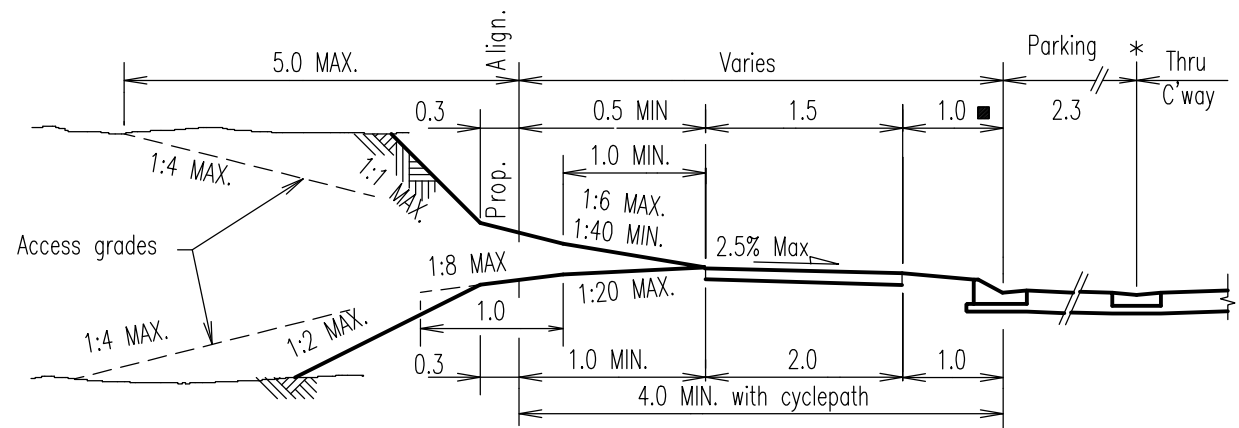
**VERGE AT PARKING BAYS WITHOUT PATHWAYS**



**VERGE WITH PATHWAYS**

**LEGEND**

- Road reserve may be 20 metres if all services can be accommodated.
- \* NOM. Kerb line
- Unless otherwise specified



**VERGE WITH PARKING BAYS AND PATHWAYS**

**NOTES:**

1. A concrete footpath or cyclepath may be provided on one side only depending on allotment catchment. It shall be constructed parallel to the kerb and channel, and transition smoothly around any parking bays.
2. Retaining wall to be designed specifically to suit site conditions. The retaining wall face should be of a type which will compliment the amenity of the area. Rock faced walls are acceptable, however each wall should be considered individually.
3. An approved guardrail shall be installed when height 'H' (top of kerb to top of kerb) exceeds 1.5m, refer TMR STD DWG 1474.
4. Landscaping may be possible in the area between the guardrail and top of wall when this dimension exceeds 1.5m, where guardrail is not required or when the width of centre median exceeds 1.5m. Landscaping will not be permitted in the 1.0m strip behind the barrier kerbs to allow for manoeuvring of vehicles.
5. The minimum reserve widths indicated on the standard road cross sections may need to be increased in certain circumstances in order to comply with this drawing.
6. For pavement design requirements refer Development design manual.
7. All dimensions in metres.

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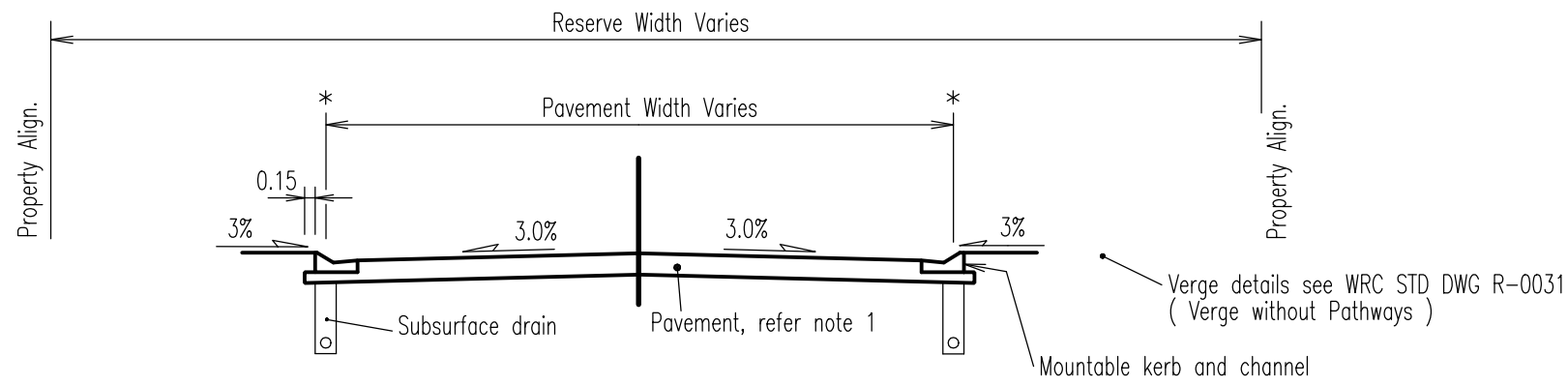
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**TYPE CROSS SECTIONS**  
**BI-LEVEL STREET & VERGE PROFILES FOR**  
**ACCESS PL, ACCESS STS. & COLLECTOR STS.**

**ROAD/STREET**  
Standard  
Drawing  
**R-0031**

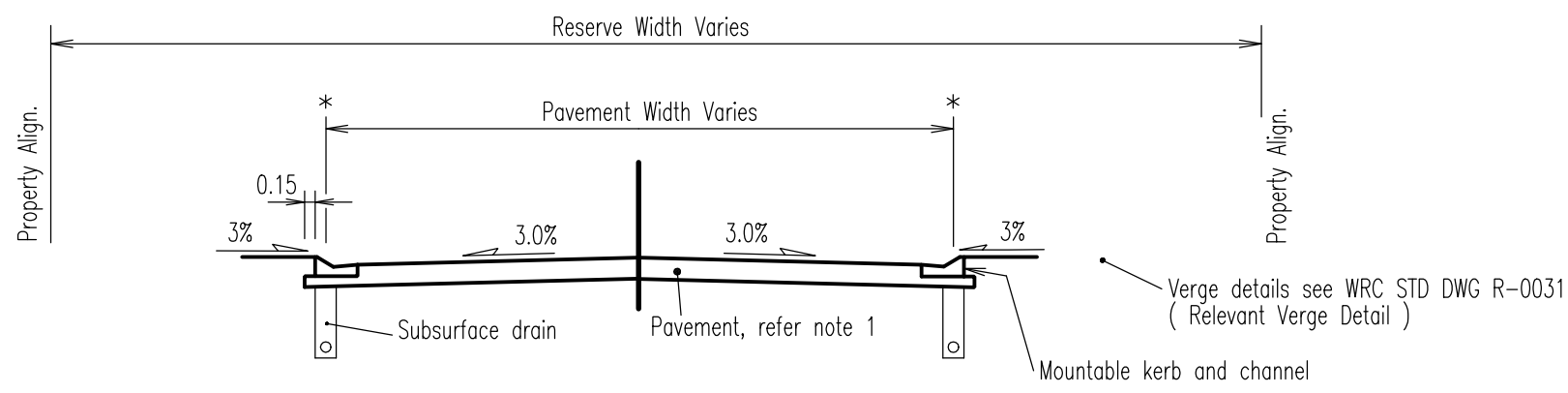
A	B	C
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**LOW DENSITY RESIDENTIAL < 1.0 HA**

LOW DENSITY RESIDENTIAL < 1.5 HA SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

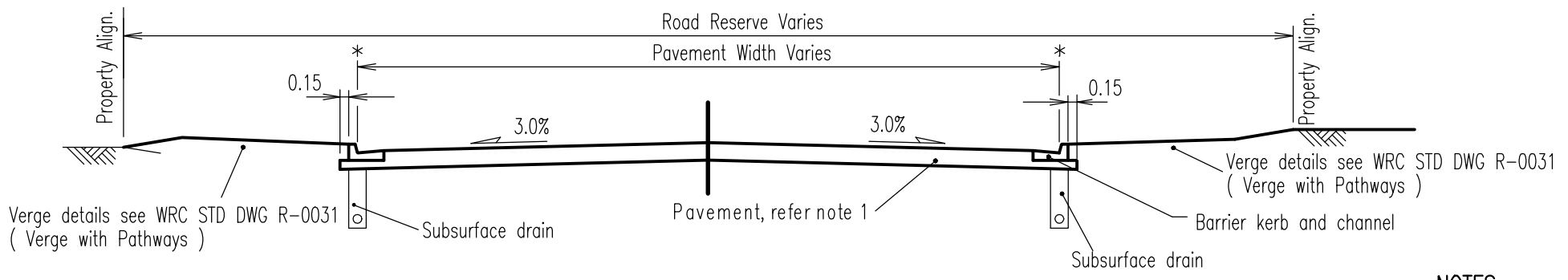
	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS STREET	16.0	6.0	5.0
COLLECTOR	20.0	7.5	5.0



**URBAN RESIDENTIAL**

URBAN RESIDENTIAL SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS PLACE	15.0	3.5	3.0
ACCESS STREET	15.0	5.5	3.0
COLLECTOR	17.0	7.5	3.5
TRUNK COLLECT.	21.0	9.0	4.5
SUB ARTERIAL	25.0	11.0	5.5



**COMMERCIAL / INDUSTRIAL**

COMMERCIAL / INDUSTRIAL SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS STREET	21.0	12.0	4.5
COLLECTOR	23.0	14.0	4.5

**NOTES:**

1. For pavement design requirements refer Development manual.
2. All dimensions in metres.

**LEGEND**

\* NOMINAL kerb line

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B AREA SPECIFICATIONS TABLE AMENDED	10/3/98
A ORIGINAL ISSUE	1/3/97

**Whitsunday Regional Council**  
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Ph 07 4761 3600

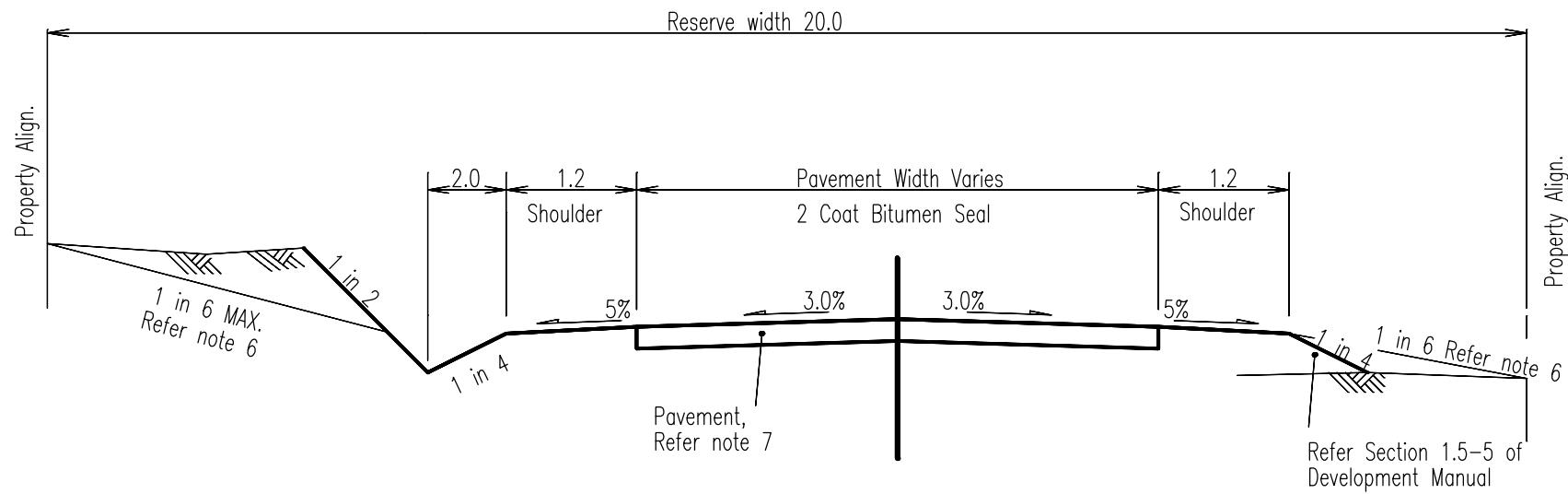
**COLLINSVILLE**  
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Collinsville 4804 Q  
Ph 07 4785 5366

**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
Ph 07 4945 0200

**TYPE CROSS SECTIONS**  
**COMMERCIAL / INDUSTRIAL STREETS**  
**URBAN RESIDENTIAL AND**  
**LOW DENSITY RESIDENTIAL < 1.0 HA**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0032**

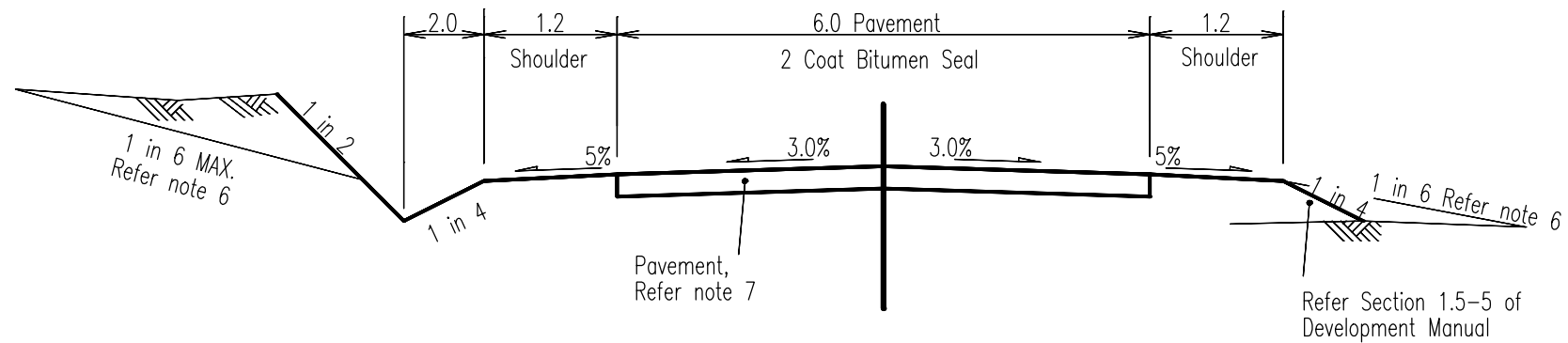
A | B | C



**LOW DENSITY RESIDENTIAL > 1.0 HA**

LOW DENSITY RESIDENTIAL > 1.5 HA  
(Refer Table 1.4-1 for total requirements)

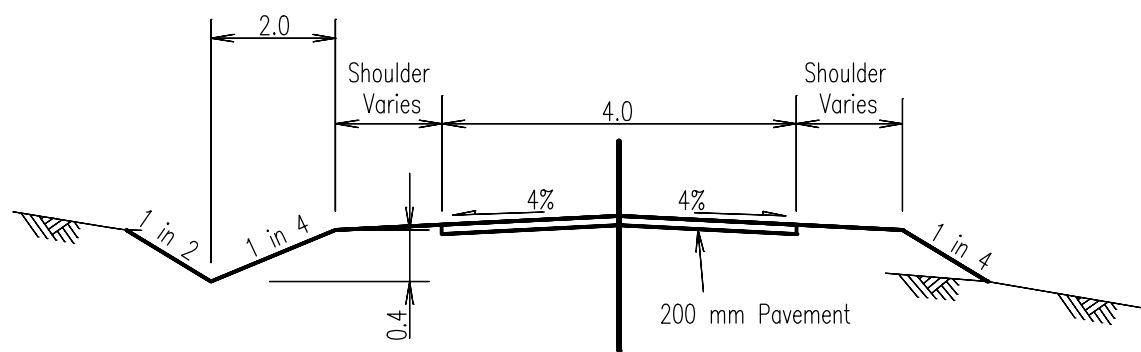
	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH	MIN VERGE WIDTH
ACCESS STREET	20.0	6.0	1.2	5.0
COLLECTOR	20.0	7.5	1.2	5.0



**RURAL ROAD - SEALED**

RURAL ROAD - SEALED  
(Refer Table 1.4-1 for total requirements)

No. LOTS	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH
31-100	20.0	6.0	1.2



**RURAL ROAD - UNSEALED**

RURAL ROAD - UNSEALED  
(Refer Table 1.4-1 for total requirements)

No. LOTS	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH
1-15	20.0	4.0	1.2
16-30	20.0	4.0	2.4

**LEGEND**

- Refer development permit for type of construction to be adopted.
- 150mm MIN. pavement overlap

**NOTES:**

1. Table Drains steeper than 5% should have erosion protection measures installed.
2. Cut batter slopes may be varied on site to ensure long term stability of batters.
3. Minimum slope of table drain inverts shall be 0.5% (1 in 200).
4. Floodways shall be constructed with cross road drainage nominated in development permit.
5. Unsealed roads shall be designed using parameters set out in AUSTRROADS "Unsealed Roads Manual" unless noted otherwise in the project drawings.
6. One access point to be constructed to each lot at a maximum slope of 1 in 6. The access point is to have a pipe crossing where a table drain is provided.
7. For pavement design requirements refer Development manual.
8. All dimensions in metres unless shown otherwise.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B AREA SPECIFICATION TABLE AMENDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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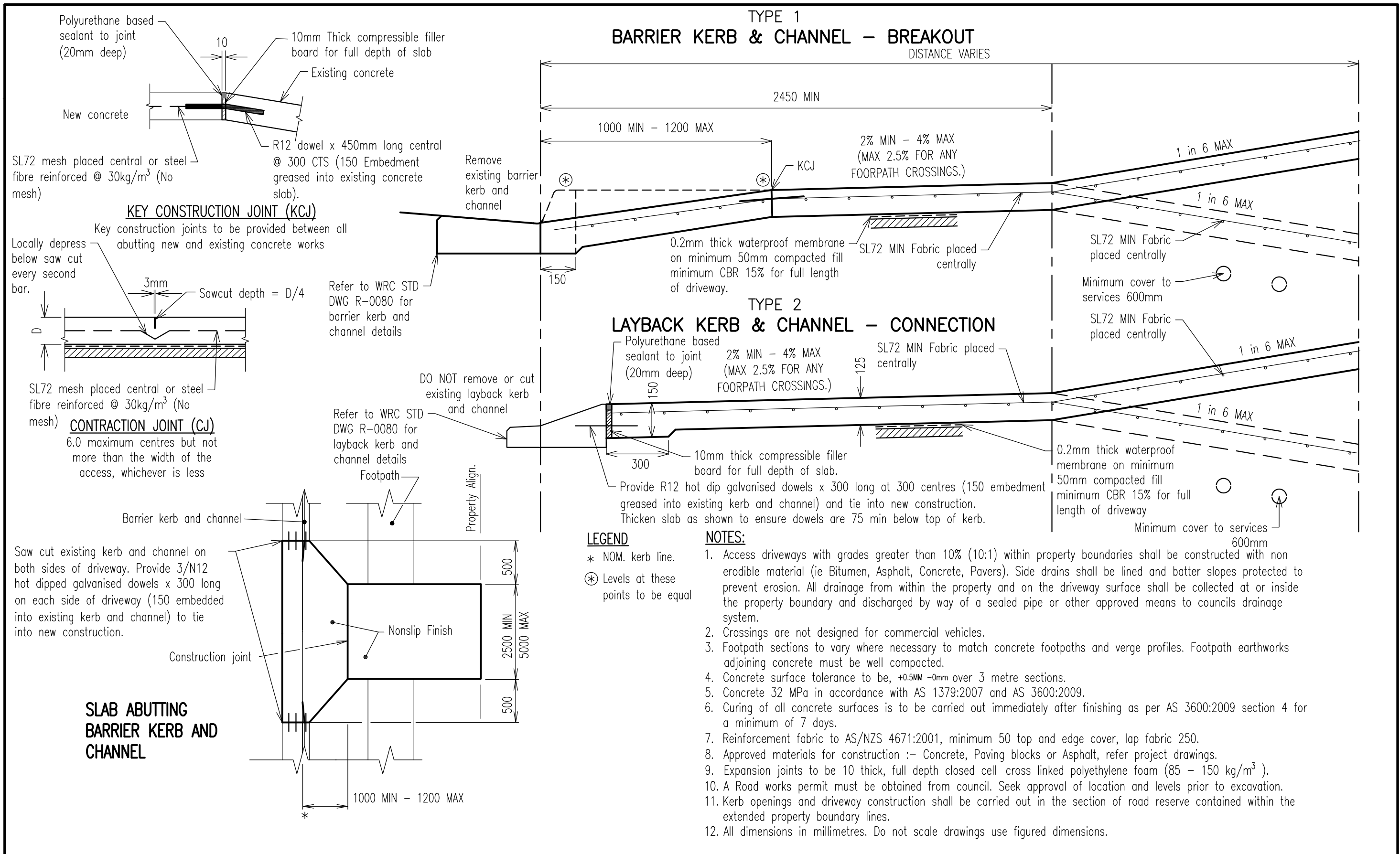
**COLLINSVILLE**  
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**PROSERPINE**  
83-85 Main St  
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**TYPE CROSS SECTIONS**  
**RURAL ROADS**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0033**

A	B	C	
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REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
D GENERAL UPDATES	15/2/12
C DRIVEWAY WIDTH CHANGED	10/03/08
B MAJOR REVISION	10/3/98
A ORIGINAL ISSUE	1/3/97


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 Ph 07 4785 5366  
**PROSERPINE**  
 83-85 Main St  
 Proserpine 4800 Q  
 Ph 07 4945 0200

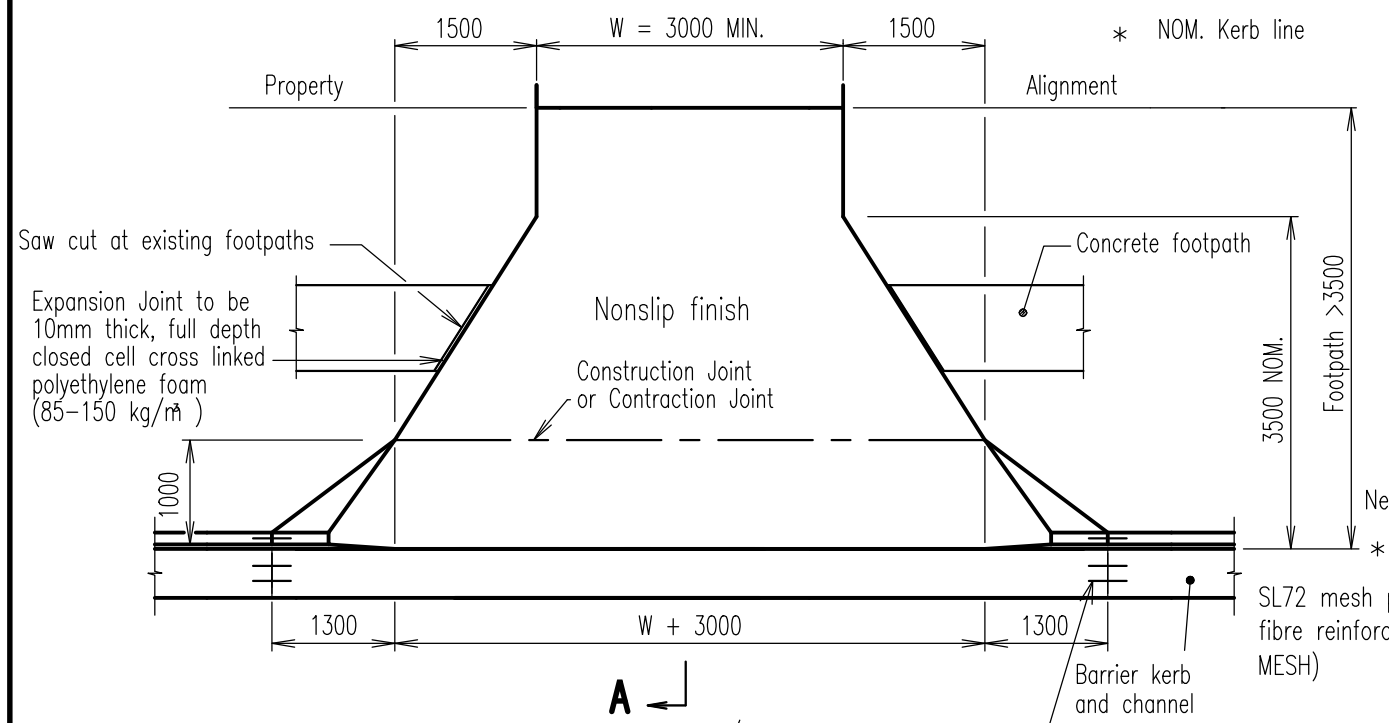
**RESIDENTIAL DRIVEWAY**  
**SLAB AND TRACKS**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0050**

A | B | C | D | E



**PLAN – WIDE FOOTPATHS**



Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85-150 kg/m<sup>3</sup>)

Nonslip finish

Construction Joint or Contraction Joint

Concrete footpath

Barrier kerb and channel

Footpath > 3500

3500 NOM.

W = 3000 MIN.

1500

1500

Property

Alignment

1000

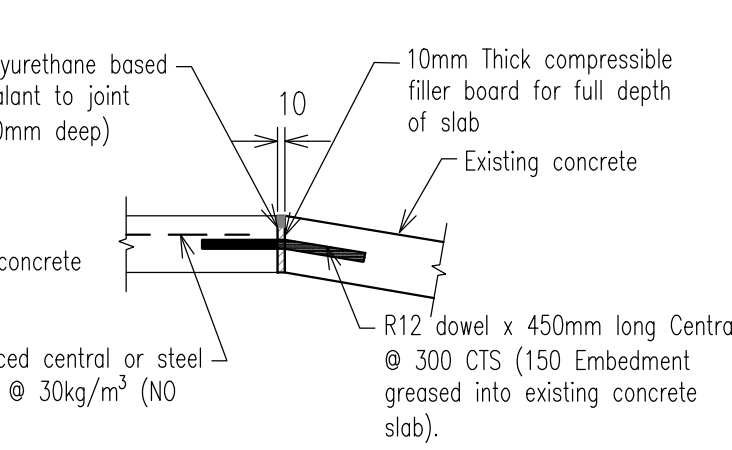
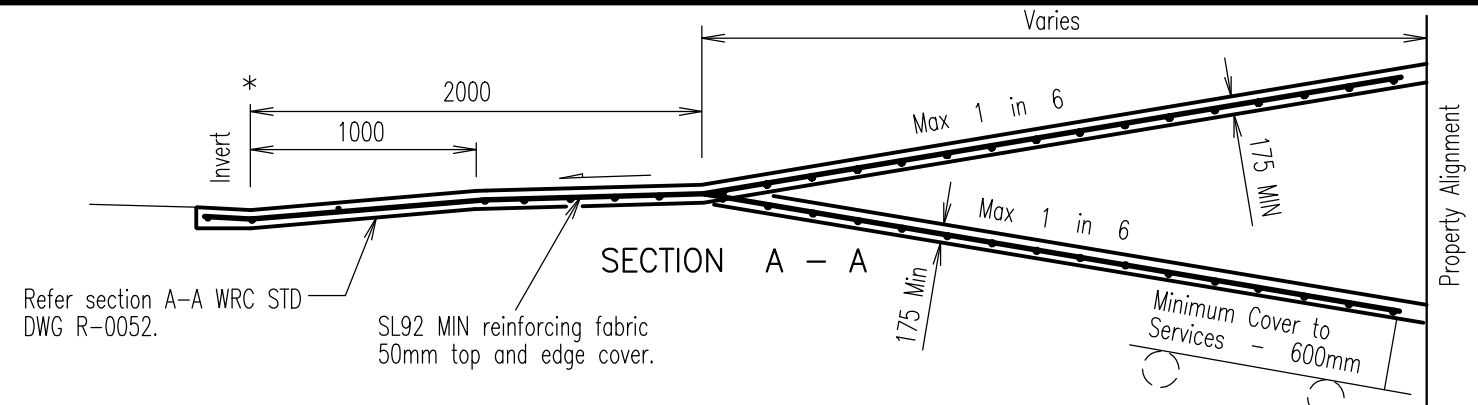
1300

W + 3000

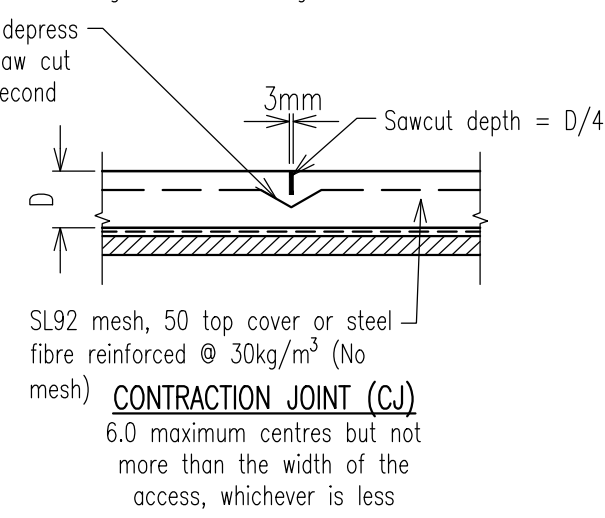
1300

SL72 mesh placed central or steel fibre reinforced @ 30kg/m<sup>3</sup> (NO MESH)

**A** Provide 3/N16 hot dipped galvanised dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.



**KEY CONSTRUCTION JOINT (KCJ)**  
Key construction joints to be provided between all abutting new and existing concrete works



**CONTRACTION JOINT (CJ)**  
6.0 maximum centres but not more than the width of the access, whichever is less

Locally depress below saw cut every second bar.

Sawcut depth = D/4

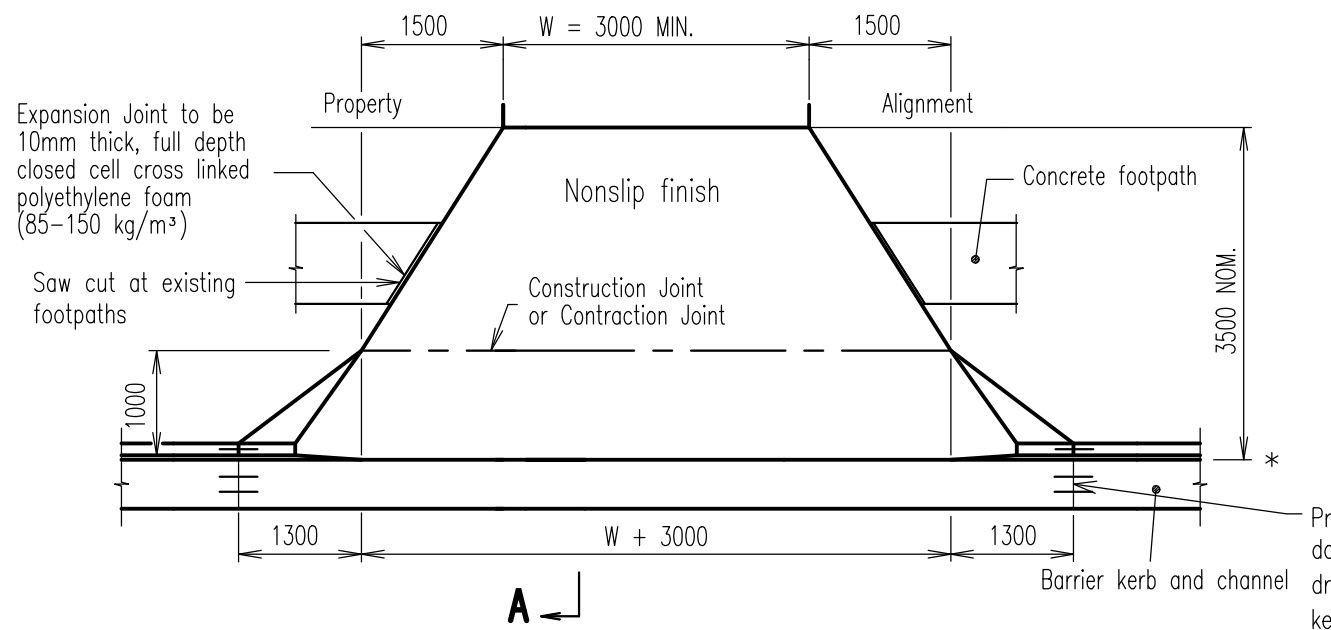
3mm

SL92 mesh, 50 top cover or steel fibre reinforced @ 30kg/m<sup>3</sup> (No mesh)

Provide 3/N16 hot dipped galvanised - dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

- NOTES:**
1. Access driveways with grades greater than 10% (10:1) within property boundaries shall be constructed with non erodible material (ie Bitumen, Asphalt, Concrete, Pavers). Side drains shall be lined and batter slopes protected to prevent erosion. All drainage from within the property and on the driveway surface shall be collected at or inside the property boundary and discharged by way of a sealed pipe or other approved means to councils drainage system.
  2. Footpath sections to vary where necessary to match concrete footpaths and verge profiles. Footpath earthworks adjoining concrete must be well compacted.
  3. Depths of concrete and reinforcing steel shown are the minimum requirements for good foundation conditions, and average traffic loading. Where this does not apply, depths of concrete and reinforcing shall be increased to suit specific conditions.
  4. Concrete surface tolerance to be, +0.5MM -0mm over 3 metre sections.
  5. Concrete 32 MPa in accordance with AS 1379:2007 and AS 3600:2009.
  6. Curing of all concrete surfaces is to be carried out immediately after finishing as per AS 3600:2009 section 4 for a minimum of 7 days.
  7. Reinforcement fabric to AS/NZS 4671:2001, minimum 50 top and edge cover, lap fabric 250.
  8. Approved materials for construction :- Concrete, Paving blocks or Asphalt, refer project drawings.
  9. Expansion joints to be 10 thick, full depth closed cell cross linked polyethylene foam (85 - 150 kg/m<sup>3</sup>).
  10. Design of crossings may vary, refer project drawings.
  11. Dimension W, 3.0m one-way or 5.5m two-way.
  12. Reprofile adjacent footpath to match driveway. Footpath earthworks adjoining concrete must be well compacted.
  13. Existing footpath profile to be maintained where possible.
  14. Compaction for subgrade 95% Standard to AS 1289.5.1.1:2003.
  15. Where subgrade is less than CBR 5 excavate and provide imported material to satisfaction of the Superintendent.
  16. A Road works permit must be obtained from council. Seek approval of location and levels prior to excavation.
  17. Kerb openings and driveway construction shall be carried out in the section of road reserve contained within the extended property boundary lines.
  18. All dimensions in millimetres. Do not scale drawings use figured dimensions.

**PLAN – 3.5m FOOTPATH**



Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85-150 kg/m<sup>3</sup>)

Nonslip finish

Construction Joint or Contraction Joint

Concrete footpath

Barrier kerb and channel

Footpath > 3500

3500 NOM.

W = 3000 MIN.

1500

1500

Property

Alignment

1000

1300

W + 3000

1300

**A** Provide 3/N16 hot dipped galvanised - dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B GENERAL UPDATES	10/3/98
A ORIGINAL ISSUE	1/3/97



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**COMMERCIAL DRIVEWAY SLAB  
TYPE A-TWO WAY ACCESS**

**ROAD/STREET  
Standard  
Drawing  
R-0051**

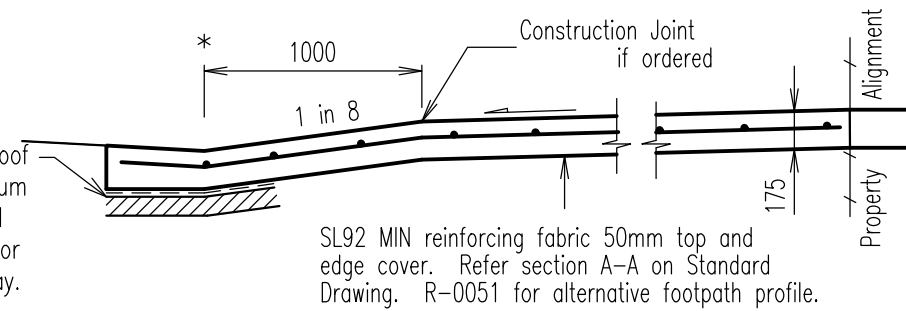
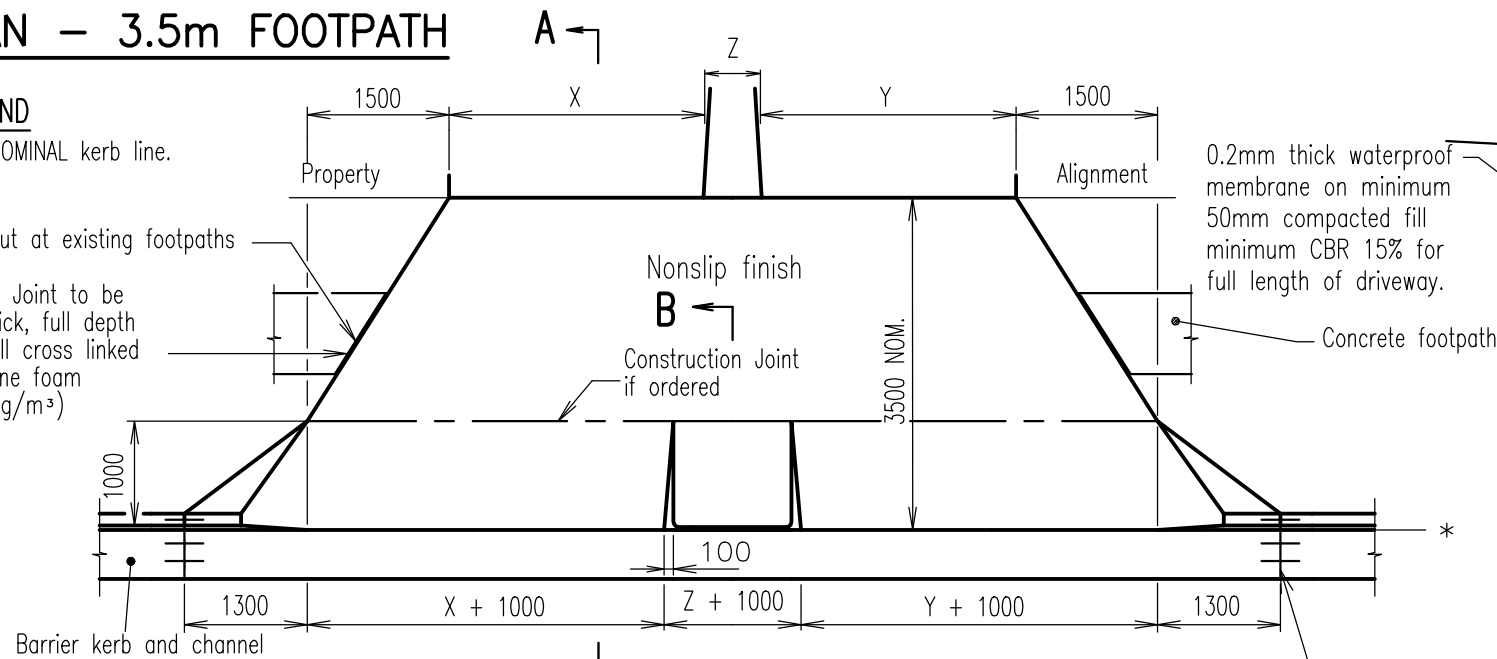
A	B	C
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# PLAN – 3.5m FOOTPATH

## LEGEND

\* NOMINAL kerb line.

Saw cut at existing footpaths  
Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85–150kg/m<sup>3</sup>)



## SECTION A – A

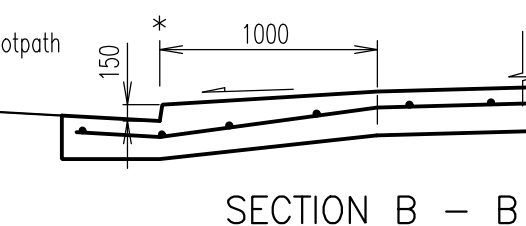
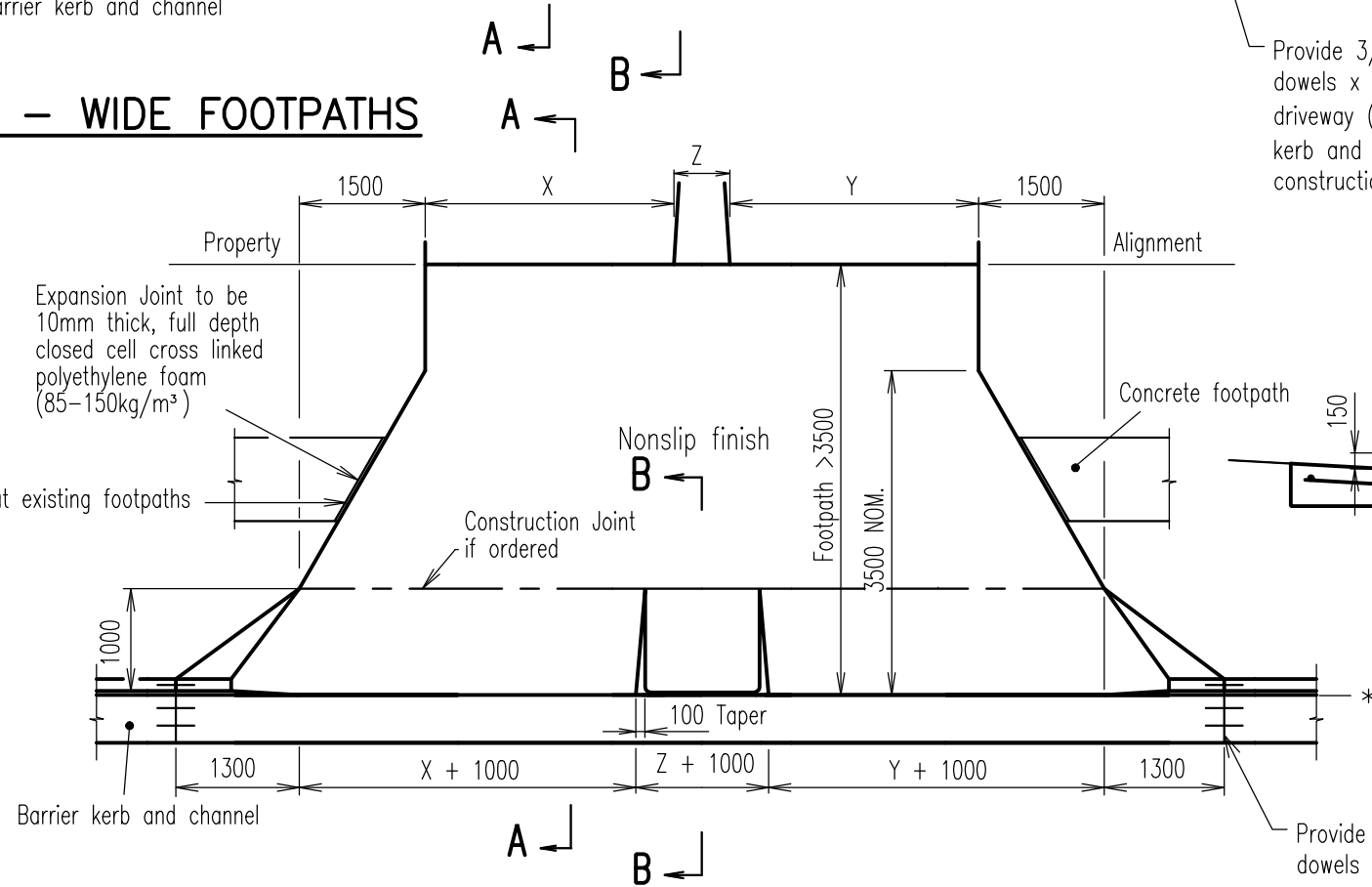
### NOTES:

- Access driveways with grades greater than 10% (10:1) within property boundaries shall be constructed with non erodible material (ie Bitumen, Asphalt, Concrete, Pavers). Side drains shall be lined and batter slopes protected to prevent erosion. All drainage from within the property and on the driveway surface shall be collected at or inside the property boundary and discharged by way of a sealed pipe or other approved means to councils drainage system.
- Depths of concrete and reinforcing steel shown are the minimum requirements for good foundation conditions, and average traffic loading. Where this does not apply, depths of concrete and reinforcing shall be determined by engineer.
- Design of crossings may vary, refer project drawings.
- Dimensions X, Y, & Z, refer specification or project drawings.
- Reprofile adjacent footpath to match driveway. Footpath earthworks adjoining concrete must be well compacted.
- Existing footpath profile to be maintained where possible.
- Footpath sections to vary where necessary to match concrete footpaths and verge profiles. Footpath earthworks adjoining concrete must be well compacted.
- Concrete surface tolerance to be, +0.5MM –0mm over 3 metre sections.
- Concrete 32 MPa in accordance with AS 1379:2007 and AS 3600:2009.
- Curing of all concrete surfaces is to be carried out immediately after finishing as per AS 3600:2009 section 4 for a minimum of 7 days.
- Reinforcement fabric to AS/NZS 4671:2001, 50 top and edge cover, lap fabric 250.
- Approved materials for construction :- Concrete, Paving blocks or Asphalt, refer project drawings.
- Expansion joints to be 10 thick, full depth closed cell cross linked polyethylene foam (85 – 150 kg/m<sup>3</sup>).
- Compaction for subgrade 95% Standard to AS 1289.5.1.1:2003.
- Where subgrade is less than CBR 5 excavate and provide imported material to satisfaction of the Superintendent.
- A Road works permit must be obtained from council. Seek approval of location and levels prior to excavation.
- Kerb openings and driveway construction shall be carried out in the section of road reserve contained within the extended property boundary lines.
- All dimensions in millimetres. Do not scale drawings use figured dimensions.

# PLAN – WIDE FOOTPATHS

Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85–150kg/m<sup>3</sup>)

Saw cut at existing footpaths



## SECTION B – B

Provide 3/N16 hot dipped galvanised dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B GENERAL UPDATES	15/2/12
A ORIGINAL ISSUE	1/3/97



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# COMMERCIAL DRIVEWAY SLAB TYPE B – TWO LANES ACCESS

ROAD/STREET  
Standard  
Drawing  
R-0052

A | B | C

Design Speed (km/hr)	Z (m)
60	27
80	36
100	45

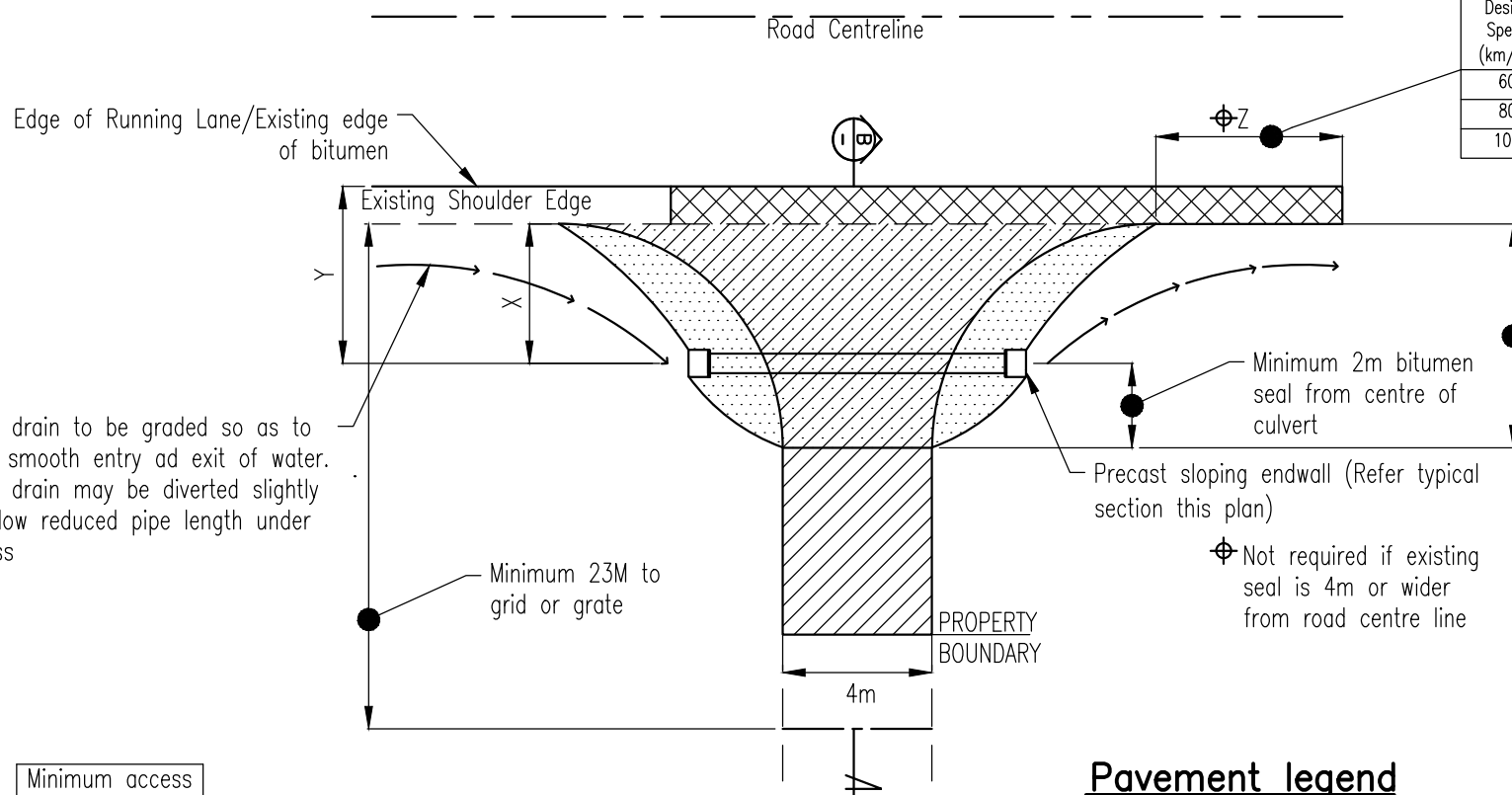
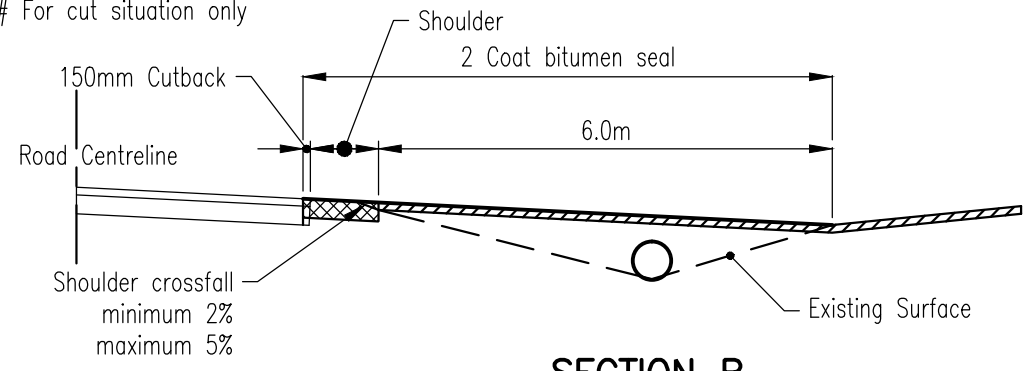


Table drain to be graded so as to allow smooth entry and exit of water. Table drain may be diverted slightly to allow reduced pipe length under access

Distance 'X' (m)	Length (m)
1#	8.54
2#	6.10
3	4.88

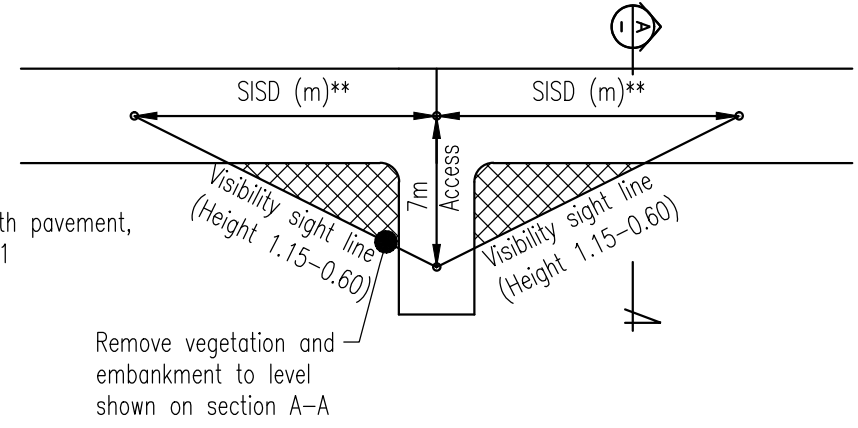
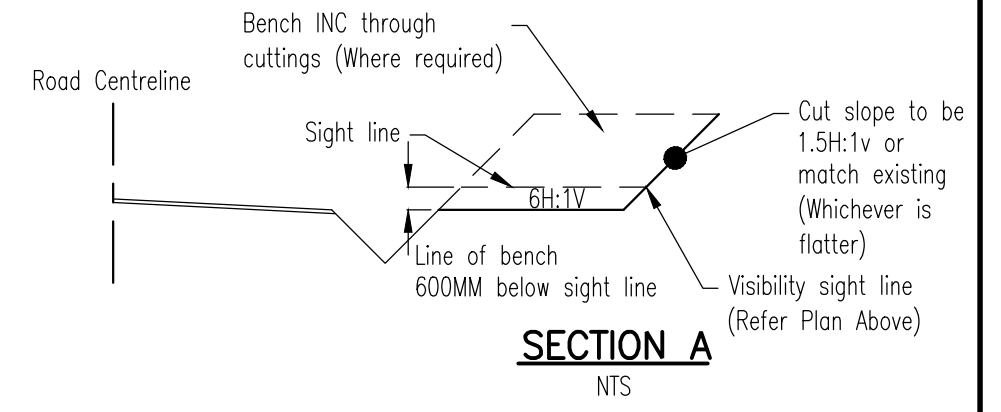
# For cut situation only



**SECTION B**  
NTS

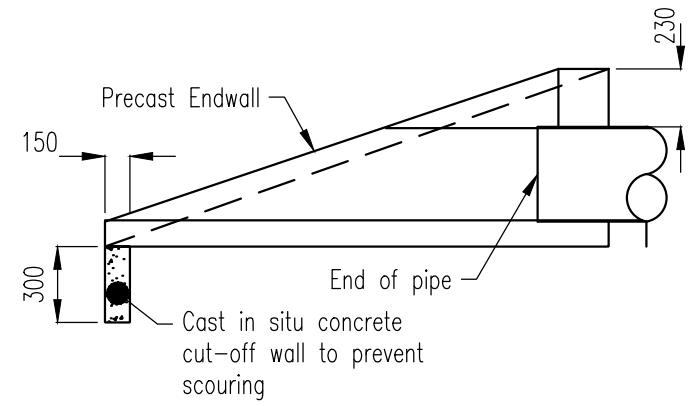
**Pavement legend**

- Existing shoulder to be full depth pavement, minimum 200mm Base, type 2.1
- 100mm Base, type 2.5
- 2 coat bitumen seal (for new driveways only)



Safe intersection sight distance (SISD)	
Design speed km/hr	SISD (m)
60	115
80	175
100	250

**VISIBILITY TRIANGLE**



**SLOPING ENDWALL TYPICAL SECTION**

**NOTES:**

- Sloping endwall is only required where dimension 'Y' is less than 9m. When dimension 'Y' is over 9m, a square endwall is acceptable, although each case to be considered individually.
- The fall through the culvert is not to be less than 50mm
- Guide posts of an approved type are to be placed on each side of the access (Rural area only).
- Details on project drawings take precedence over any notes or calculations shown on standard drawing.

REVISIONS	DATE
A ORIGINAL ISSUE	19/05/16



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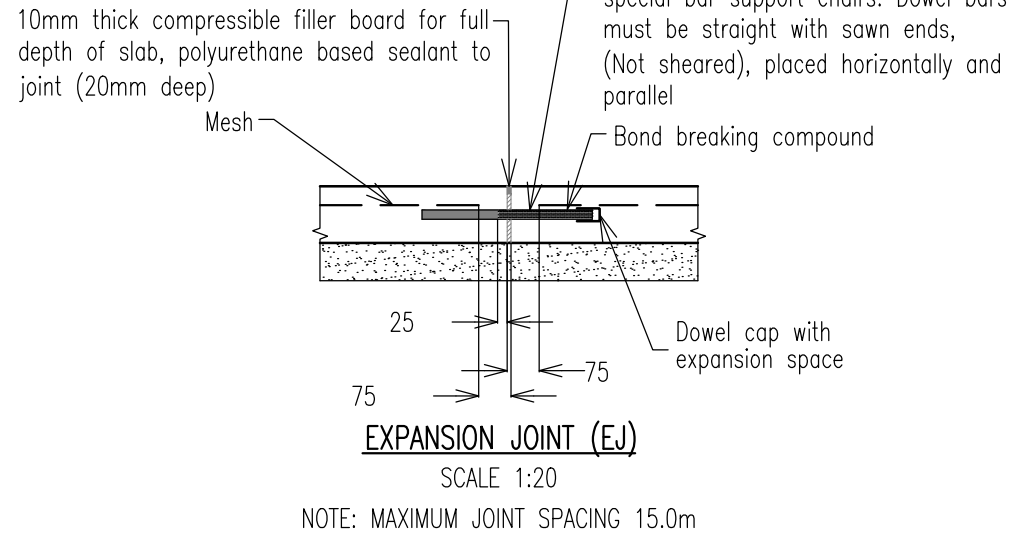
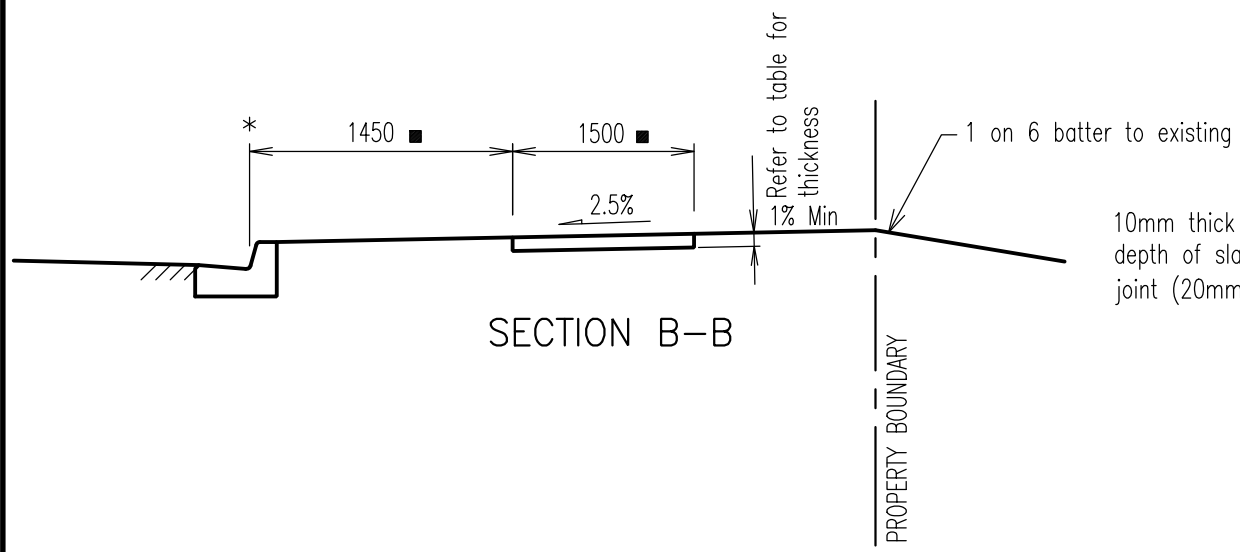
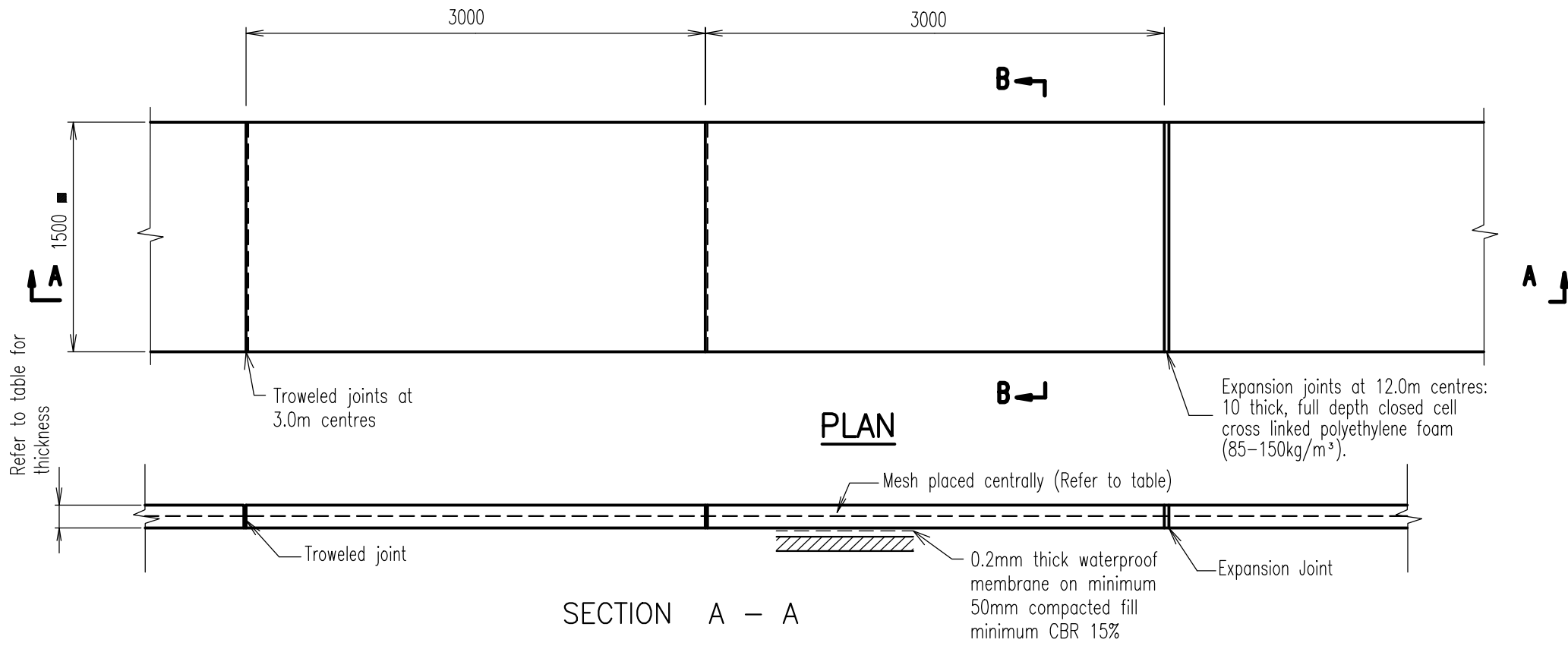
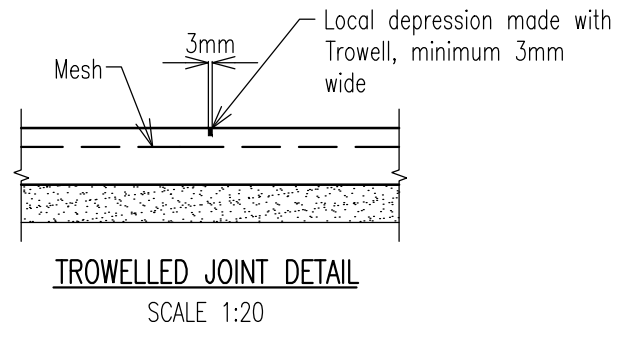
**COLLINSVILLE**  
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**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
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**TYPICAL MINOR ACCESS  
DETAILS FOR COUNCIL  
RURAL ROADS**

**ROAD/STREET  
Standard  
Drawing  
R-0053**

A				
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**LEGEND**

- \* NOM kerb line.
- Unless otherwise specified.

**NOTES:**

1. Concrete MPa 32 in accordance with AS 1379:2007 and AS 3600:2009.
2. All concrete to be broom finished.
3. Troweled joints, 3m MAX spacing. +6mm
4. Finished surface tolerance to be maximum +6mm & -0mm relative to kerb level and crossfall specified.
5. Pattern lines to be square to sides and finished with an approved grooving tool.
6. Concrete footpaths, adjoining existing driveways are to be transitioned over a minimum 5.0m length.
7. A Roadworks permit must be obtained from Council, seek approval of location and levels prior to excavation.
8. All dimensions in millimetres.

PATHWAY LOCATION/DETAILS			
REINFORCING TYPE	FOOTPATH	RESIDENTIAL DRIVEWAY	INDUSTRIAL/COMMERCIAL DRIVEWAY
MESH	100mm N32 SL72	125mm N32 SL72	175mm N32 SL92
COVER	CENTRALLY	CENTRALLY	50mm TOP

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B GENERAL UPDATES	15/2/12
A ORIGINAL ISSUE	1/3/97



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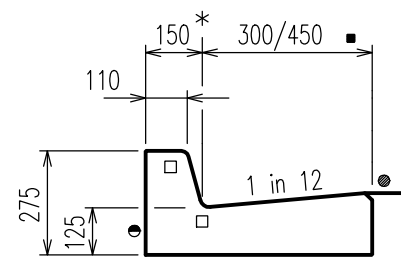
**COLLINSVILLE**  
Cnr Stanley & Conway Sts  
Collinsville 4804 Q  
Ph 07 4785 5366

**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
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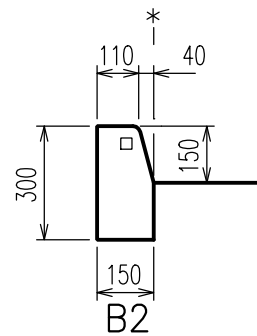
**CONCRETE STRIP FOOTPATHS**

**ROAD/STREET Standard Drawing R-0065**

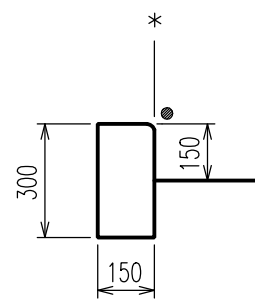
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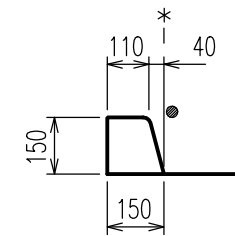
B1



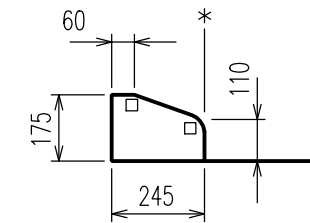
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B3

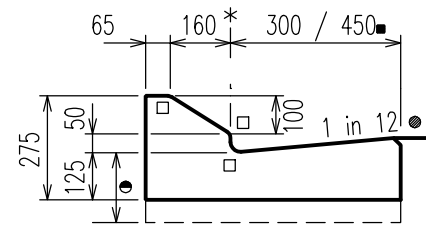


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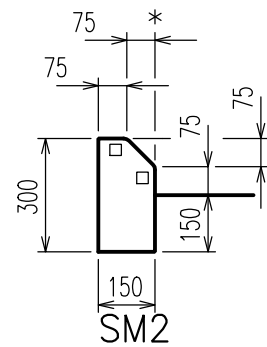


B5

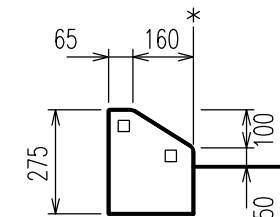
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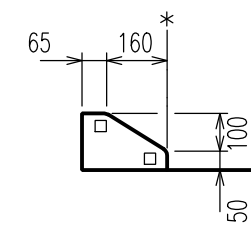
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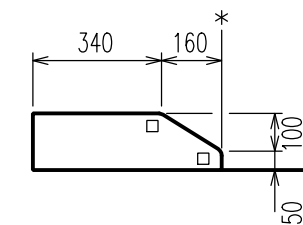
SM2



SM3

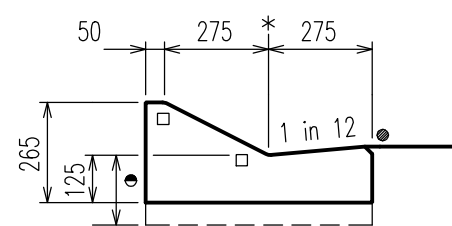


SM4

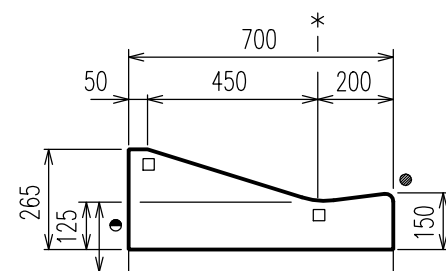


SM5

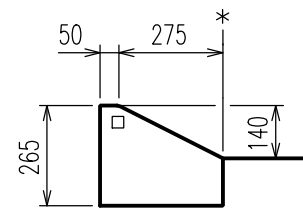
**SEMI - MOUNTABLE TYPE**



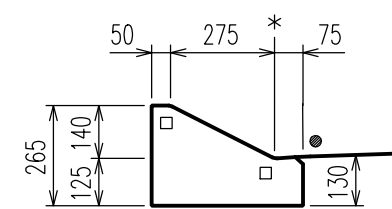
M1



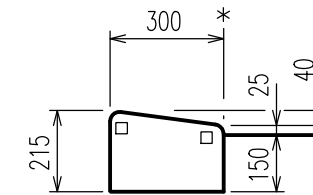
M2



M4

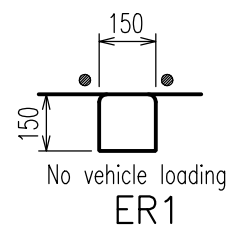


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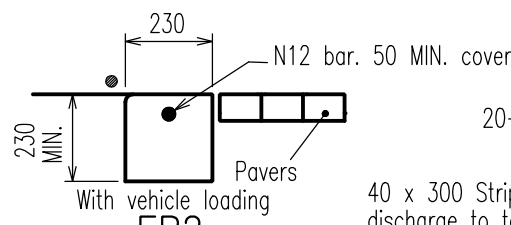


M6

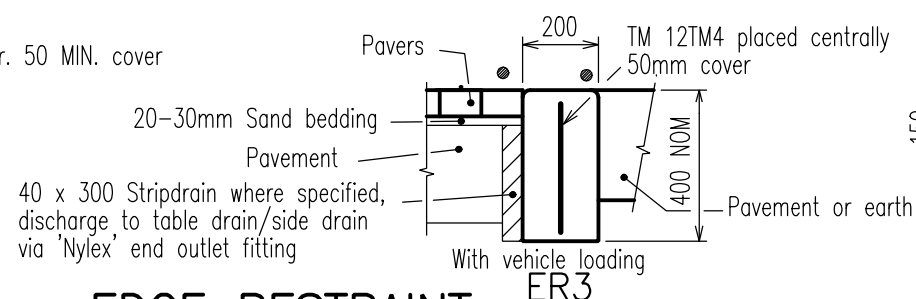
**MOUNTABLE TYPE**



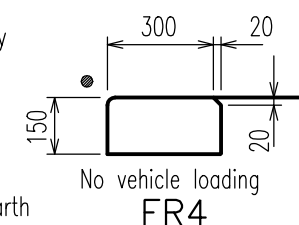
ER1



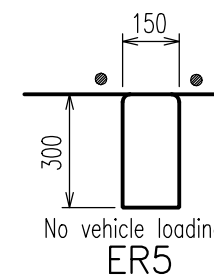
ER2



ER3

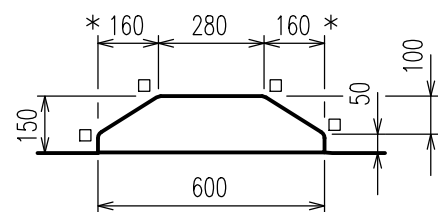


ER4

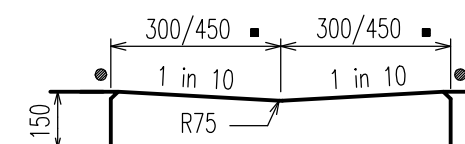


ER5

**EDGE RESTRAINT**



MEDIAN



**INVERT**

**NOTES:**

1. All materials and construction shall comply with AS 2876:2000 except for dimensions on this drawing.
2. All concrete S25 MIN (refer project documentation) in accordance with AS 1379:2007 and AS 3600:2009.
3. Reinforcement bars to AS 1302:2005, trench fabric to AS/NZS 4671:2001.
4. All dimensions in millimetres.

**LEGEND**

- \* Nominal kerb line for setting out.
- Channel, invert width - refer project drawings.
- 10mm Radius.
- R20 Radius.
- 175. for commercial and industrial applications.

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A ORIGINAL ISSUE	1/3/97



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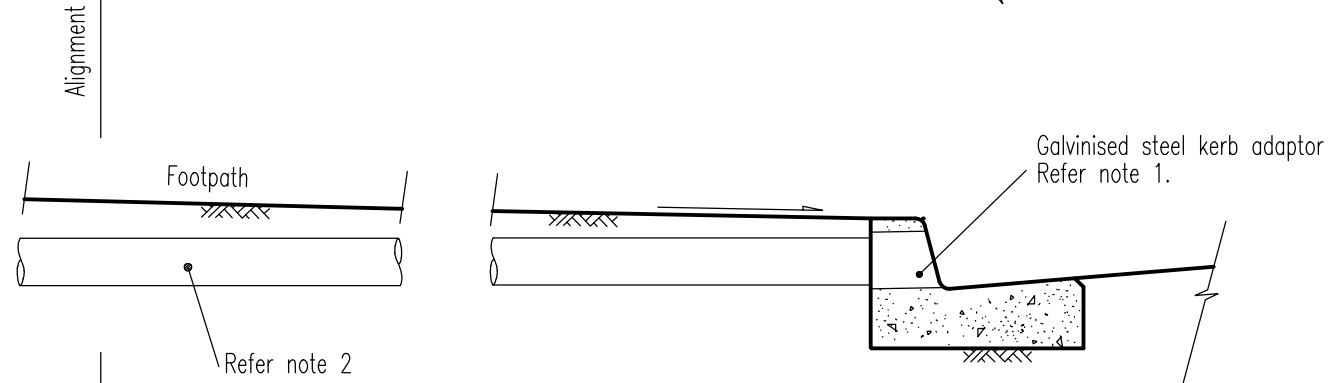
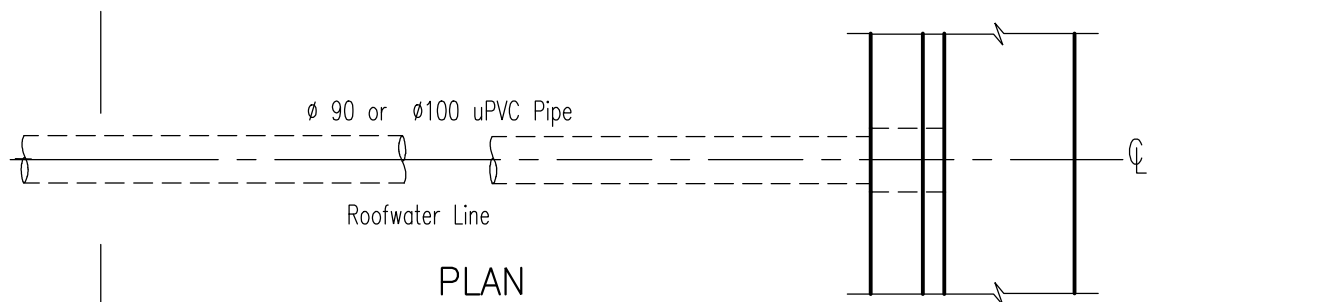
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**COLLINSVILLE**  
Cnr Stanley & Conway Sts  
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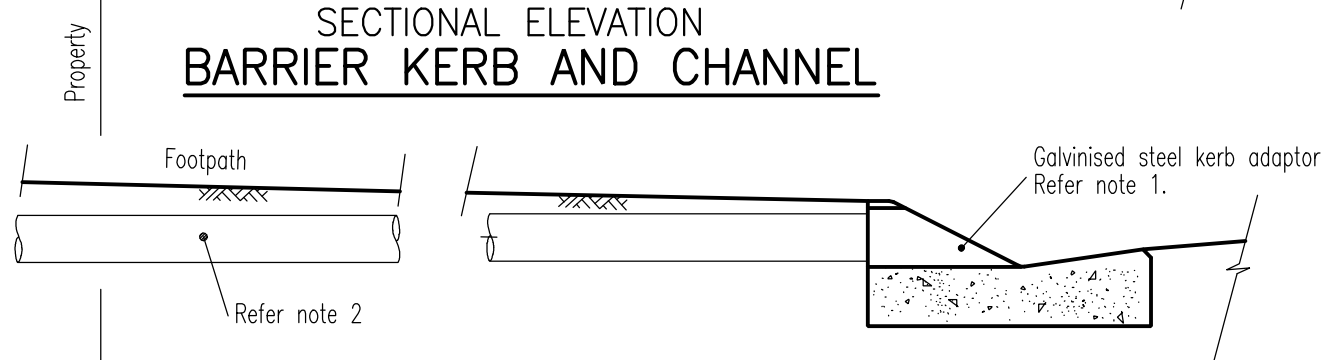
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**KERBS AND CHANNELS  
PROFILES AND DIMENSIONS  
INCL. EDGE RESTRAINTS, MEDIAN & INVERT**

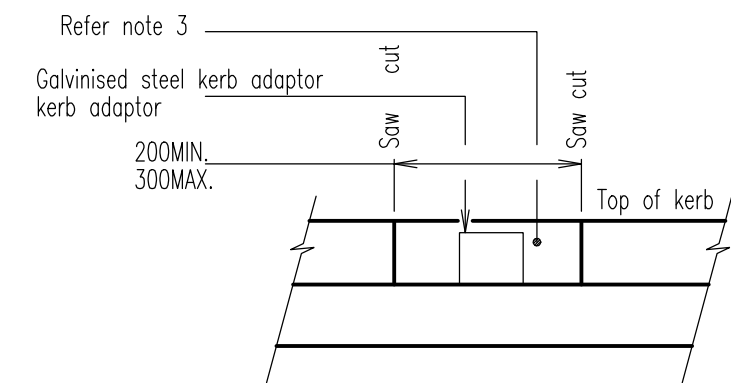
**ROAD/STREET  
Standard  
Drawing  
R-0080**



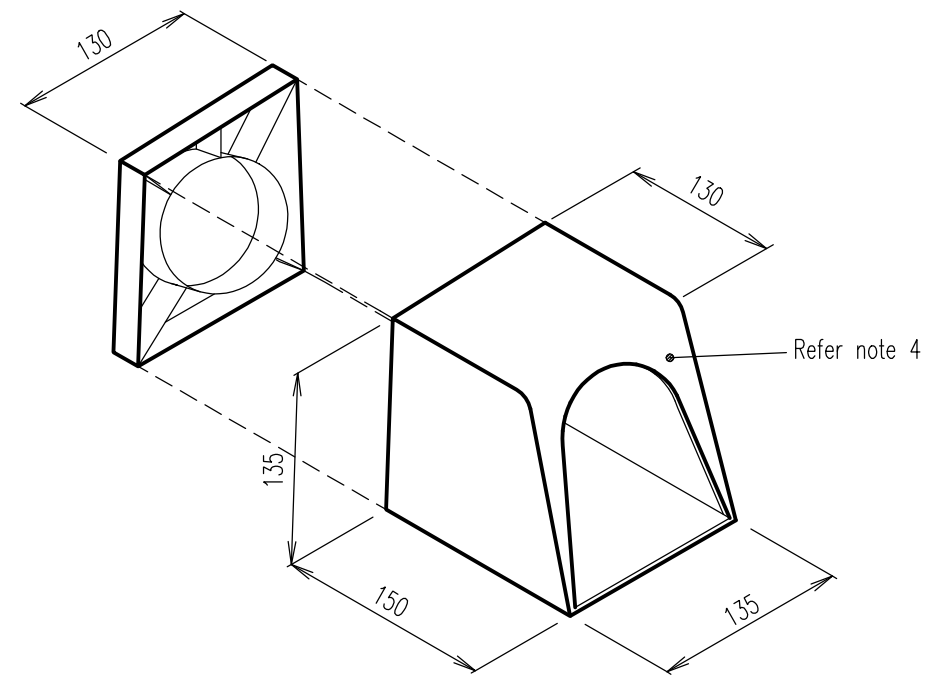
SECTIONAL ELEVATION  
**BARRIER KERB AND CHANNEL**



SECTIONAL ELEVATION  
**MOUNTABLE KERB AND CHANNEL**

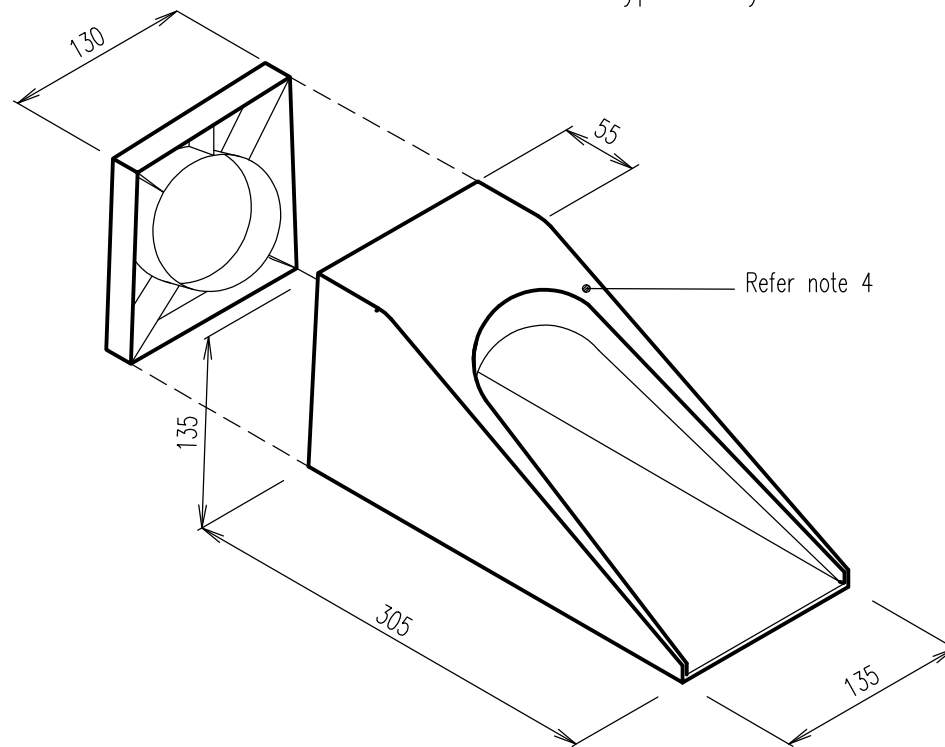


ELEVATION  
**EXISTING KERB AND CHANNEL**



**BARRIER KERB ADAPTOR**

Typical only ø90 and ø100 uPVC or galvanised steel



**MOUNTABLE KERB ADAPTOR**

Typical only ø90 and ø100 uPVC or galvanised steel  
As approved by W.R.C

**NOTES:**

1. Standard ø90 or ø100 galv. steel adaptor to suit barrier or mountable type kerb and channel.
2. Pipe across footpath to be laid with the maximum available cover, and with a minimum grade of 1 in 80.
3. At existing kerb and channel saw cut kerb as necessary. Reinstated with N20/10 concrete in accordance with AS 1379:2007 and AS 3600:2009 to clean concrete faces.
4. Use kerb adaptors that match kerb profile.
5. Refer project drawings/specifications for option to be adopted.
6. At new developments seal inlet to adaptor.
7. All dimensions in millimetres.

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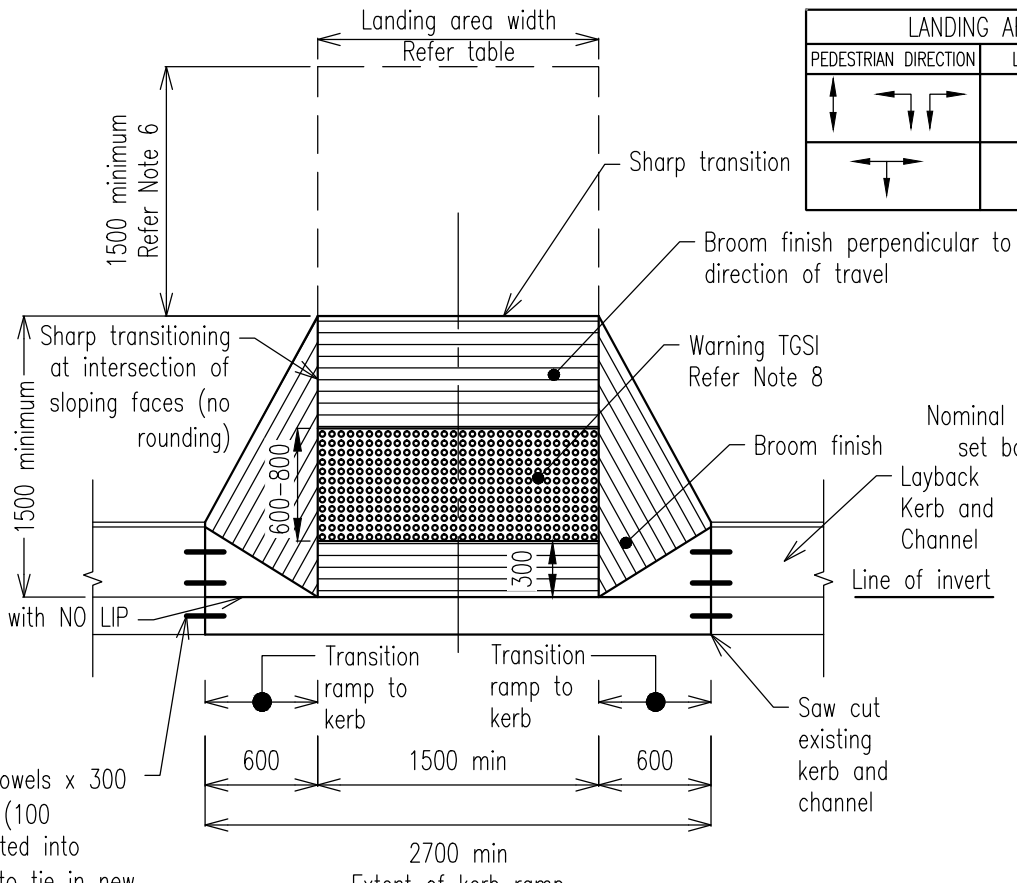
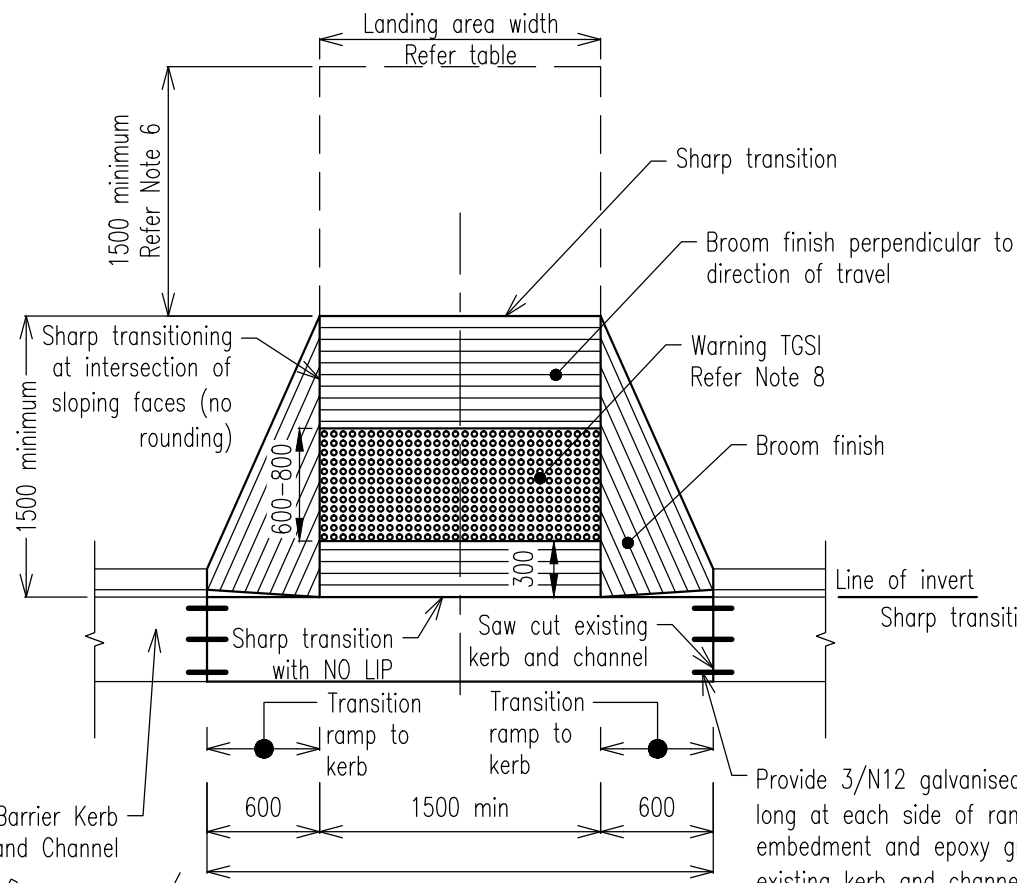
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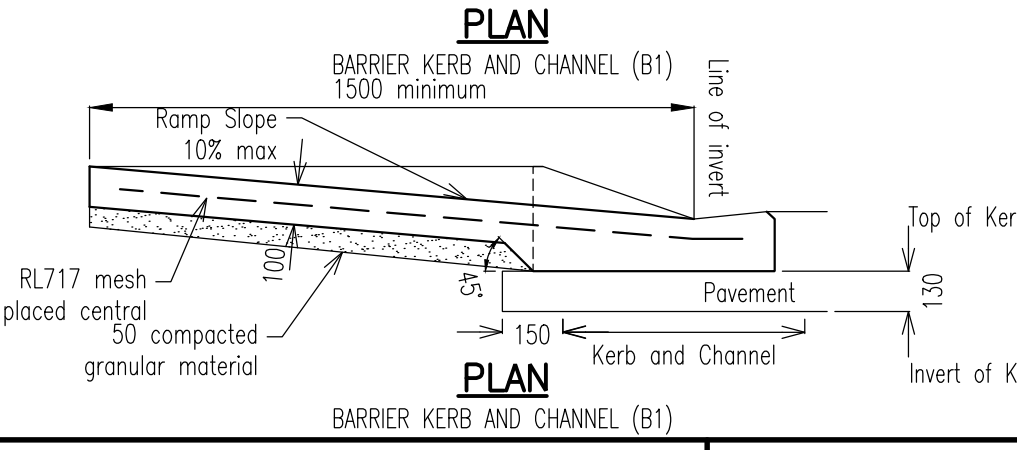
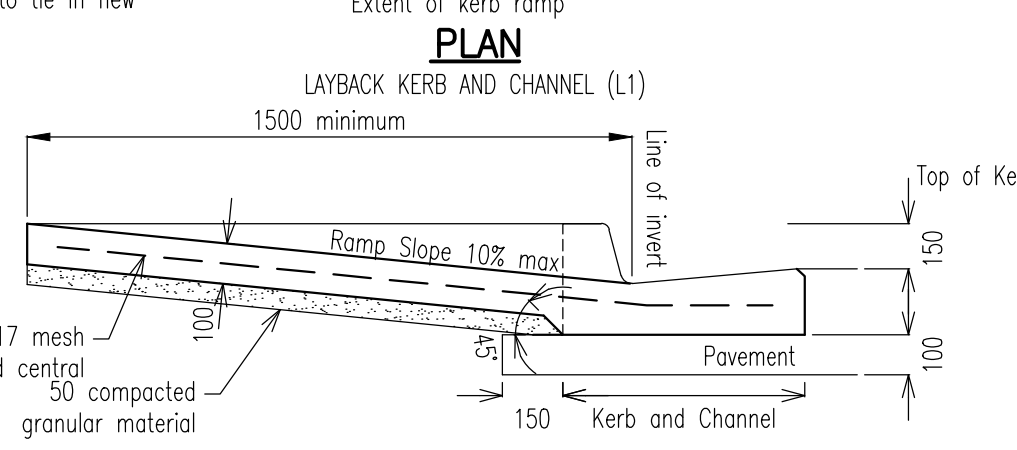
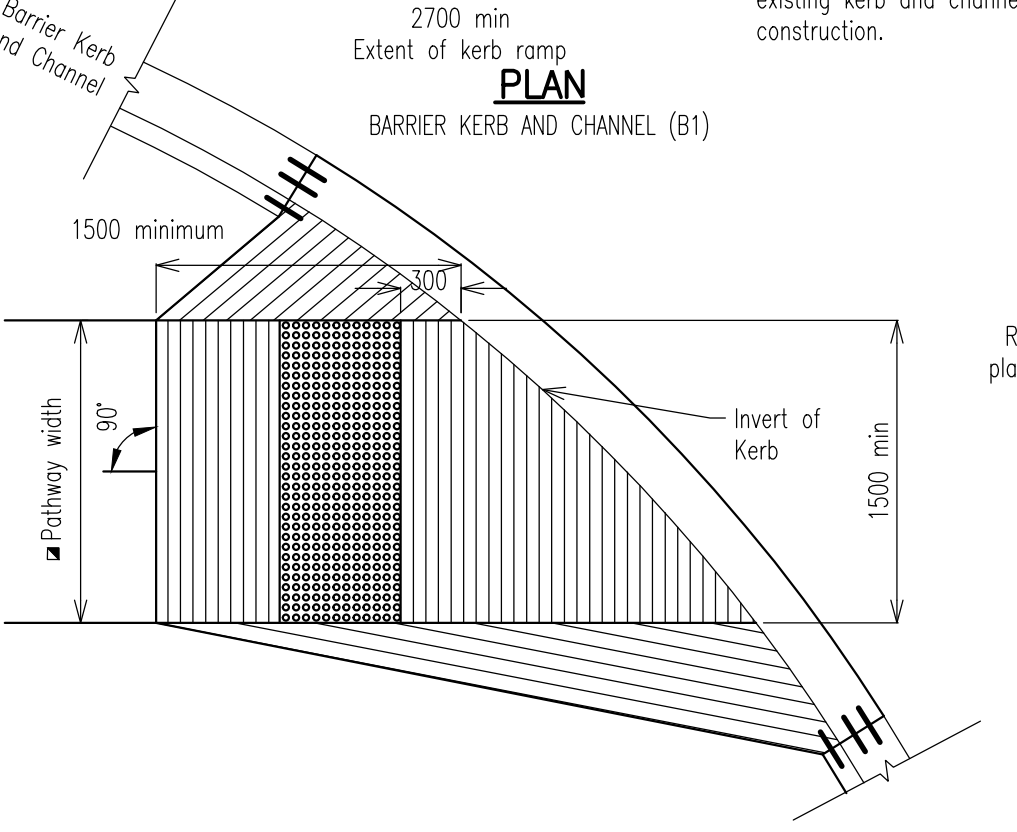
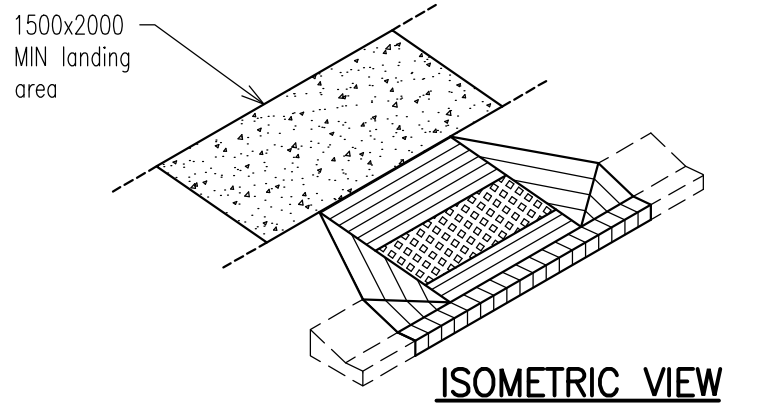
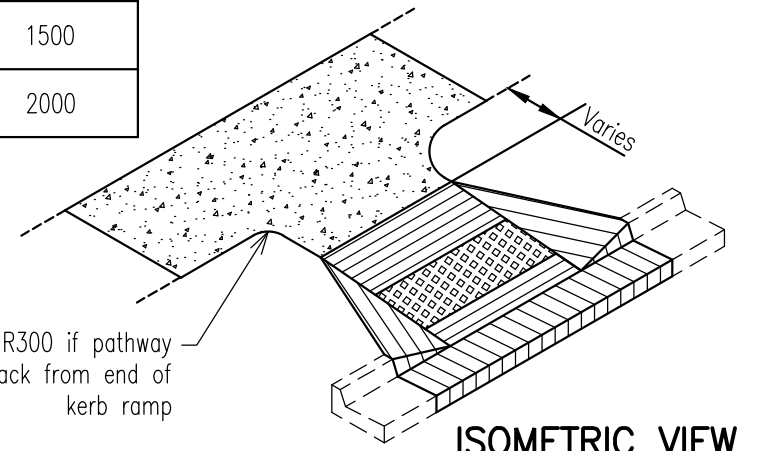
**KERB AND CHANNEL  
DRAINAGE CONNECTIONS**

**ROAD/STREET  
Standard  
Drawing  
R-0081**

A	B	C	
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LANDING AREA	
PEDESTRIAN DIRECTION	LANDING WIDTH
↕ ↔ ↕	1500
↔ ↕ ↔	2000



- NOTES:**
- All dimensions are in millimetres unless noted otherwise.
  - Concrete shall be Grade N25 (25 MPa) minimum.
  - Kerb Ramp to be cast monolithically, no construction joints will be allowed.
  - the ramp and sloping sides should be slip resistant.
  - Kerb Ramp should be aligned in the direction of travel.
  - Ramp End Clearance – There shall be a minimum wheelchair turnaround distance of 1500mm beyond the end of the ramp and be free of any obstruction. Size according to the direction of pedestrians or adjacent pathway in accordance with AS 1428.1:2009.
  - Kerb Ramp slope for wheelchair access shall not be steeper than 10%, to provide ease of access for wheelchair users.
  - Tactile Ground Surface indicators (TGSi) shall be in accordance with AS 1428.4.1:2009 Design for Access and Mobility – Tactile Indicators.
  - For kerb ramp locations and set out refer to Project/ subdivision drawings

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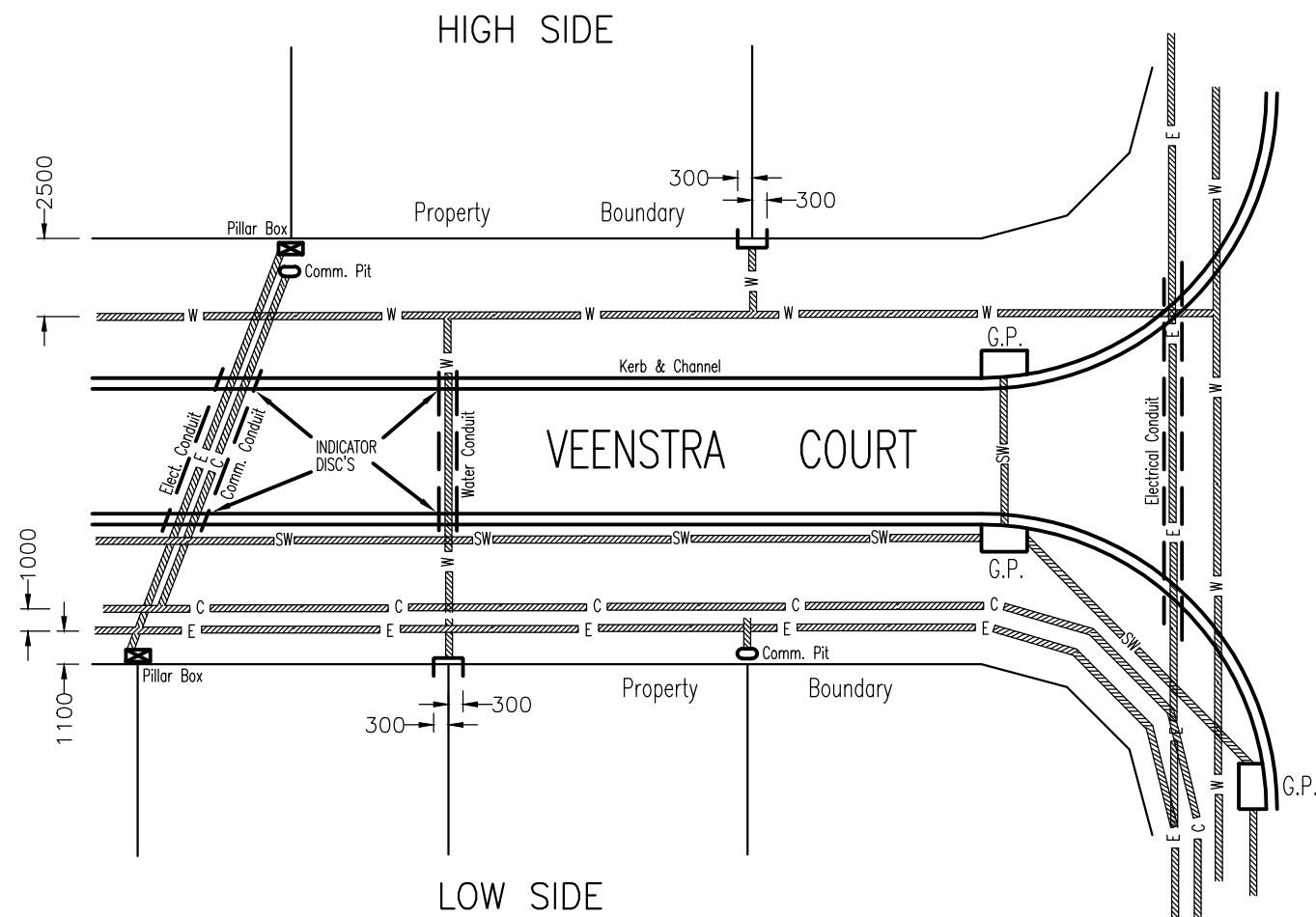
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**KERB RAMP**

**ROAD/STREET  
Standard  
Drawing  
R-0084**

A	B	C
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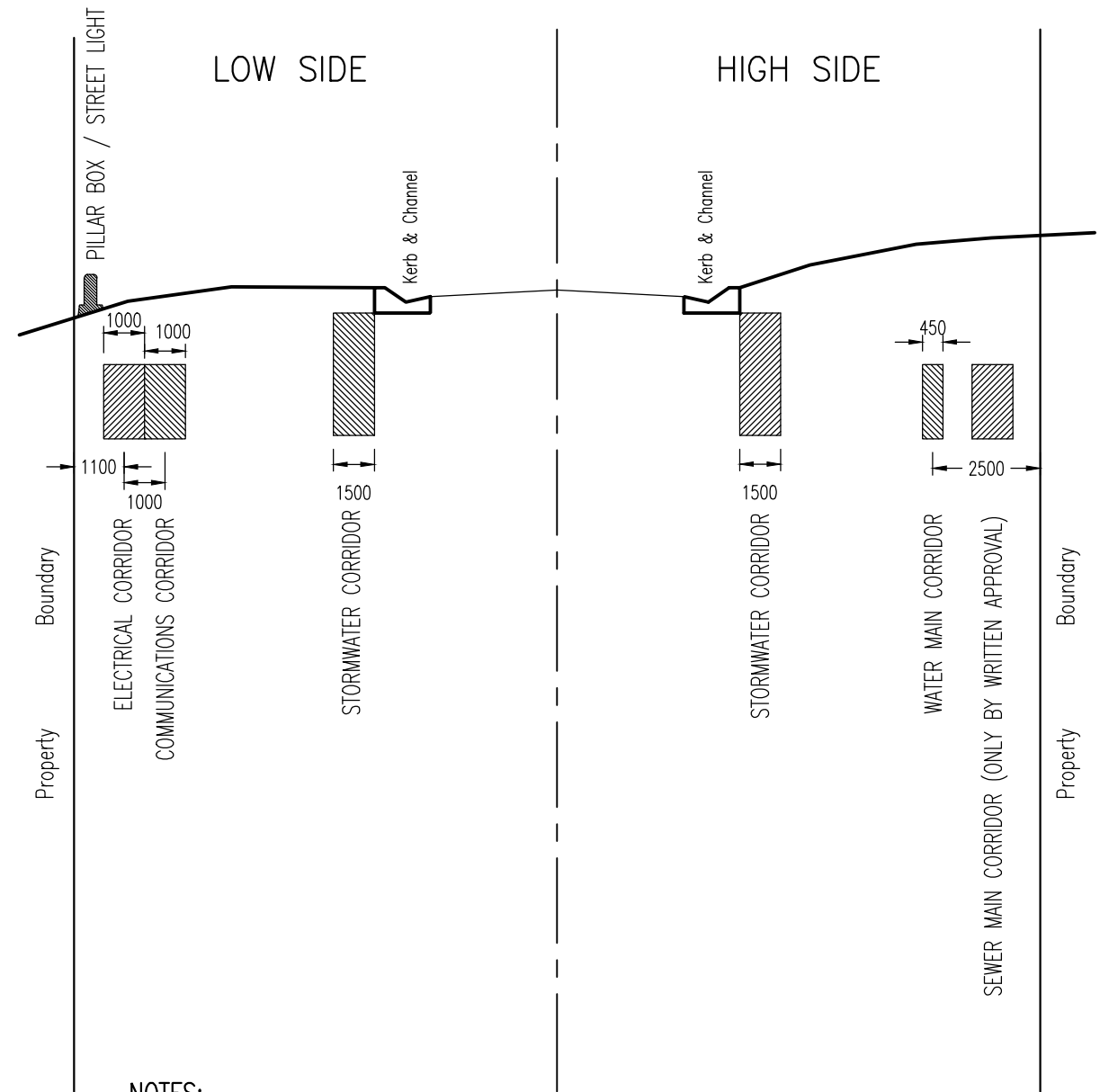
# TYPICAL SERVICE CORRIDOR



### LEGEND

Road crossing conduits	— — — —
Water -	W
Stormwater -	SW
Communications -	C
Electricity -	E

# TYPICAL CONDUIT SECTION



### NOTES:

1. The alignment and depths of existing services shall be proven on site by consultation with the relevant service authorities prior to any excavation and shall not be inferred from this drawing.
2. Various configurations of trench width and conduit numbers/diameters exist for both electricity and common trench arrangements with communication companies.
3. For split level roads, service corridors to be determined by council prior to completion of engineering design.
4. All dimensions in millimetres

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## PUBLIC UTILITIES IN SUBDIVISIONS TYPICAL SERVICE CORRIDORS AND SECTIONS

ROAD/STREET  
Standard  
Drawing  
**R-0100**

A	B		
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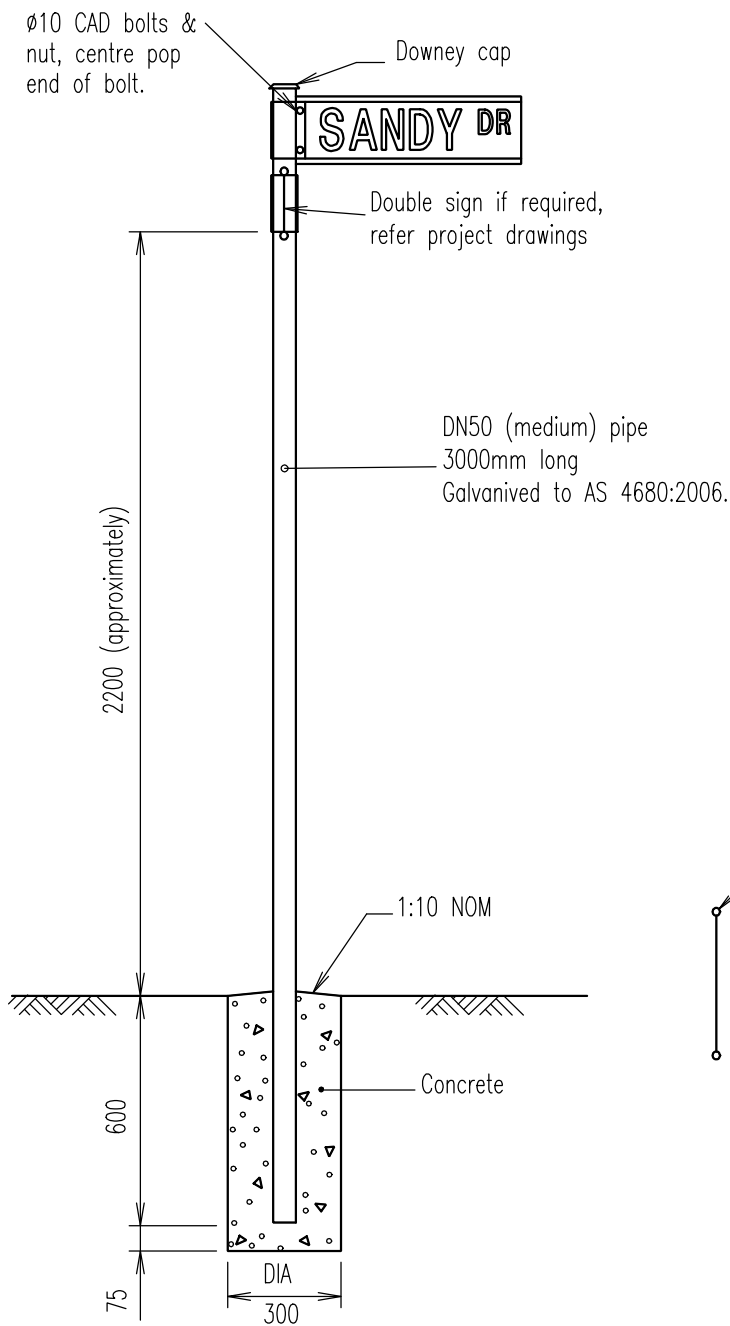
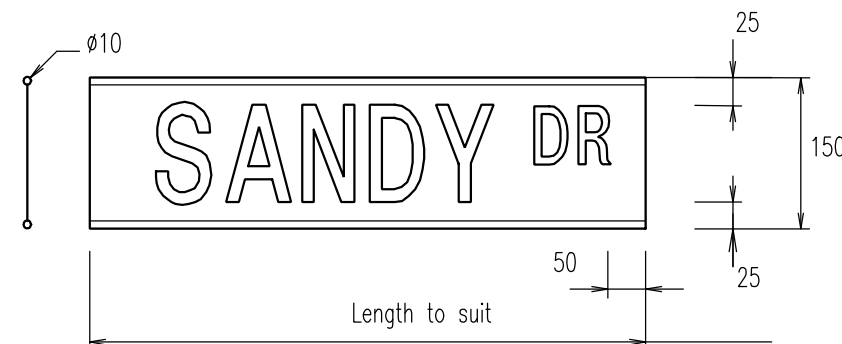


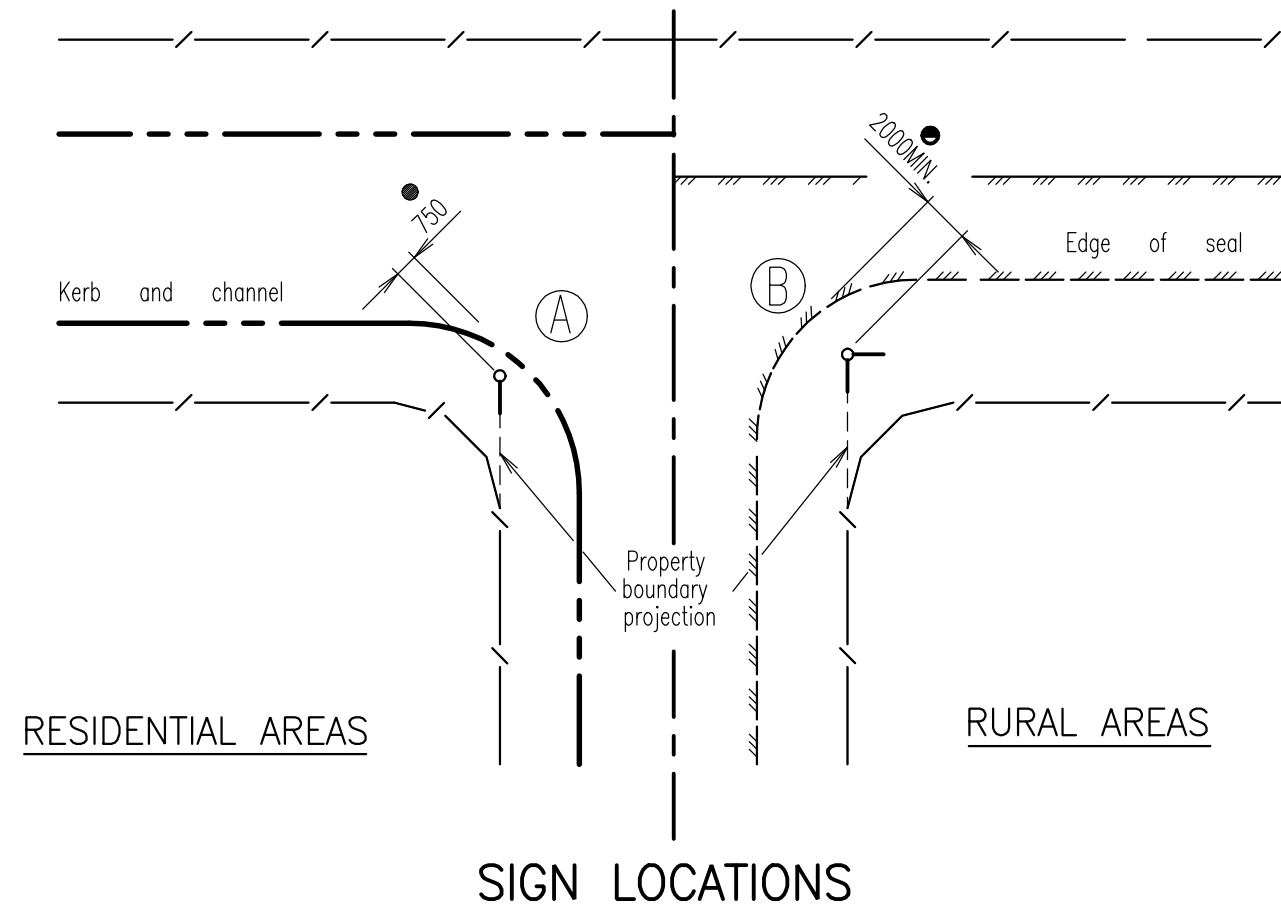
Table of Abbreviations	
Avenue	AV
Court	CT
Crescent	CR
Drive	DR
Esplanade	ESP
Lane	LA
Parade	PDE
Road	RD
Street	ST
Terrace	TCE

Other abbreviations to be approved by Superintendent.



**LEGEND**

- Sign post is to be located 750mm behind nominal kerb line.
- Sign post is to be located 2000mm MIN. – 4000mm MAX. from edge of seal, or as directed by the Superintendent.



**NOTES:**

1. Street names must be approved by Council.
2. Name plates: 150mm wide and 3mm thick extruded aluminium or polypropylene section.
3. Bracket: Standard 150mm wide and 3mm thick aluminium extruded bracket (including 2 x  $\phi 6$  CAD bolts & nuts). CAD bolts and nuts to AS 1897.
4. Background color "Freeway Green" Class 2 Reflectorisred (both sides) Name Letters: "White" 100mm high, Series B, Class 2 Reflectorisred Location Letters: "White" 60mm high, Series B, Class 2 Reflectorisred
5. All signs are to be approved by the Superintendent prior to erection.
6. Signs to be positioned on the side of street/road that provides best visibility.
7. Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
8. All dimensions in millimetres.

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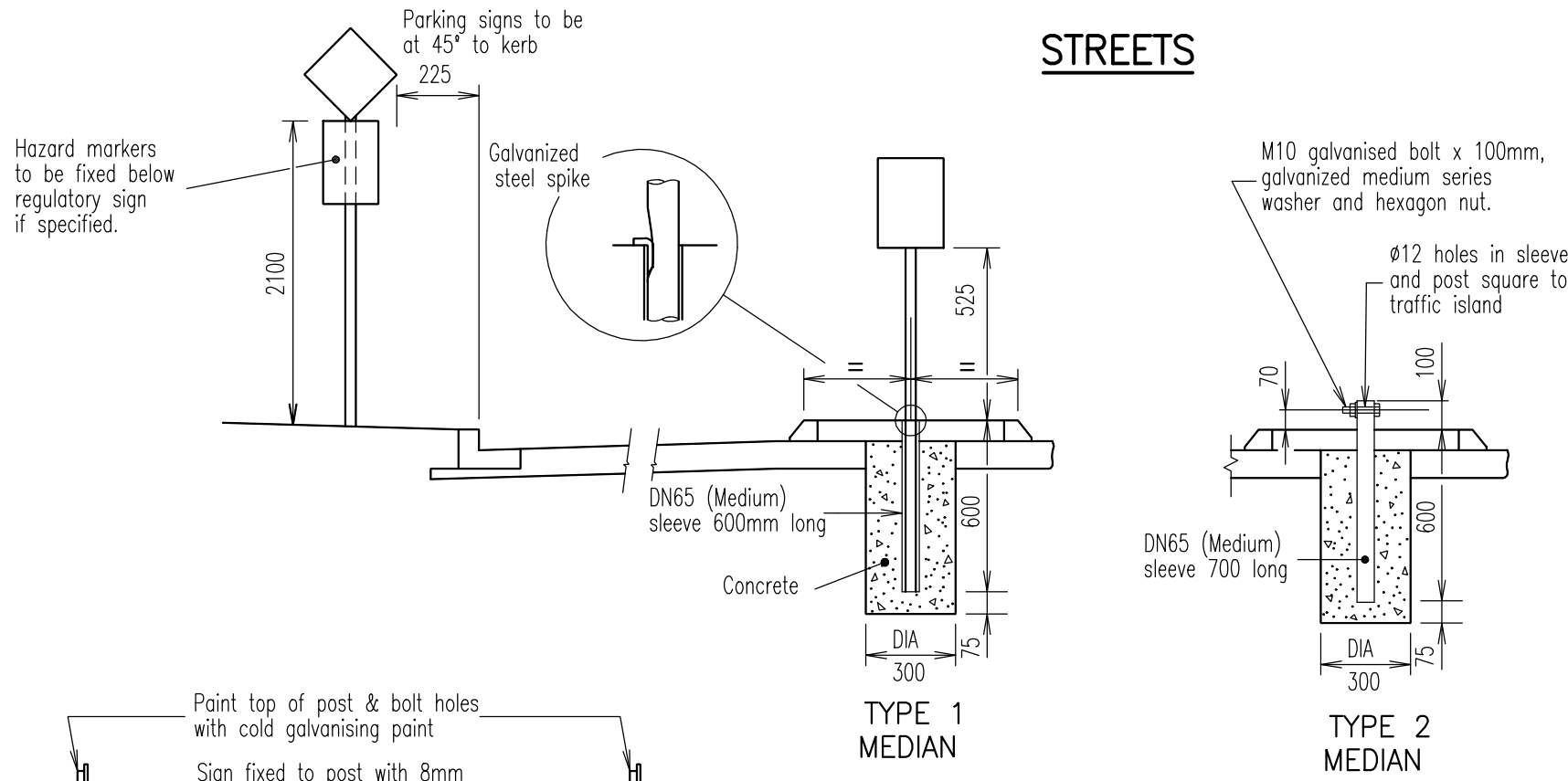
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**STREET NAME SIGN**

**ROAD/STREET  
Standard  
Drawing  
R-0130**

A	B	C	
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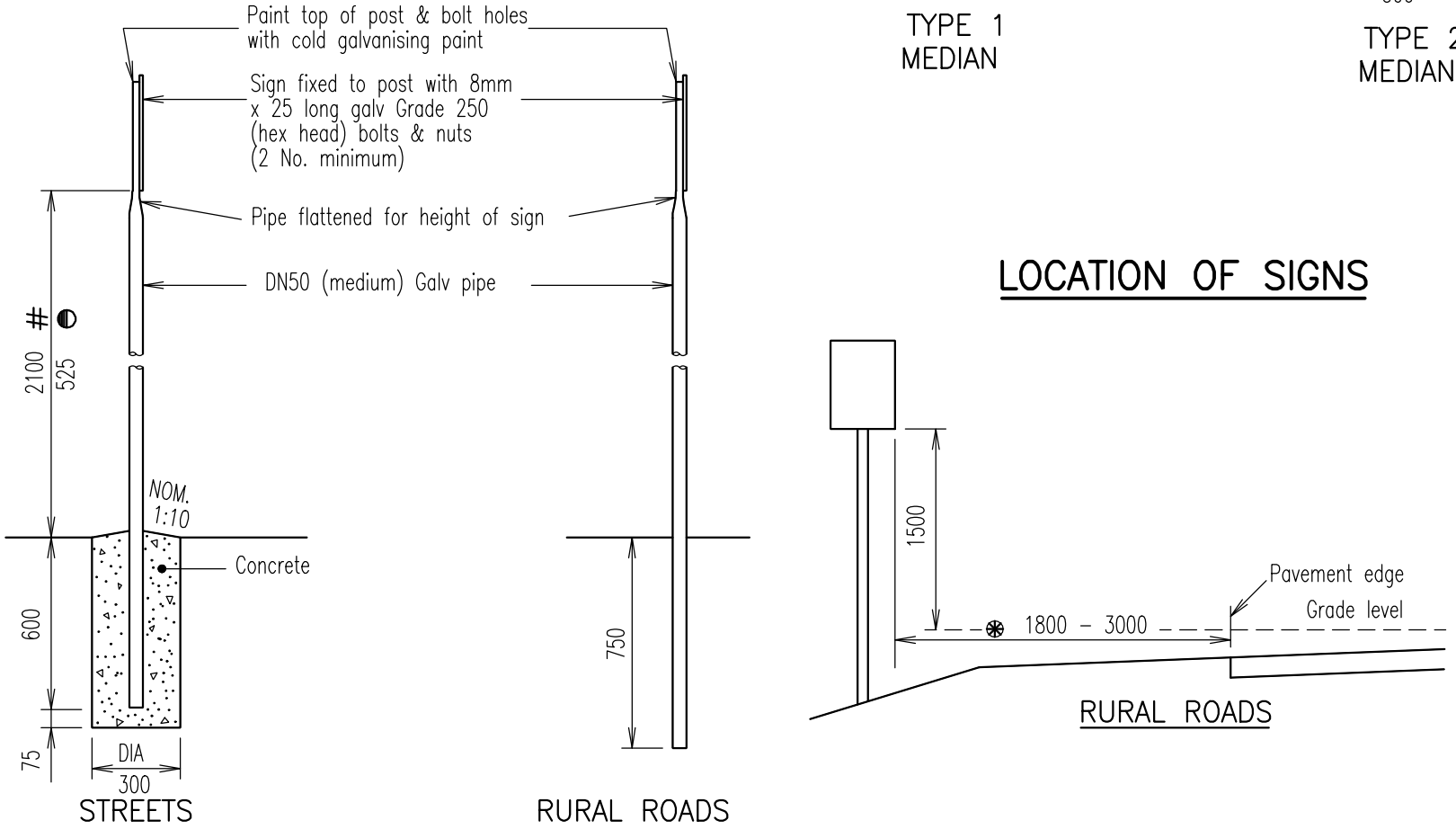
# STREETS



TYPE 1 MEDIAN

TYPE 2 MEDIAN

# LOCATION OF SIGNS



STREETS

RURAL ROADS

RURAL ROADS

### NOTES:

1. All signage to be fabricated and installed as per M.U.T.C.D unless noted otherwise
2. All signs are to be approved by the Superintendent prior to erection.
3. Where signs are to be erected in streets where footpaths are not constructed to permanent levels the Rural Roads type base shall be adopted.
4. The DN65 sleeve and spike shall only be used on medians.
5. All pipes to be galvanized. Steel pipe to AS 1074:1989. Galvanising to AS/NZS 4680:2006.
6. Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
7. Hexagonal head bolts to AS 1111.1:2015  
Nuts to AS 1112.1:2015  
Washers to AS 1237.1:2002  
Galvanizing to AS/NZS 1214:2016
8. All dimensions in millimetres.

### LEGEND

- Series A, medium spacing
- Series A, medium spacing where space is available, if not adopt narrow spacing
- # on footpaths
- ⊗ As directed by the Superintendent
- ⊙ on medians

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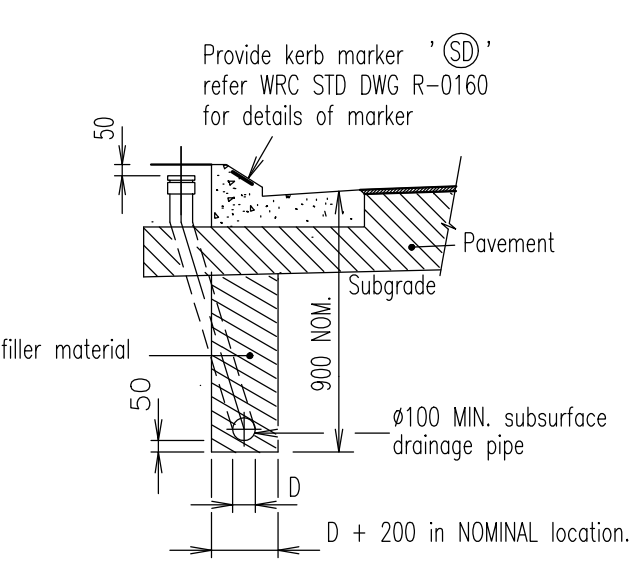
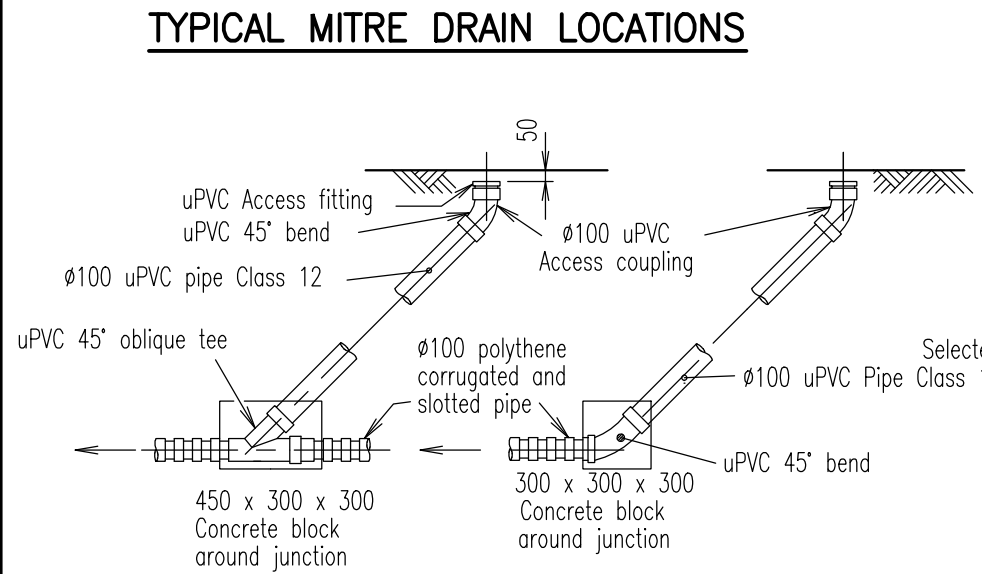
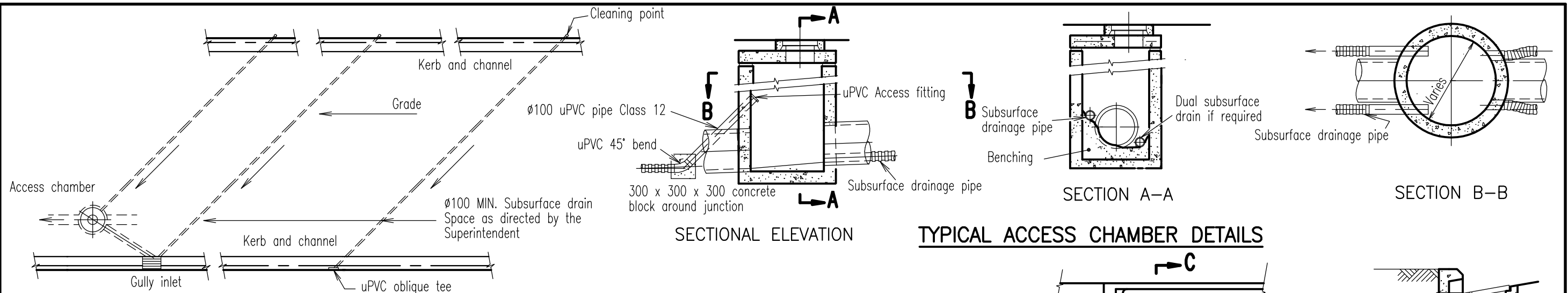
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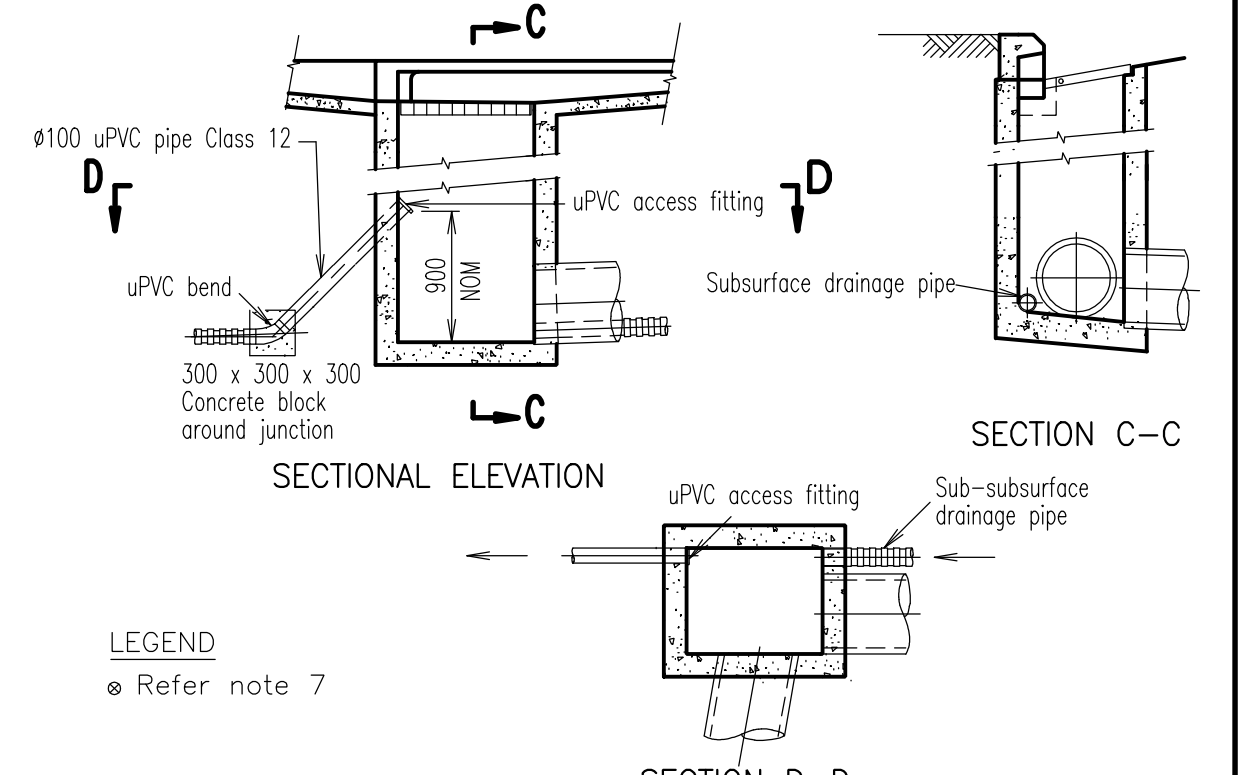
# TRAFFIC CONTROL DEVICES

ROAD/STREET  
Standard  
Drawing  
**R-0131**

A	B	C
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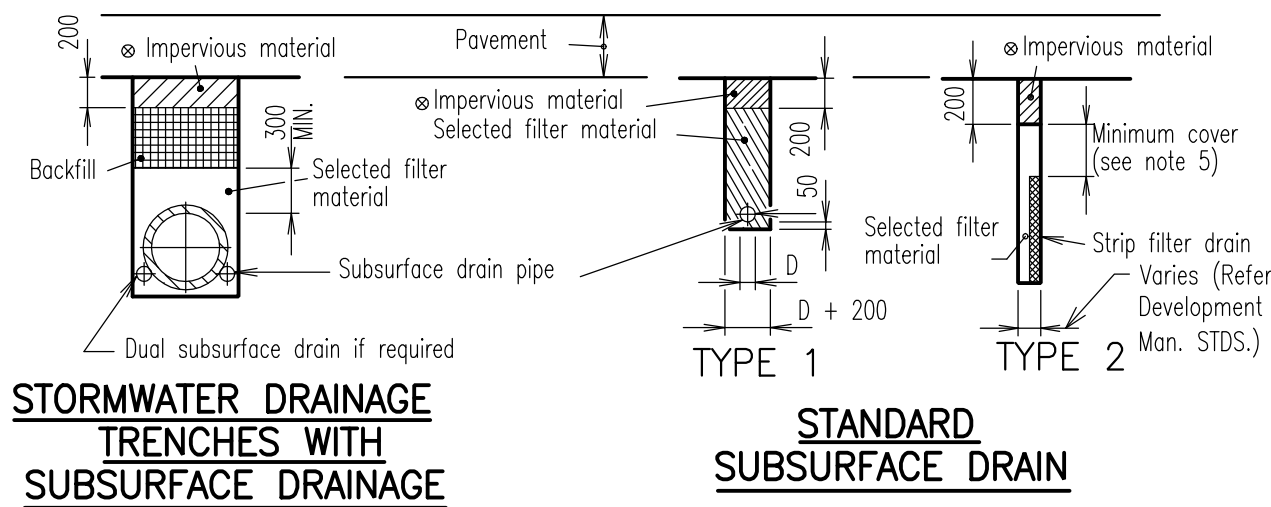
**TYPICAL ACCESS CHAMBER DETAILS**



**LEGEND**  
 ⊗ Refer note 7

- NOTES:**
- All Subsurface drains, polyethylene corrugated slotted pipe to AS 2439.1:2007, discharge at inlet pipe invert level unless detailed otherwise. 0.5% MIN grade.
  - Filter materials not complying with the specified grading requirements may be used when approved by the Superintendent. A geofabric may be used to line trenches where approved by the Superintendent.
  - Concrete anchors N20 in accordance with AS 1379:2007 and AS 3600:2009.
  - At 'oblique tee' on subsurface drain cleaning points, the contractor may install Vinindex vertical fittings if approved by the Superintendent.
  - Minimum cover over subsurface drain pipe for various compactors unless approved otherwise: Hand held units - 100, Units < 15 tonnes - 200, Units > 15 tonnes - 300
  - 'D' = 100 NOM. unless otherwise specified.
  - Impervious material to be provided where subsurface drainage is not under a pavement. When impervious material is omitted the backfill / selected filter material shall extend to underside of pavement.
  - All dimensions in millimetres.

**RECOMMENDED FILTER MATERIAL**  
 10mm-14mm AGGREGATE FILTER MATERIAL  
 ENSURE POSITIVE GRADE TO DAYLIGHT



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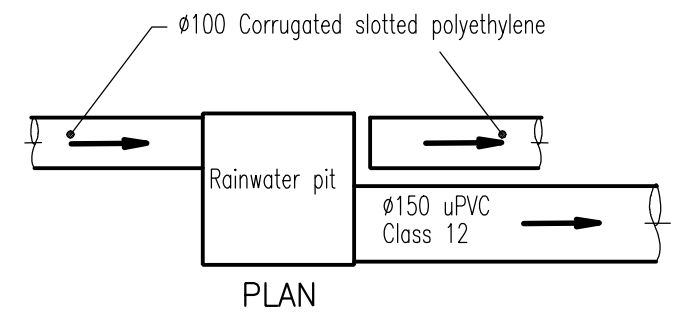
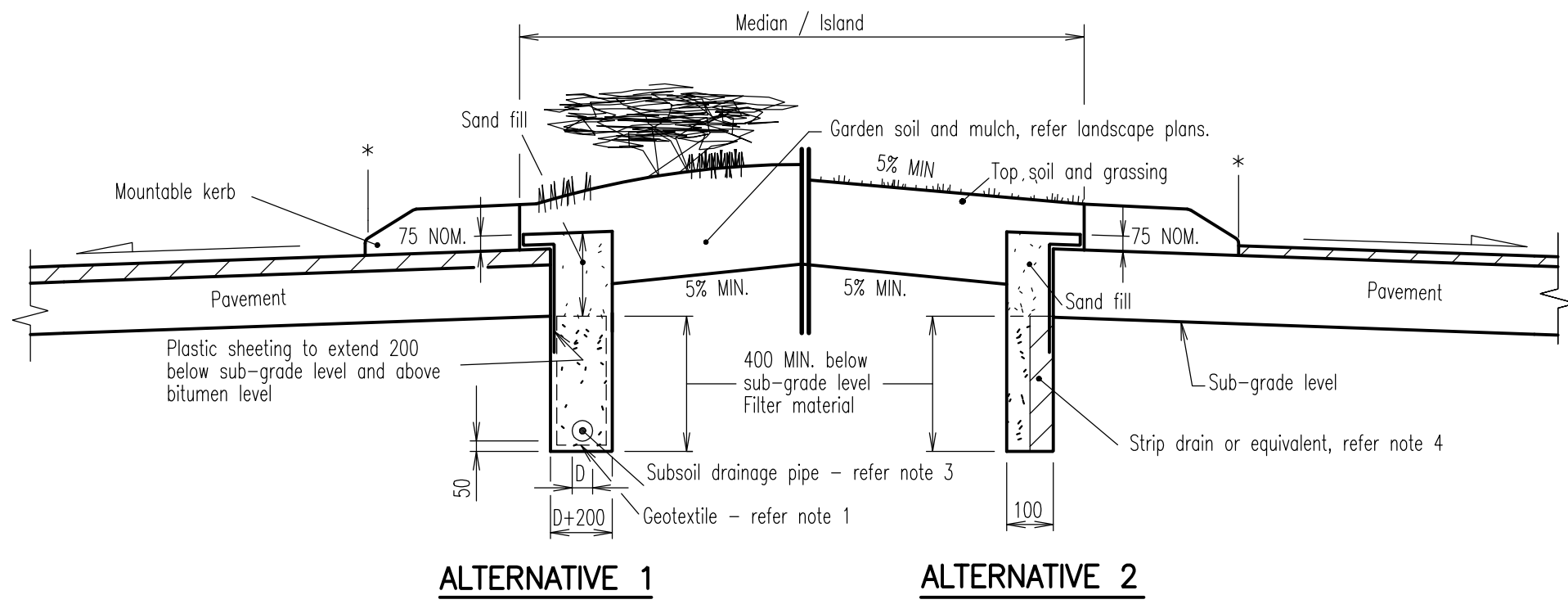
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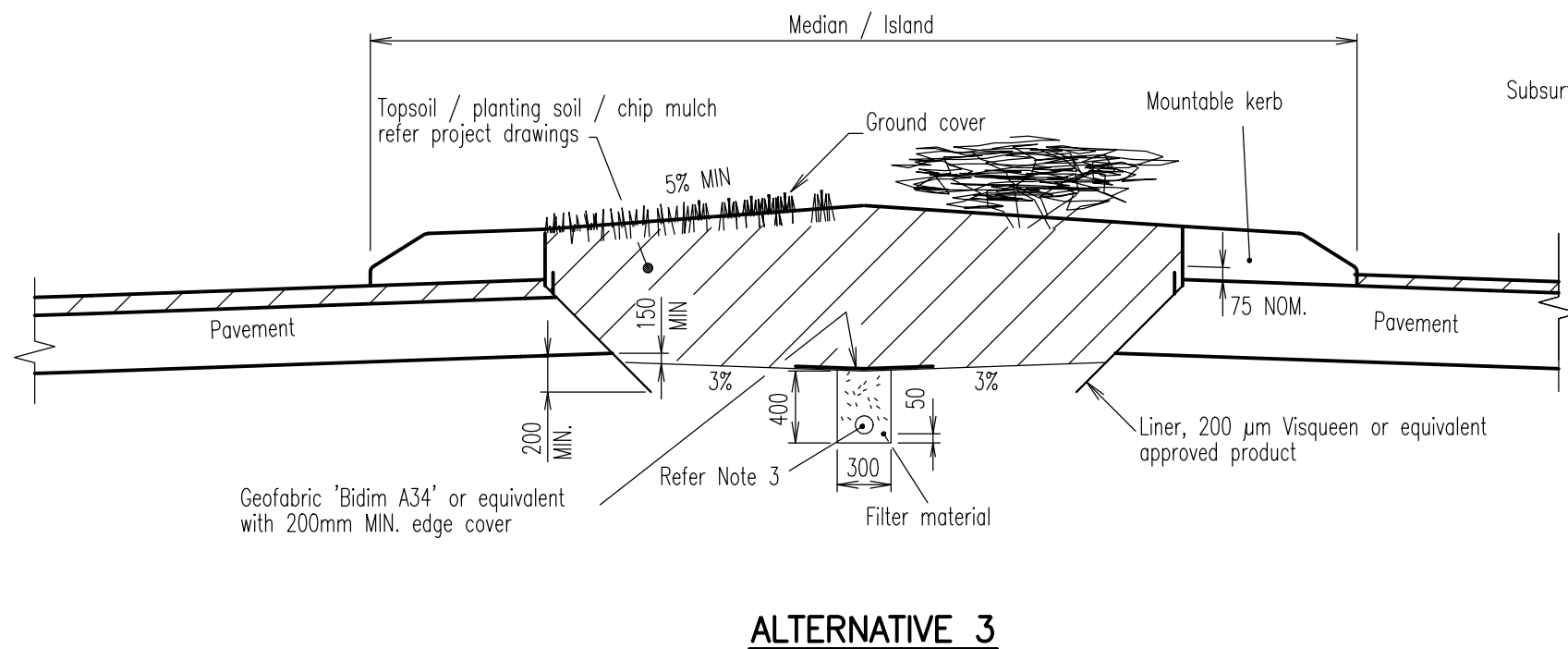
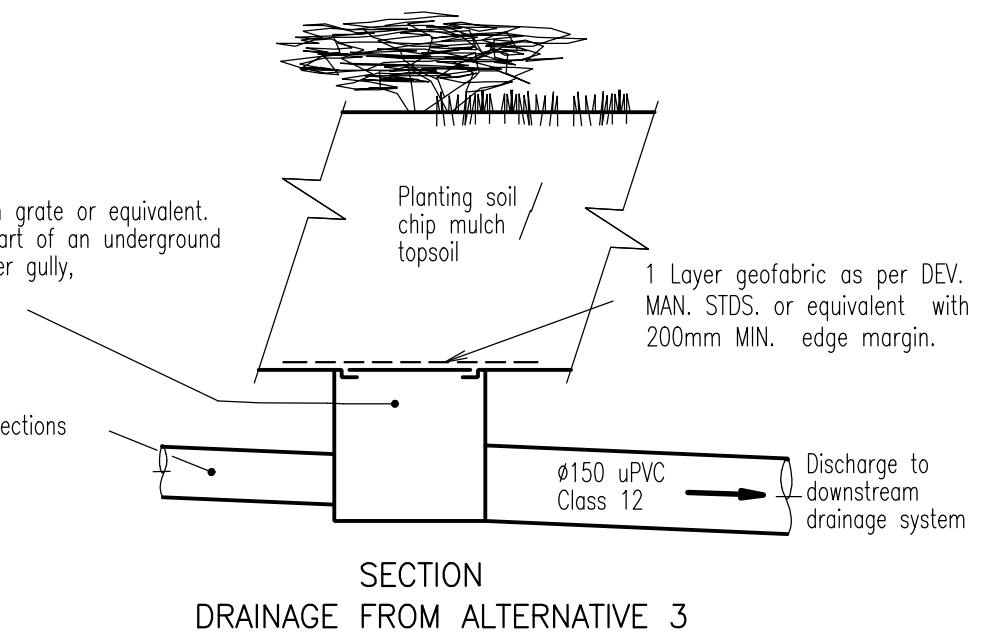
**SUBSURFACE DRAINAGE**

**ROAD/STREET Standard Drawing R-0140**

A	B	C		
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**Median Drainage Only :**  
 Polypropylene rainwater pit and aluminium grate or equivalent.  
 Where median / island drainage forms part of an underground drainage system, construct an anti-ponder gully, refer WRC STD DWG D-0068.



**LEGEND**

\* NOMINAL kerb line

**NOTES:**

1. Geotextile surround, propriety product, U.V. stabilised, non-woven type, flow rate > 50 l/m<sup>2</sup>/sec, G > 1300 and E.O.S. < 200 µm.
2. Filter material - 75 µm - 9.5 mm. Refer grading requirements on Standard Drawing R-0140.
3. 100mm Subsoil drainage pipe - corrugated slotted polyethylene, connect to drainage system. 0.5% MIN. grade.
4. Strip drain - propriety product, deep-fin plastic core, 120 KPa MIN. crush strength, 40mm MIN. thickness, fully enclosed by a non-woven geotextile. 0.5% MIN. grade.
5. All dimensions in millimetres.

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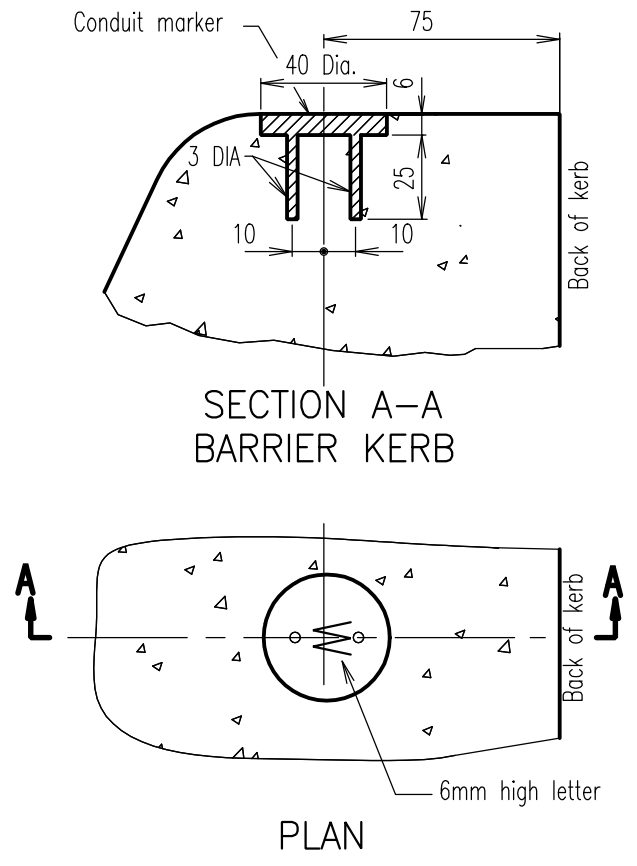
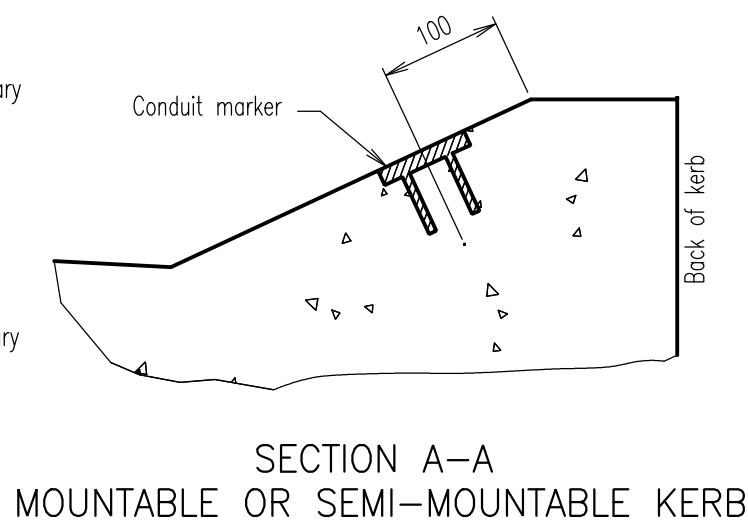
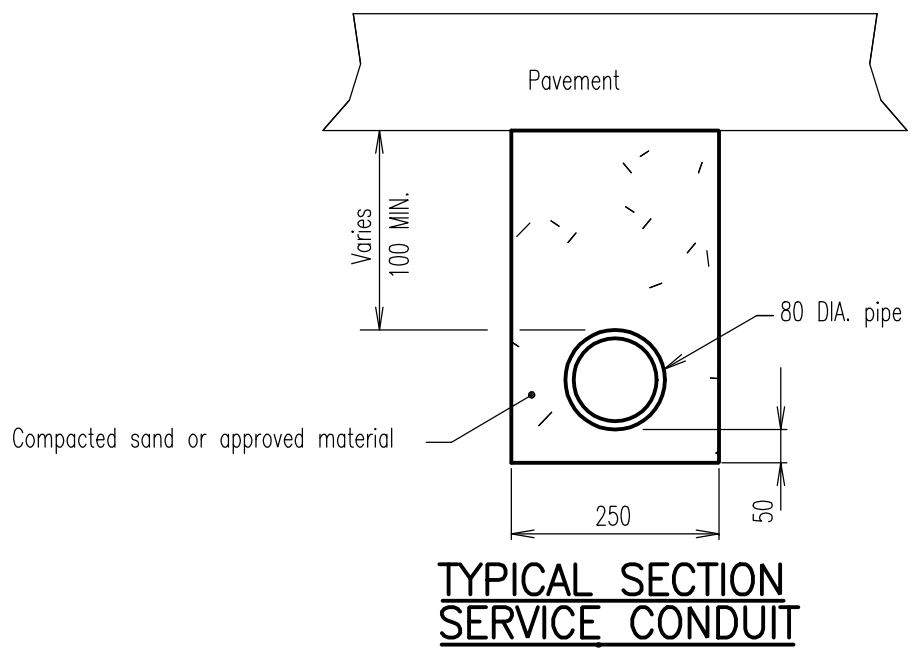
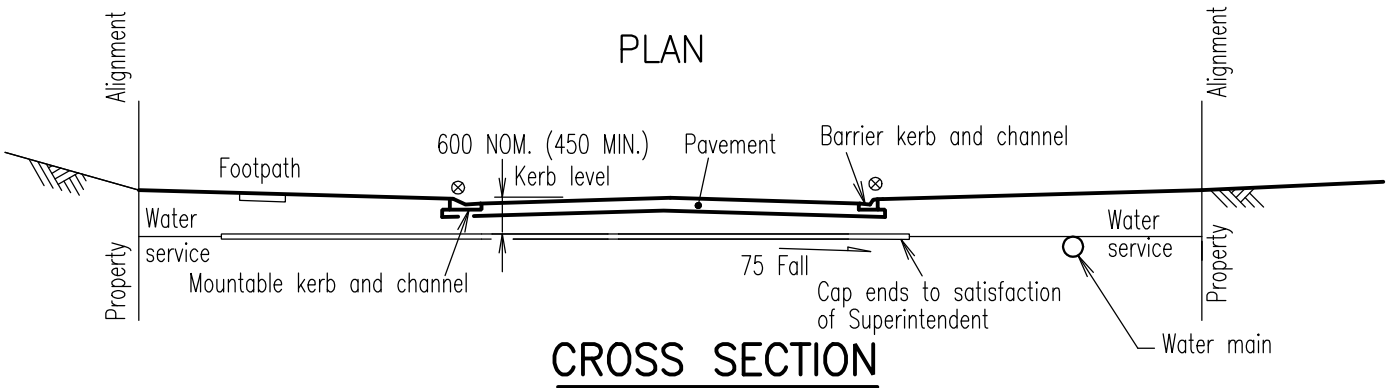
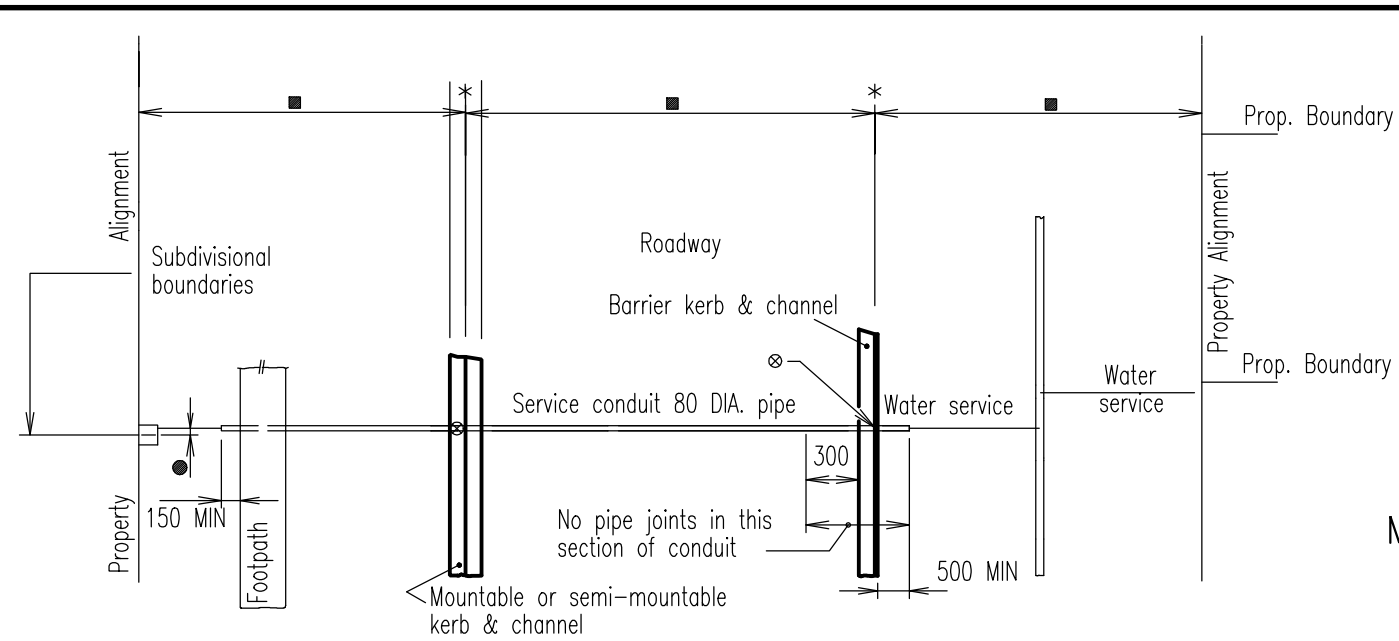
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**SUBSOIL DRAINAGE DETAILS AT MEDIANS / ISLANDS**

**ROAD/STREET Standard Drawing R-0141**

A	B	C
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**BRASS SERVICE CONDUIT MARKER**

**LEGEND**

- \* NOM kerb line
- ⊗ Service conduit marker
- Refer project drawings.
- Service conduit to be offset 0.6 metre on low side from subdivisional boundary.
- SC ——— Service conduits (on project drawings).

**NOTES:**

1. Trimming and compaction of the subgrade to be completed and approved before excavation for service conduits is commenced. Excavated material shall be thrown on the footpath and not on the subgrade.
2. Service conduits alternatives :- 100 DIA concrete/FR pipes (S.F.) Class C or S (R.R.J.)  
100 DIA uPVC, Class 12.
3. Positions of the service conduits shown are typical only. Conduits to be located as shown on project drawings.
4. Where concrete footpaths/cyclepaths exist or are planned, the service conduit is to extend past the far side of the path.
5. Marker details may be varied if approved.
6. Refer WRC STD DWG R-0100 and R-0101 for utilities layout plan and sections.
7. All dimensions in millimetres.

B	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
A	ORIGINAL ISSUE	1/3/97
REVISIONS		DATE



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**WATER SERVICE CONDUITS**

**ROAD/STREET  
Standard  
Drawing  
R-0160**

A	B		
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Std. Dwg. No.	Descriptions
	<b>AS CONSTRUCTED</b>
S-0010	SAMPLE AS CONSTRUCTED PLAN
	<b>ACCESS CHAMBERS</b>
	ACCESS CHAMBERS
S-0020	1050mm NOM DIA – INSITU CONSTRUCTION
S-0021	1050mm NOM DIA – PRECAST COMPONENTS (BY PRIOR APPROVAL ONLY)
S-0022	1500mm NOM DIA – INSITU CONSTRUCTION
S-0023	ALTERNATIVE DROPS – INSITU CONSTRUCTION
S-0024	RECTANGULAR INCLUDING CAST IRON COVERS AND FRAMES
S-0025	CAST IRON COVER AND FRAME, CAST IRON CONCRETE FILLED COVER
S-0026	CAST IRON COVER AND FRAME, BOLT DOWN
	<b>HOUSE CONNECTION BRANCHES</b>
S-0030	HOUSE CONNECTION BRANCHES
	<b>PUMP STATIONS</b>
	SUBMERSIBLE SEWAGE PUMPING STATION
S-0050	1800mm DIA & 2400mm DIA PRESSURE GAUGE ARRANGEMENT AIR RELEASE PIPEWORK DETAILS
S-0051	7.2m VENT POLE TERRAIN CAT 2 AND 3
S-0052	12.0m VENT POLE TERRAIN CAT 2 AND 3
S-0057	LIFT STATION SUBMERSIBLE, 1800mm DIA (0-20L/sec)
S-0058	PUMP STATION OVERFLOW
S-0059	SUBMERSIBLE SEWAGE PUMPING STATION GENERAL ARRANGEMENT, REINFORCEMENT 2400mm DIA.
S-0060	ALUMINIUM COVERS AND FRAMES 2400mm DIA.
	<b>PRESSURE MAINS</b>
S-0070	PRESSURE MAIN DISCHARGE DETAILS
	<b>SEWER CONSTRUCTION</b>
S-0090	SEWER CONSTRUCTION, PIPELINE CONSTRUCTION TYPES
S-0091	PIERING DETAILS FOR BUILDINGS LESS THAN 1.5m TO SEWER LINE

C	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B	S-0010, S-0020 TO 0024, S-0030, S-0050, S-0059 TO 0060, S-0070 & S-0091 (S-0054 TO 0056 DELETED)	10/3/98
A	ORIGINAL ISSUE	1/3/97
REVISIONS		DATE



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# INDEX STANDARD DRAWINGS SEWERAGE

**SEWERAGE  
Standard  
Drawing  
S-0001**

A	B	C	
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# BRETT STREET

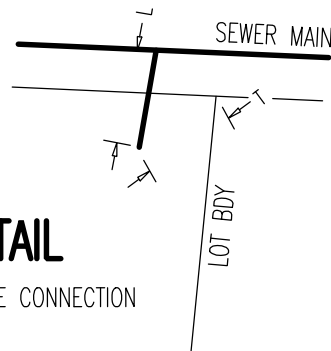
## MANHOLE DETAILS

PIT NUMBER	LID LEVEL	OUTLET LEVEL	INLET LEVEL/S
8/12	17.66	16.31	16.78 N, 16.33 S
9/12	18.5	17.28	17.33 E, 17.33 S
10/12	18.56	17.78	17.82
11/12	20.75	19.22	19.27
1/13	19.56	18.33	18.37
1/14	18.56	17.78	17.82

TABLE FORMAT FOR MANHOLE LEVEL DETAILS PREFERRED.  
 (LEVELS ON FACE OF PLAN AN ALTERNATE OPTION ONLY IF  
 PLAN IS OPEN ENOUGH TO FACILITATE CLEAR INTERPOLATION  
 SEE SETOUT OF TEXT AS SHOWN ON THIS SAMPLE PLAN)

### DETAIL

TYPE C HOUSE CONNECTION



### LEGEND

- Sewers
- Kerb and channel

This standard drawing is indicative of plan presentation only.

LOT 4  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

LOT 5  
 HC 20.5  
 TYPE A  
 DEPTH 0.5

LOT 6  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

LOT 7  
 HC 0  
 TYPE SP  
 DEPTH

M/H TOP  
 RL 18.56

LOT 8  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

M/H TOP  
 RL 17.66

M/H TOP  
 RL 20.75

M/H TOP  
 RL 18.56

IL 19.27  
 OL 19.22

1:152  
 42.48

M/H TOP  
 RL 18.56

IL 17.82  
 OL 17.78

1:116  
 30.06

1:114  
 12.1

M/H TOP  
 RL 17.66

IL 17.78  
 OL 17.78

EXIST 225Ø uPVC

FUTURE  
 HC 38.6  
 TYPE C  
 DEPTH 0.6  
 L 2.3  
 T 3.25

LOT 3  
 HC 17.6  
 TYPE C  
 DEPTH 0.6  
 L 2.5  
 T 1.8

LOT 1  
 HC 3.5  
 TYPE A  
 DEPTH 0.7

M/H TOP  
 RL 18.50

LOT 2  
 HC 0  
 TYPE SP  
 DEPTH

M/H TOP  
 RL 19.56

SMITH

### NOTES:

- All sewer pipes are Ø150 uPVC Class SEH unless shown otherwise.
- Manhole numbering to be obtained from council prior to plan completion
- Level datum to be indicated on plan, including Origin Mark and Level.
- Plan to contain sewerage as-constructed details only.



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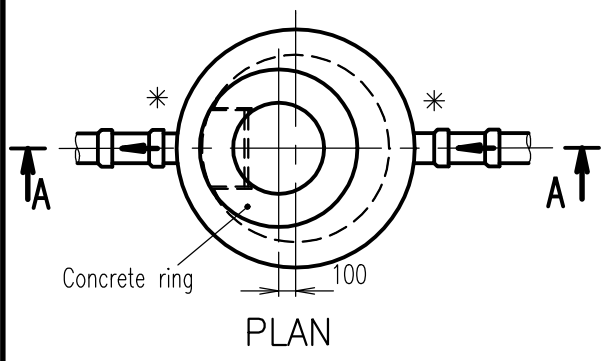
PROSERPINE  
 83-85 Main St  
 Proserpine 4800 Q  
 Ph 07 4945 0200

**SIMPLE AS CONSTRUCTED PLAN**

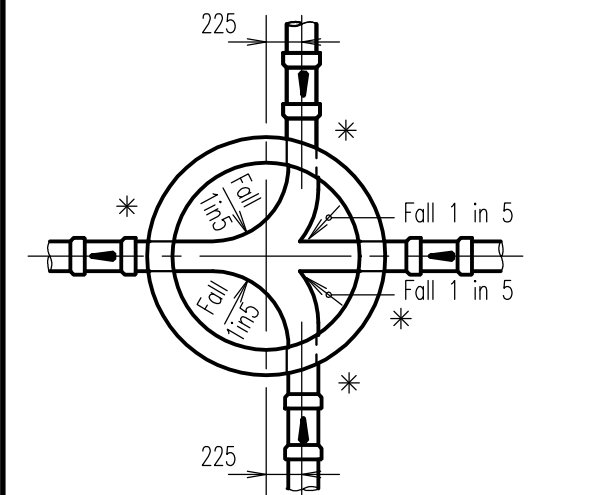
SEWERAGE  
 Standard  
 Drawing  
**S-0010**

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97

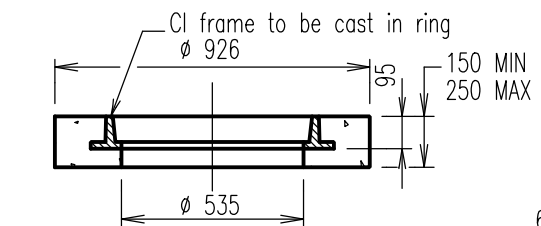
A B C



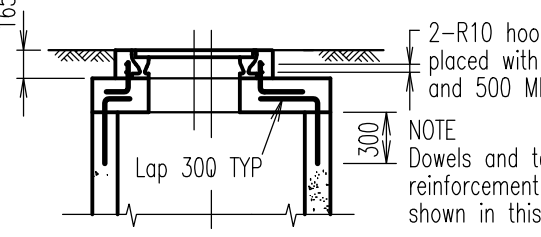
PLAN



SECTIONAL PLAN  
TYPICAL LAYOUT OF CHANNELS

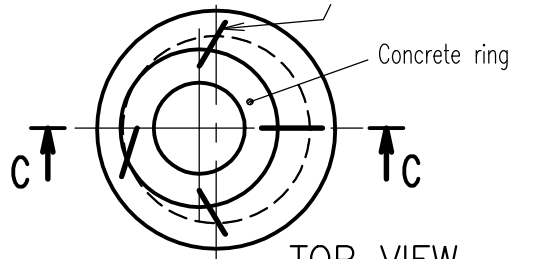


SECTIONAL ELEVATION  
CONCRETE RING

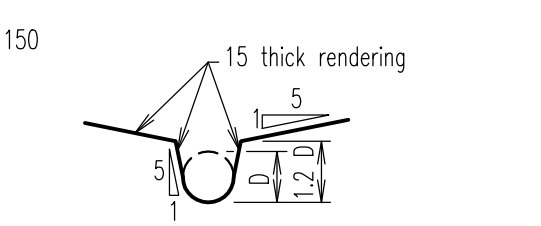


SECTION C - C

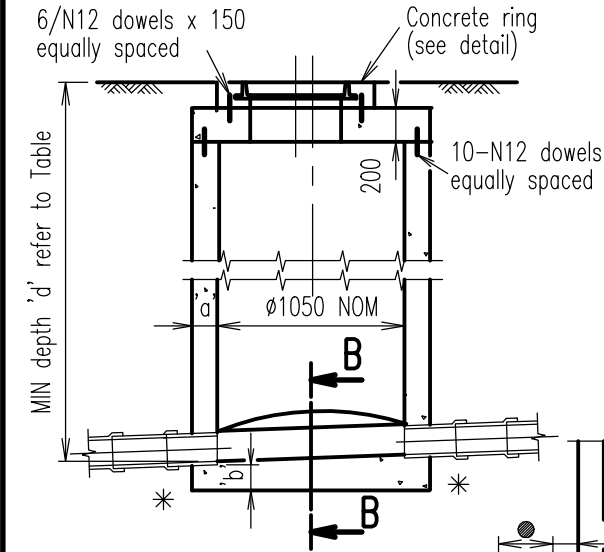
4 - N12 bars equally spaced on centre line of concrete ring with 40 cover to top of hook. (Top of bar to be hooked around 4d pin by approved method).



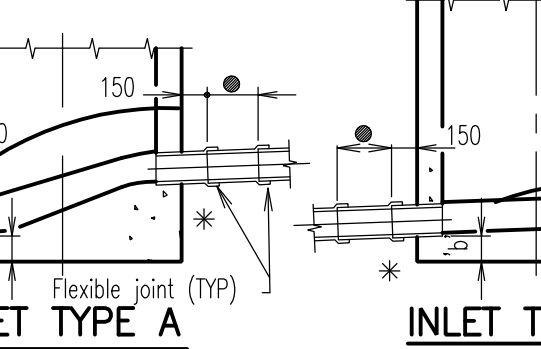
TOP VIEW  
REINFORCEMENT FOR  
BOLT DOWN COVER



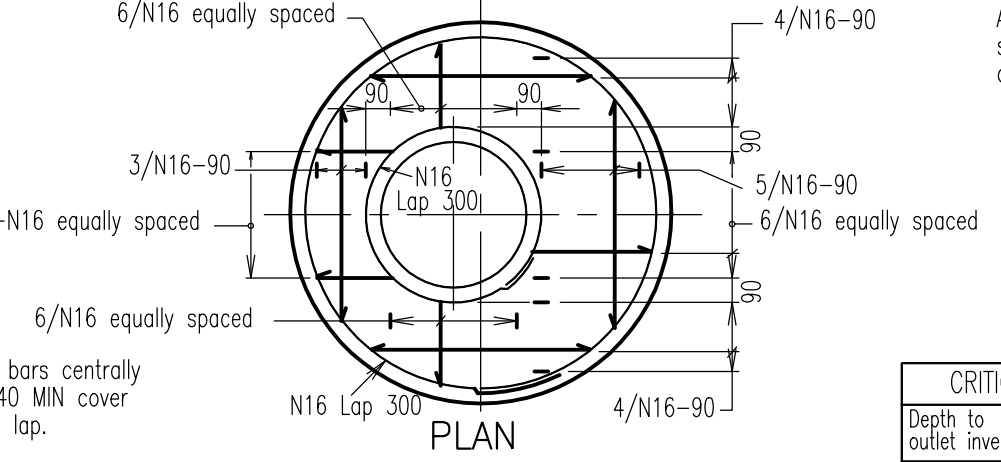
SECTION B - B



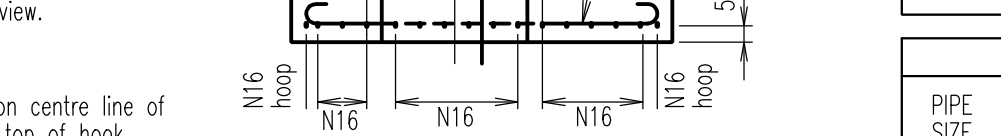
SECTION A - A



INLET TYPE A

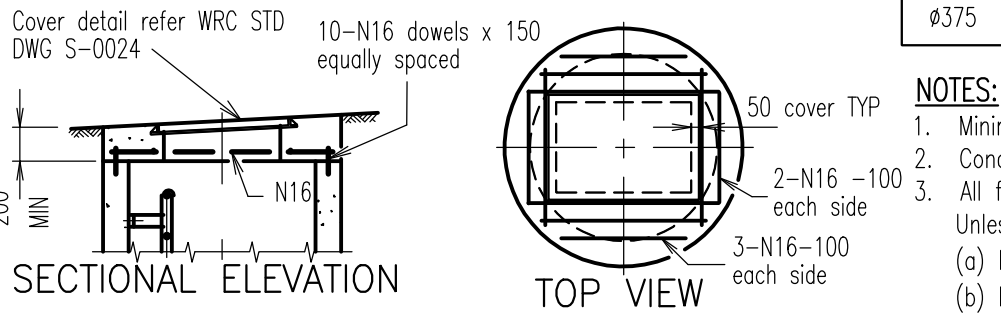


PLAN

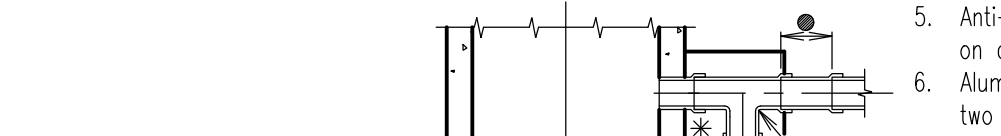


SECTIONAL ELEVATION  
TOP SLAB REINFORCEMENT

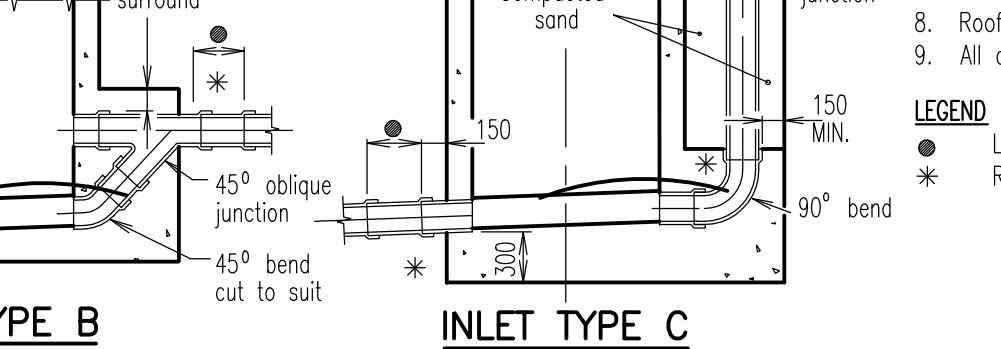
Refer Standard Drawing S-0021 for alternative top slab reinforcement



SECTIONAL ELEVATION  
ALTERNATIVE ROOF



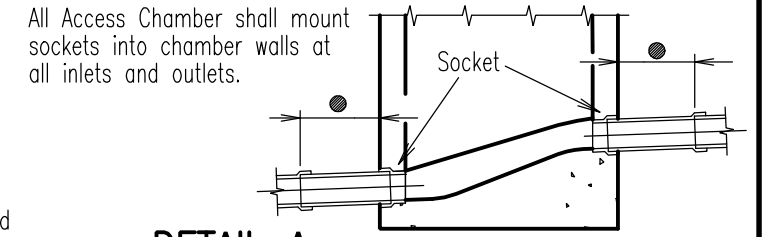
TOP VIEW



INLET TYPE B



INLET TYPE C



DETAIL A

CRITICAL DIMENSIONS			MINIMUM DEPTHS	
Depth to outlet invert	Thickness		Outlet $\phi$	Minimum Depth 'd'
	a	b		
Minimum to 3000	150	150	$\phi 150$	1500 + (Type A fall - 100)
3000 to 6000	225	300	$\phi 225$	1575 + (Type A fall - 100)
			$\phi 300$	1650 + (Type A fall - 100)
			$\phi 375$	1725 + (Type A fall - 100)

PIPE SIZE	INLET DROP - DEPTH RANGE					
	V C PIPE			uPVC PIPE		
	TYPE A	TYPE B	TYPE C	TYPE A	TYPE B	TYPE C
$\phi 150$	40 to 300	300 to 600	over 350	40 to 300	300 to 600	over 600
$\phi 225$	40 to 300	500 to 800	over 550	40 to 300	500 to 1000	over 1000
$\phi 300$	40 to 300	600 to 900	over 700	40 to 300	600 to 1500	over 1500
$\phi 375$	40 to 300	700 to 1000	over 900	40 to 300	1000 to 2100	over 2100

- NOTES:**
- Minimum fall through chamber shall be 40mm.
  - Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  - All fasteners shall be Grade AS 1444:2007 stainless steel. Unless otherwise noted, fasteners shall be as described below.
    - (a) Fixing to concrete - bolts shall be approved anchors.
    - (b) Fixing to metalwork - bolts shall be HEX head bolts.
  - Nylon or polythene separation inserts shall be used between stainless steel fasteners and aluminium sections.
  - Anti-galling lubricant "Loctite 222 or 567" or similar shall be used on all threads and between all stainless steel abutting surfaces.
  - Aluminium surfaces in contact with concrete shall be painted with two coats of alkali resistant bituminous paint.
  - uPVC or GRP pipes cast into access chamber wall shall be coated or sanded for the length of wall penetration to ensure bonding.
  - Roof design to Austroads W7 wheel load, dynamic factor 0.4.
  - All dimensions in millimetres.

- LEGEND**
- Length of pipe shall be 3 x DIA of pipe
  - \* Refer Detail A (above)

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B DETAIL 'A' ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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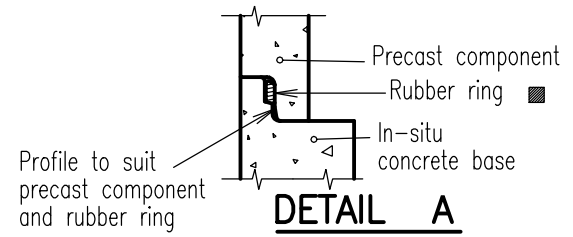
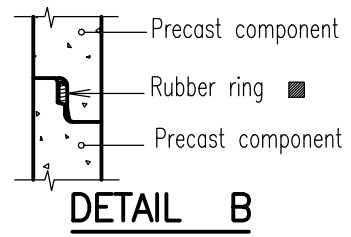
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**ACCESS CHAMBER  
1050 NOM. DIA.  
INSITU CONSTRUCTION**

**SEWERAGE  
Standard  
Drawing  
S-0020**

A	B	C
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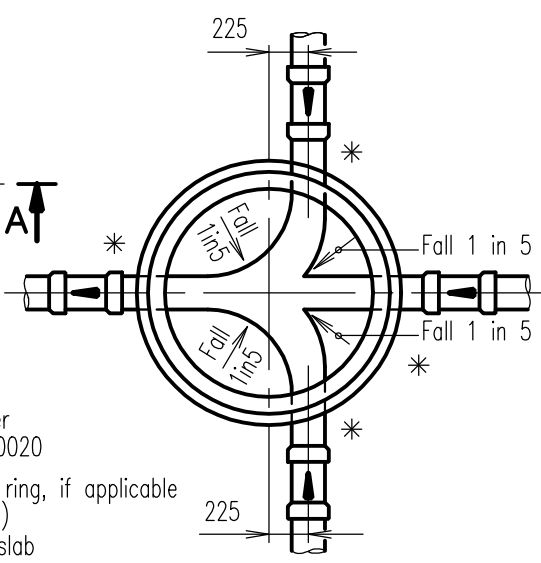
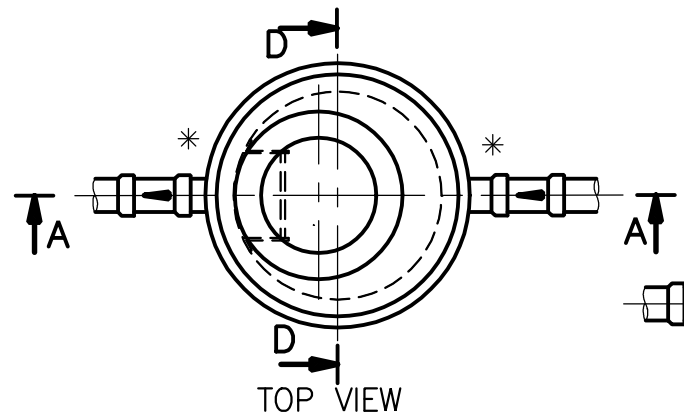




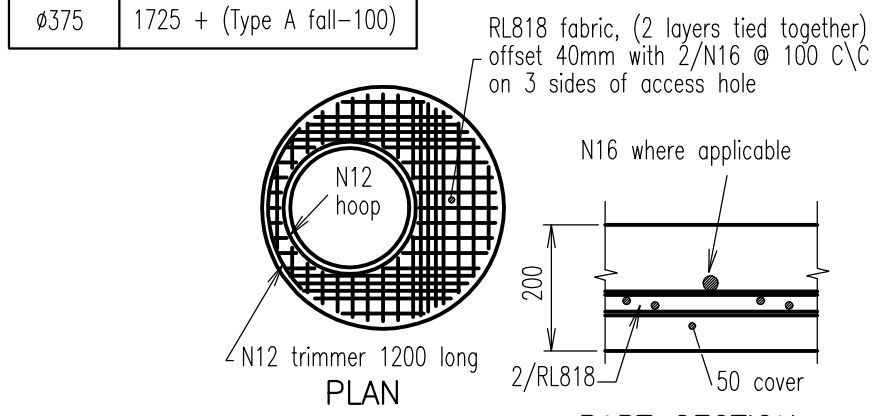
PIPE SIZE	INLET DROP - DEPTH RANGE					
	V C PIPE			uPVC PIPE		
	TYPE A	TYPE B	TYPES C&D	TYPE A	TYPE B	TYPES C & D
Ø150	40 to 300	300 to 600	over 350	40 to 300	300 to 600	over 600
Ø225	40 to 300	500 to 800	over 550	40 to 300	500 to 1000	over 1000
Ø300	40 to 300	600 to 900	over 700	40 to 300	600 to 1500	over 1500
Ø375	40 to 300	700 to 1000	over 900	40 to 300	1000 to 2100	over 2100

MINIMUM DEPTHS	
Outlet Pipe Size	Minimum Depth to Outlet Invert
Ø150	1500 + (Type A fall-100)
Ø225	1575 + (Type A fall-100)
Ø300	1650 + (Type A fall-100)
Ø375	1725 + (Type A fall-100)

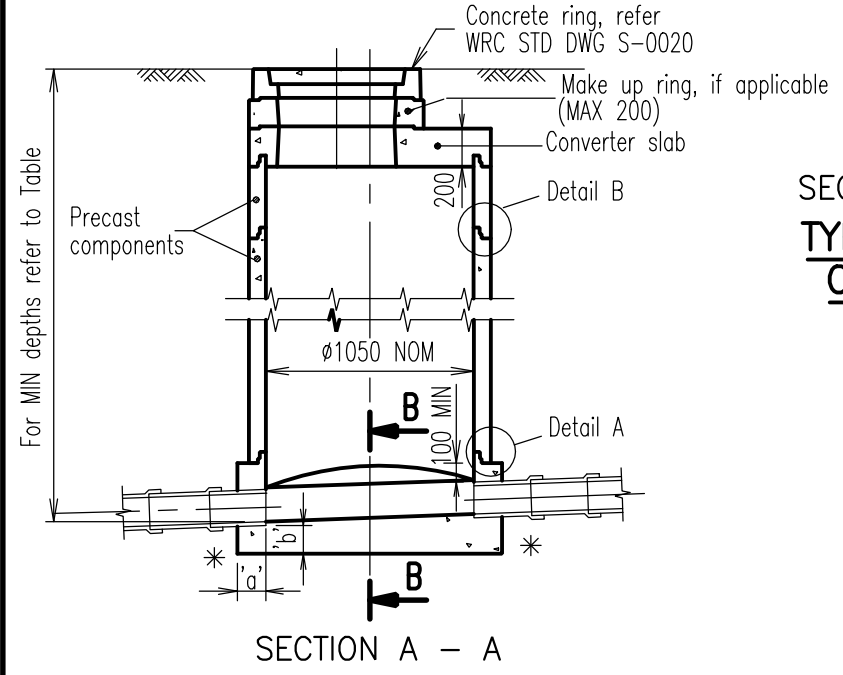
CRITICAL DIMENSIONS		
Depth to outlet invert	Thickness	
	a	b
Minimum to 3000	150	150
3000 to 6000	225	300



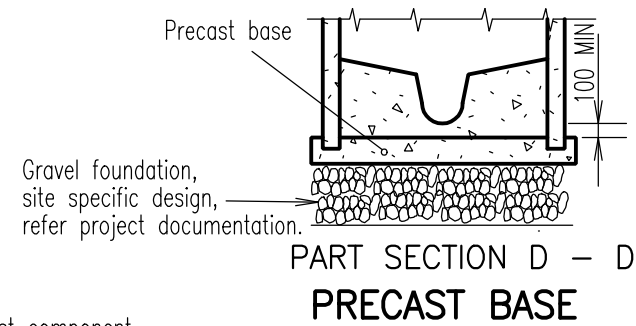
SECTIONAL PLAN  
TYPICAL LAYOUT  
OF CHANNELS



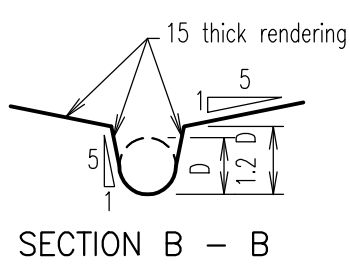
CONVERTER SLAB



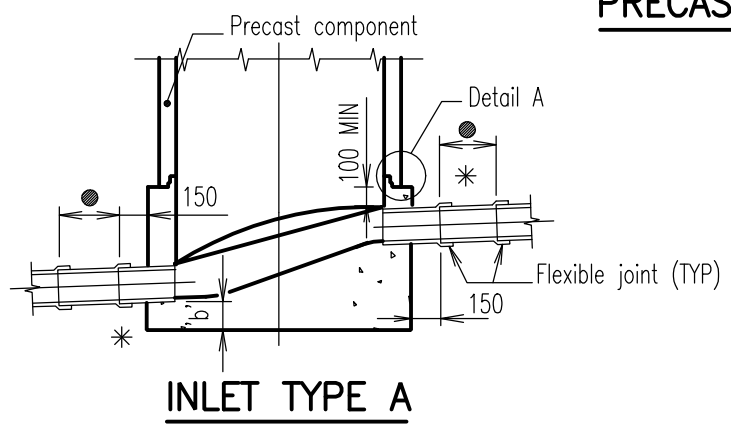
SECTION A - A



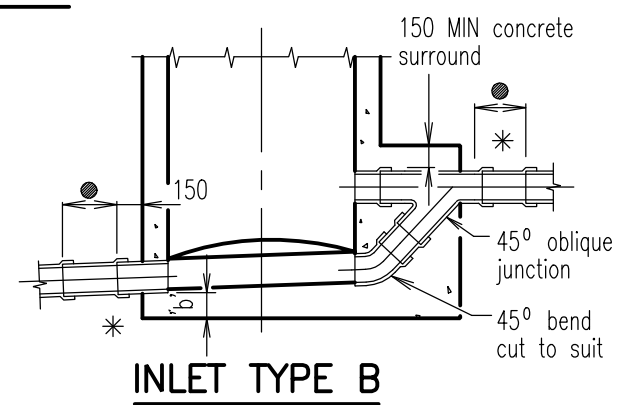
PART SECTION D - D  
PRECAST BASE



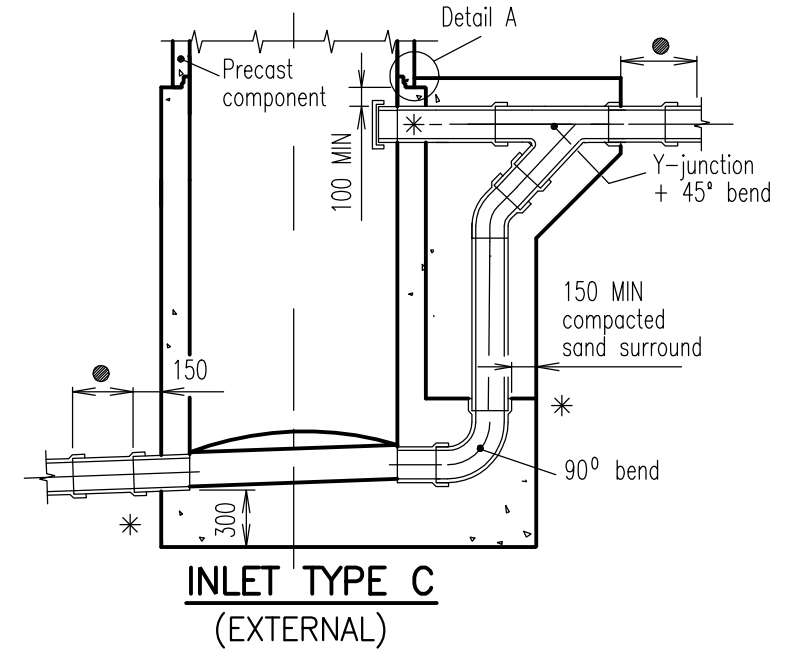
SECTION B - B



INLET TYPE A



INLET TYPE B



INLET TYPE C  
(EXTERNAL)

**NOTES**

- Minimum fall through chambers shall be 40mm.
- Concrete shall be
  - Class N32 for in-situ concrete
  - Class N40 for pre-cast segments both in accordance with AS 1379:2007 and AS 3600:2009.
- All fasteners shall be Grade AS 1444:2007 stainless steel. Unless otherwise noted, fasteners shall be as described below.
  - Fixing to concrete - bolts shall be approved anchors.
  - Fixing to metalwork - bolts shall be HEX head bolts.
- Nylon or polythene separation inserts shall be used between stainless steel fasteners and aluminium sections.
- Anti-galling lubricant "Loctite 222 or 567" or similar shall be used on all threads and between all stainless steel abutting surfaces
- Aluminium surfaces in contact with concrete shall be painted with two coats of alkali resistant bituminous paint.
- uPVC or GRP pipes cast into walls shall be coated or sanded for the length of wall penetration to ensure bonding.
- Precast chambers shall not be used where :-
  - sewer lines accept pumped flows
  - sewer lines are greater than Ø375
  - chambers are greater than 6.0m in depth
- Alternative converter slab designed to Austroads W7 wheel load, dynamic factor 0.4. Precast converter slabs must be designed to same standards.
- All dimensions in millimetres.

**LEGEND**

- Length of short pipe shall be 2 x DIA of pipe
- Lubricate concrete surface and rubber ring before placing precast components
- \* Refer DETAIL 'A' Dwg S-0020

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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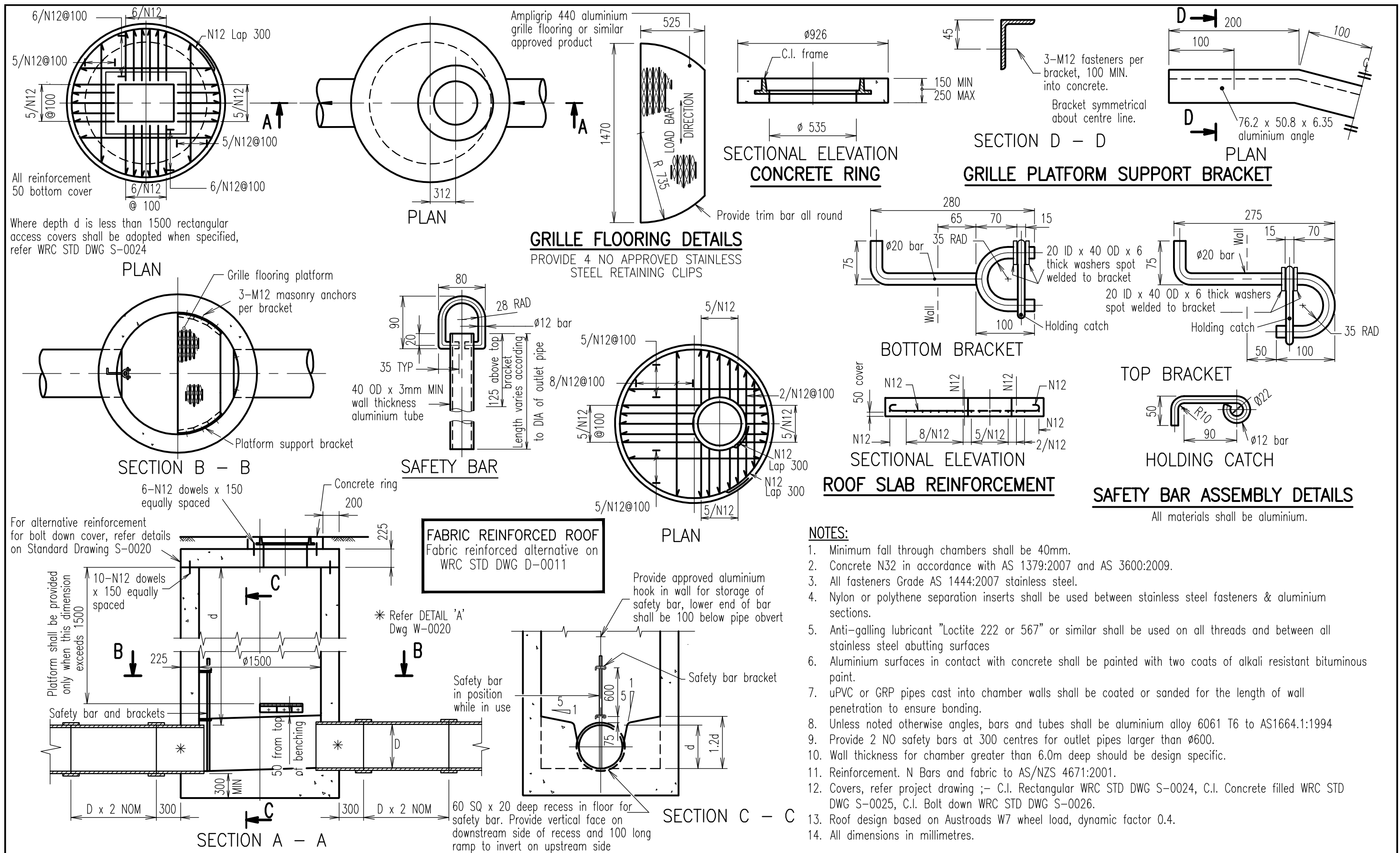
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**ACCESS CHAMBERS  
1050mm NOM. DIA.  
PRECAST COMPONENTS  
( BY PRIOR APPROVAL ONLY )**

**SEWERAGE  
Standard  
Drawing  
S-0021**

A	B	C
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REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97

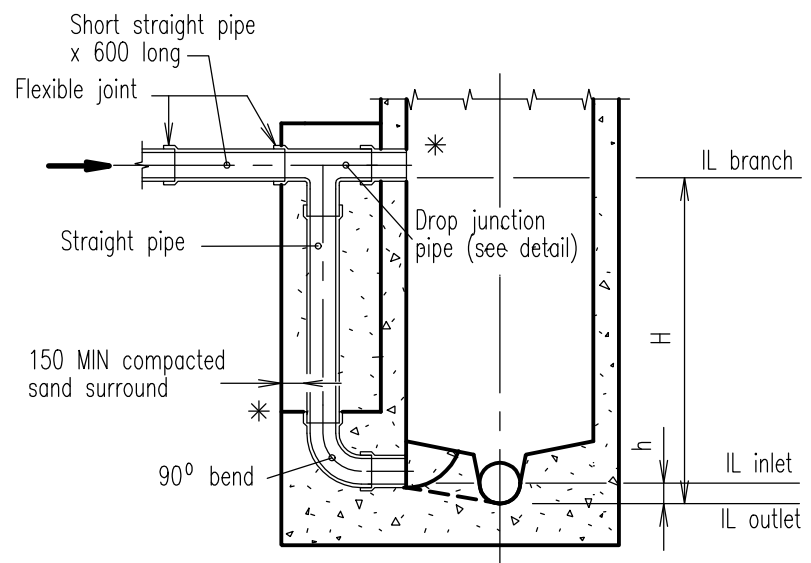

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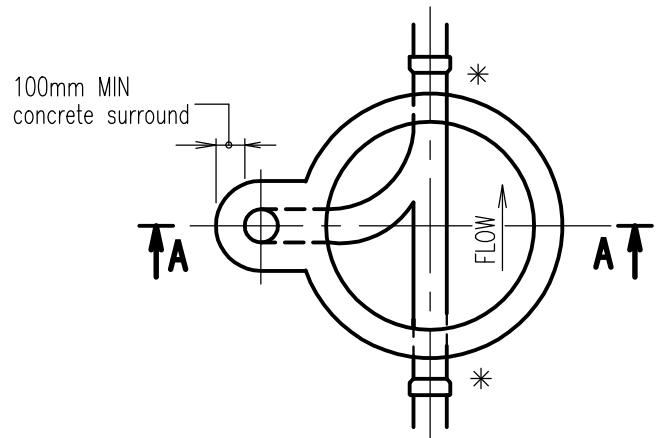
**ACCESS CHAMBERS**  
**1500mm DIA.**  
**INSITU CONSTRUCTION**

**SEWERAGE**  
**Standard**  
**Drawing**  
**S-0022**

A | B | C

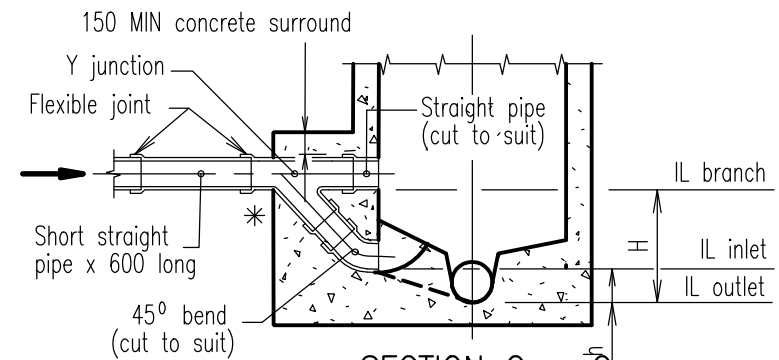


SECTION A - A

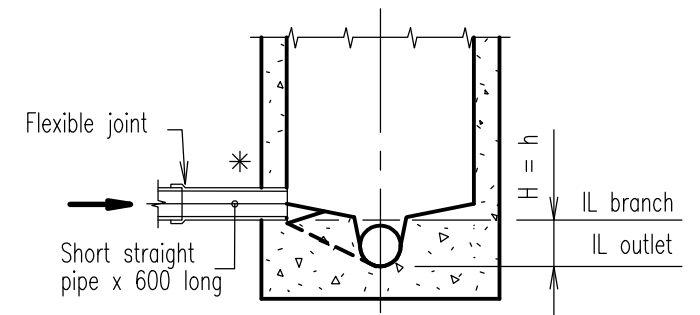


PLAN EXTERNAL VERTICAL DROP

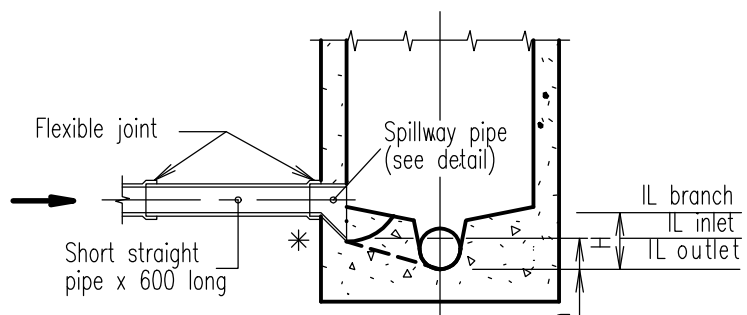
Only to be used where approved or ordered by Service Authority



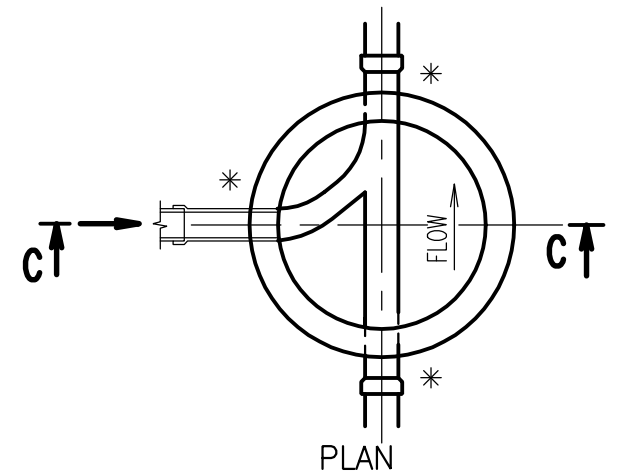
SECTION C - C SHORT SLOPE DROP



SECTION C - C BENCHING ONLY



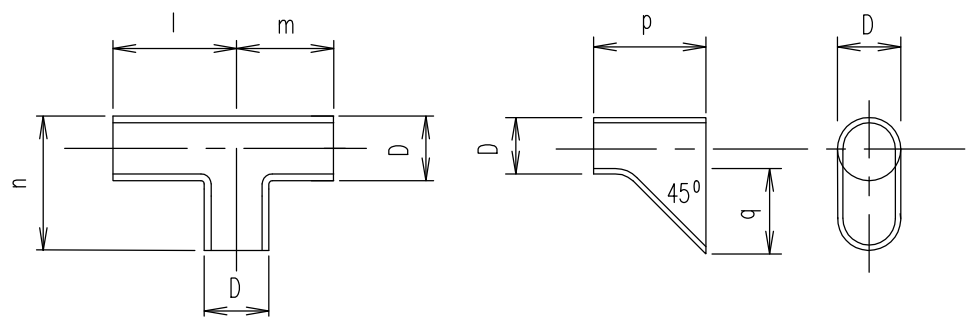
SECTION C - C SPILLWAY DROP



PLAN

\* Refer DETAIL 'A' WRC STD DWG W-0020

PIPE DIA D	MAXIMUM DROPS			
	CHAMBER DROP 'H'			
	Normal Benching	Spillway Drop	Short Slope Drop	Vertical Drop
100	Under 250	250 to 350	350 to 600	over 600
150	Under 250	250 to 400	400 to 700	over 700
225	Under 300	300 to 500	500 to 800	over 800
300	Under 350	350 to 650	650 to 1000	over 1000



DROP JUNCTION PIPE

SPILLWAY PIPE

SPECIAL PIPES

PIPE DIA D	SPECIAL PIPES				
	Drop Junction			Spillway	
	l	m	n	p	q
100	380	225	300	150	100
150	380	225	300	225	150
225	420	350	425	325	225
300	450	450	525	425	300

MINIMUM DROPS		
Angle Through Chamber	Minimum Drop 'h'	
	Branch Sewer	0° to 30°
30° to 60°		50
60° to 90°		75
Main Sewer	0° to 45°	25
	45° to 90°	40

NOTES:

1. Unless otherwise approved for particular types of sewer pipe used or particular site conditions, short pipes (600mm MAX) to be flexibly jointed to all sections bedded on or surrounded with concrete.
2. All benching to be 1 in 5 MIN.
3. 100mm external uPVC drop to be provided where house drain connection is well above chamber invert.
4. Refer WRC STD DWG S-0020 for 1050 NOM. access chamber insitu construction details.
5. Vertical and short slope drops to be formed using special pipes and standard fittings with couplings & sealing rings.
6. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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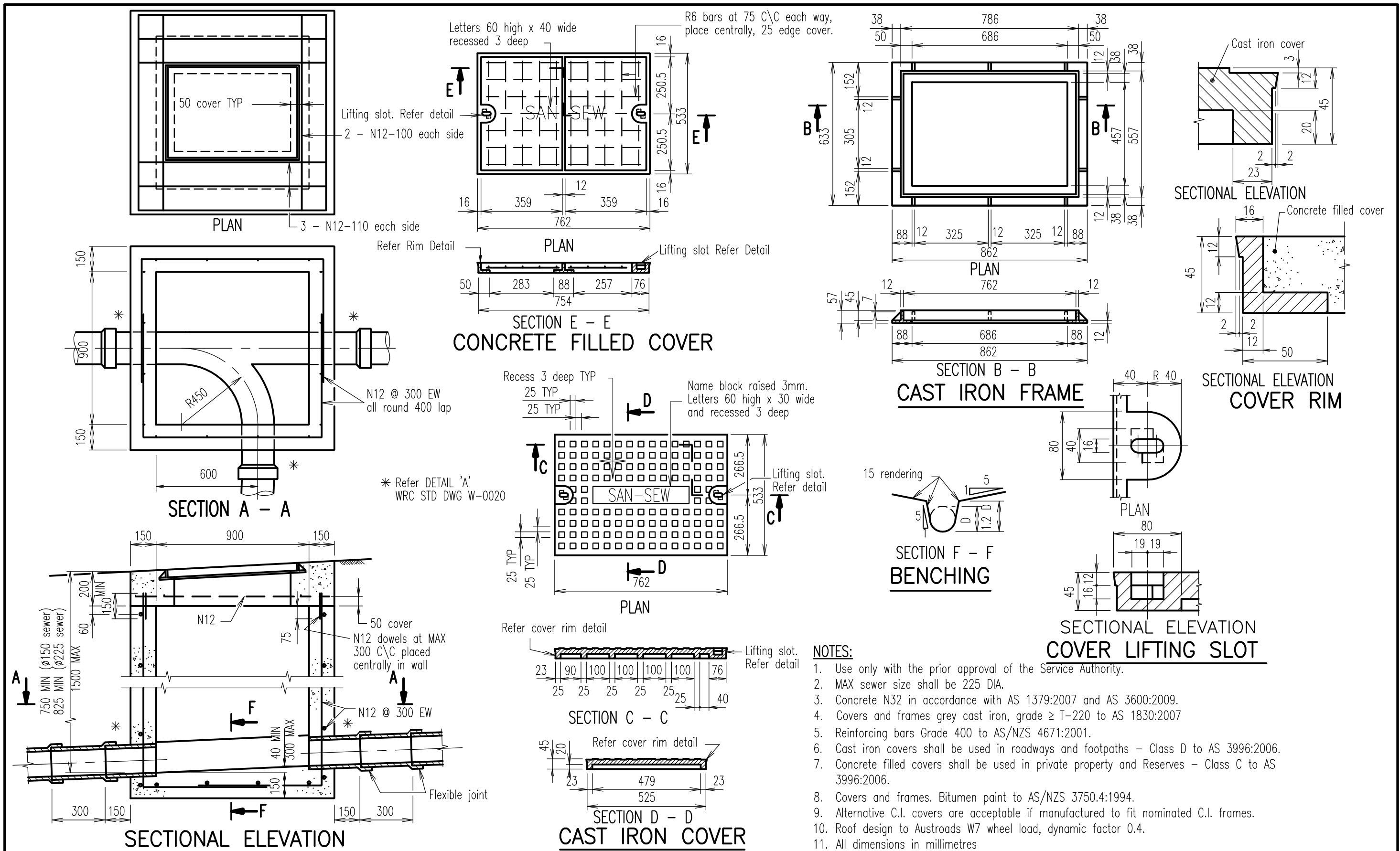
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ACCESS CHAMBERS  
ALTERNATIVE DROPS  
INSITU CONSTRUCTION

SEWERAGE  
Standard  
Drawing  
S-0023

A	B	B	
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C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
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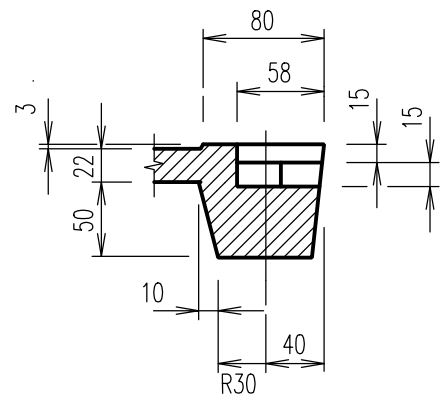
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## ACCESS CHAMBERS RECTANGULAR INCLUDING C.I. COVERS & FRAMES

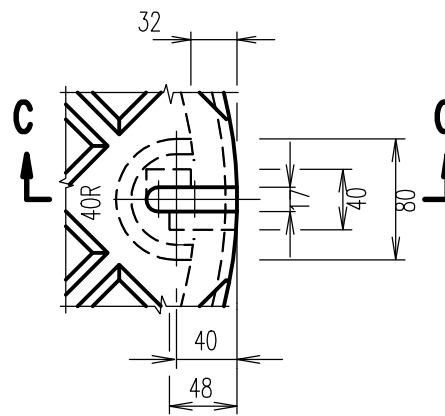
SEWERAGE  
Standard  
Drawing  
**S-0024**

A	B	C
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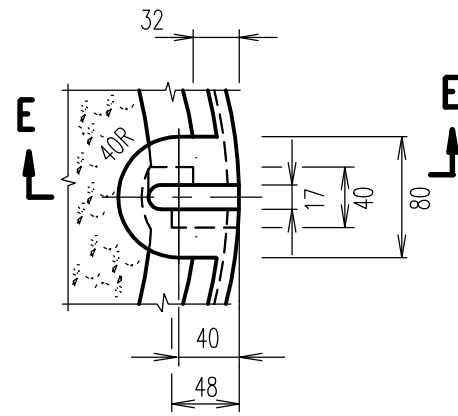


SECTION C-C

LIFTING SLOTS - DETAIL A

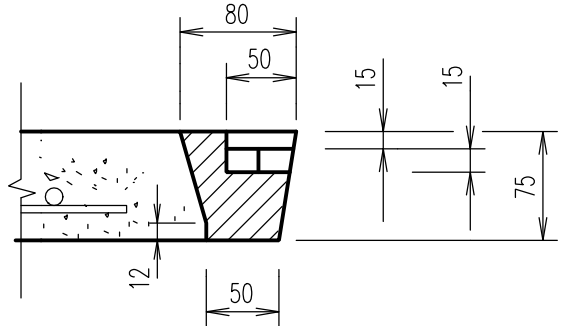


PLAN

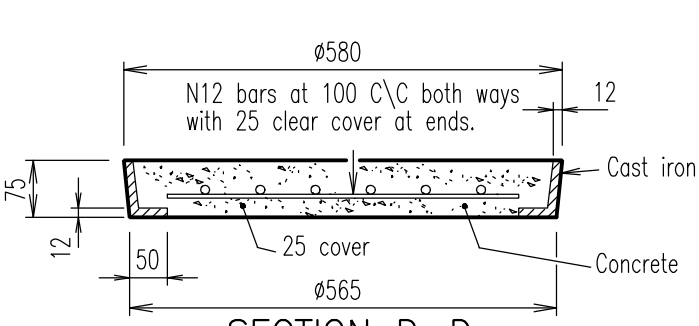


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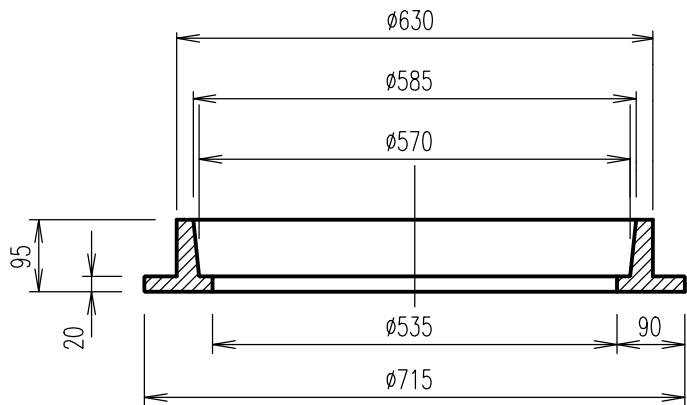
SLOTS - DETAIL B



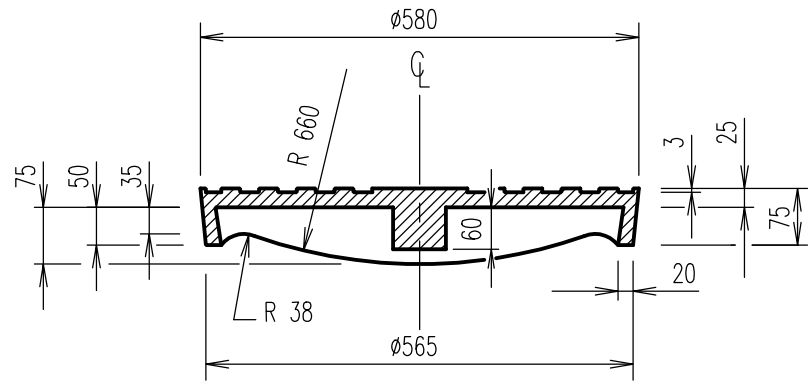
SECTION E - E



SECTION D-D

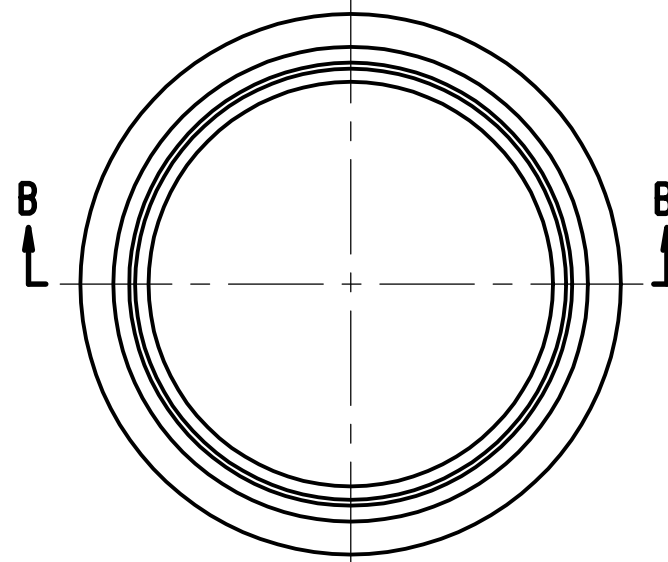


SECTION B-B

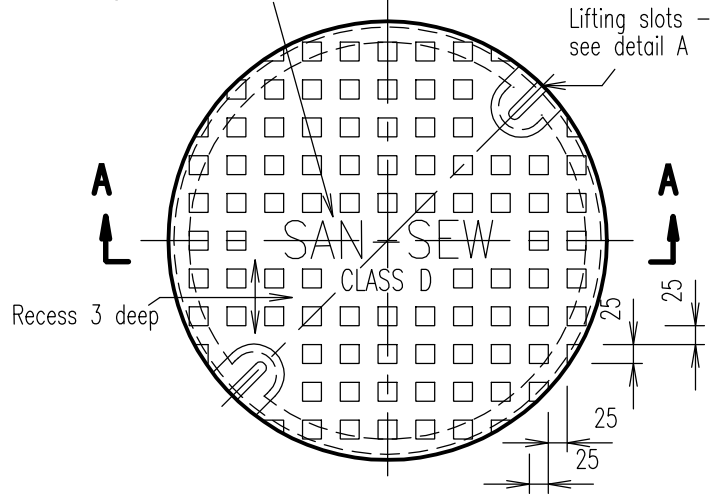


SECTION A-A

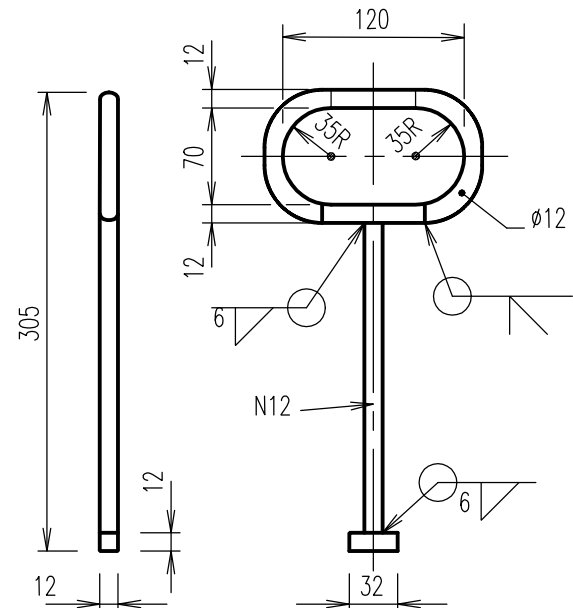
Name block raised 3 with 60 high letters for SAN-SEW and 30 high letters for CLASS D



PLAN - FRAME

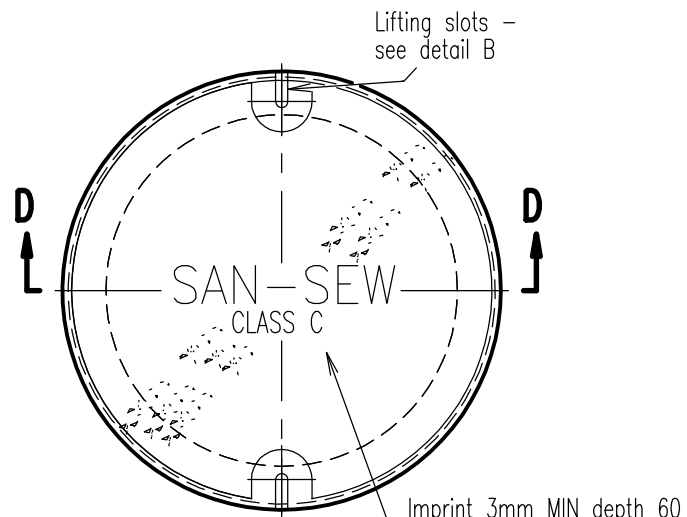


PLAN - C.I. COVER



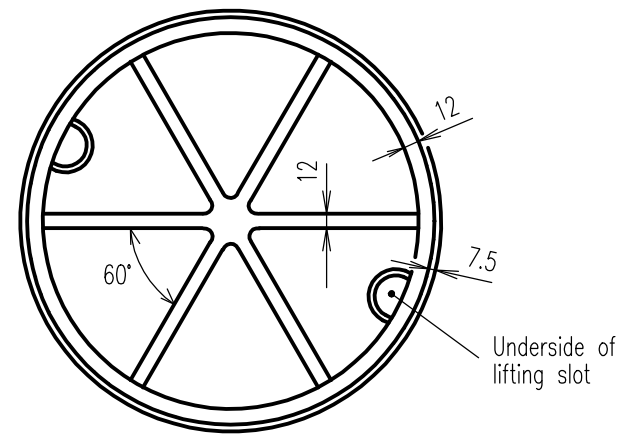
STEEL LIFTING KEY

Hot dip galvanized to AS 4680:2006



PLAN

PLAN - C.I. CONCRETE FILLED COVER



UNDERSIDE OF C.I. COVER

NOTES:

1. Mass of C.I. frames = 42 kg approx.
2. Mass of C.I. cover = 46 kg approx.
3. Cover and frame, grey cast iron Grade ≥ T220 to AS 1830:2007.
4. All steel Grade 400 to AS/NZS 3679.1:2016.
5. Concrete infill N32/10 in accordance with AS 1379:2007 and AS 3600:2009.
6. All welds to AS 1554.1:2014  
Welding symbols to AS 1101.3:2005
7. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
8. Bitumen paint cover and frame to AS/NZS 3750.4:1994.
9. Covers and frames to AS 3996:2006
10. All dimensions in millimetres.

REVISIONS	DATE
B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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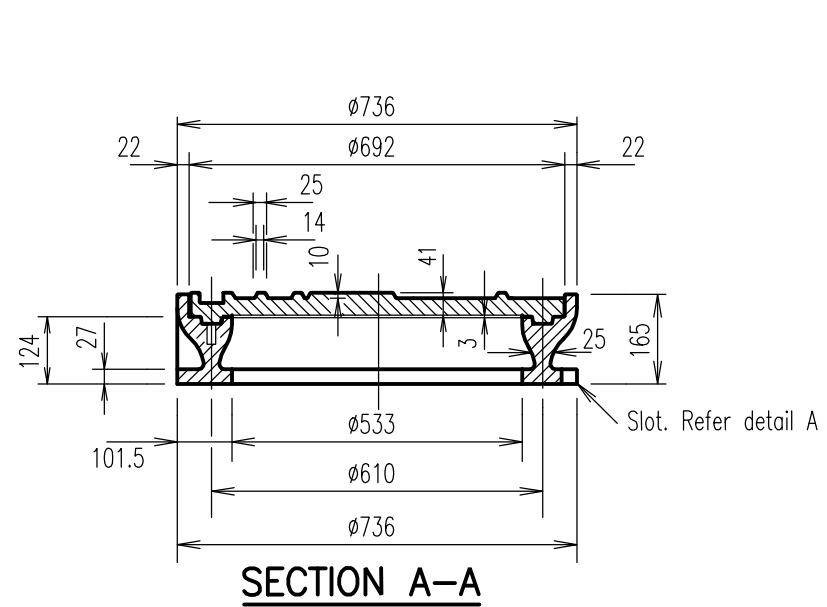
**COLLINSVILLE**  
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Collinsville 4804 Q  
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**PROSERPINE**  
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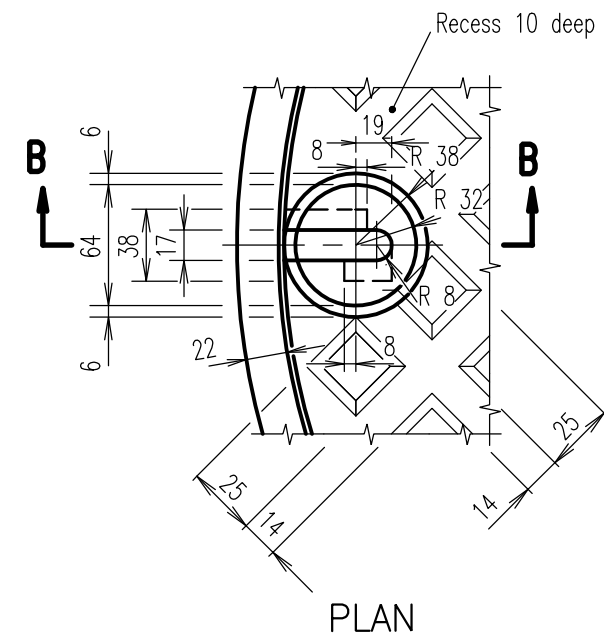
ACCESS CHAMBERS  
RECTANGULAR INCLUDING  
C.I. COVERS & FRAMES

SEWERAGE  
Standard  
Drawing  
S-0025

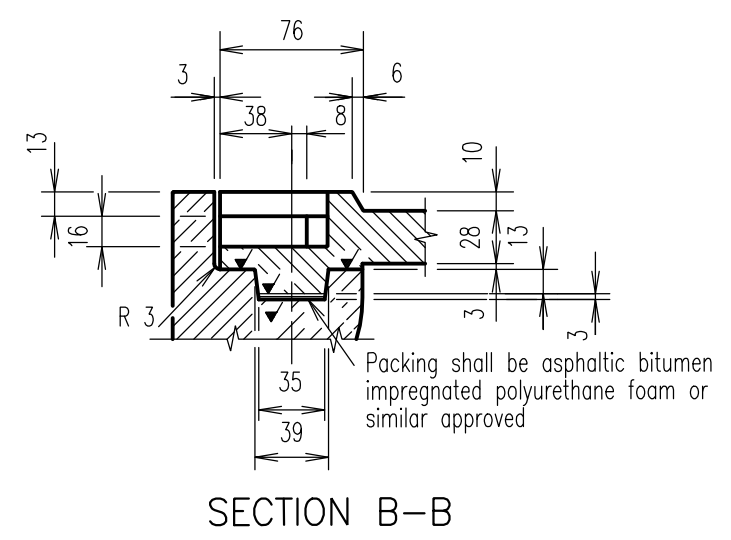
A	B		
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**SECTION A-A**

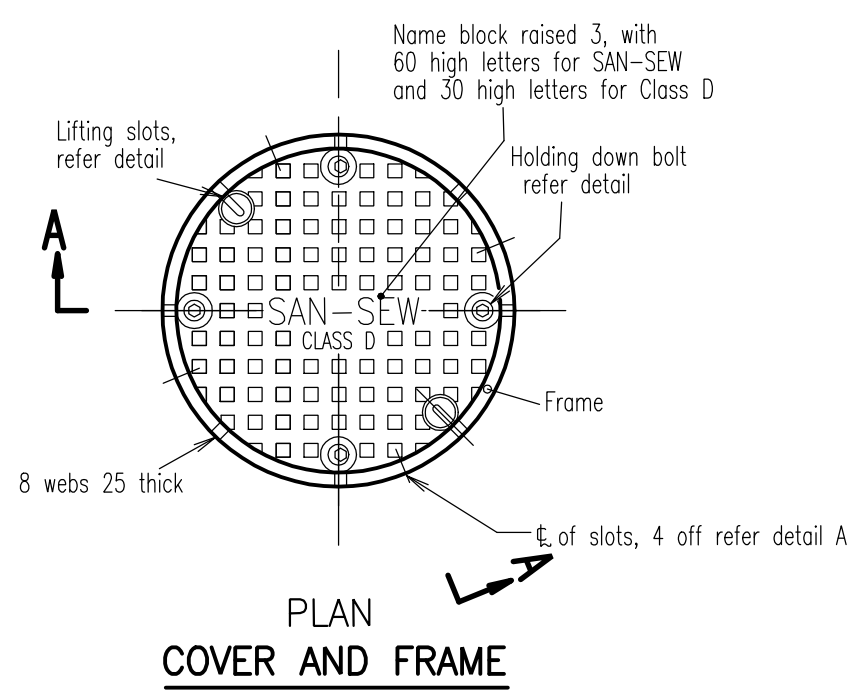


**PLAN**

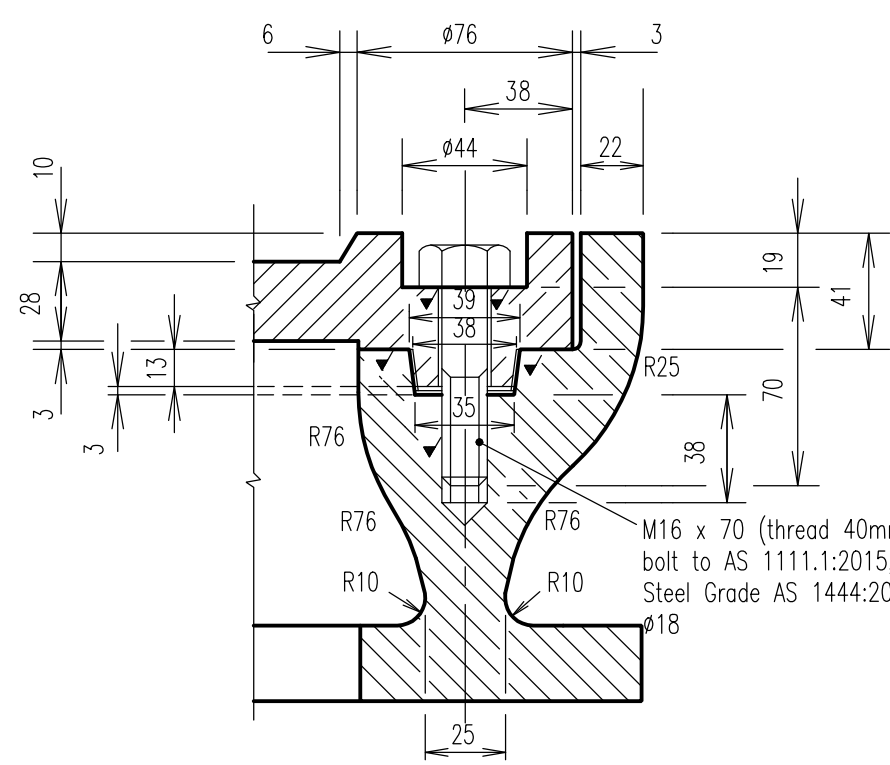


**SECTION B-B**

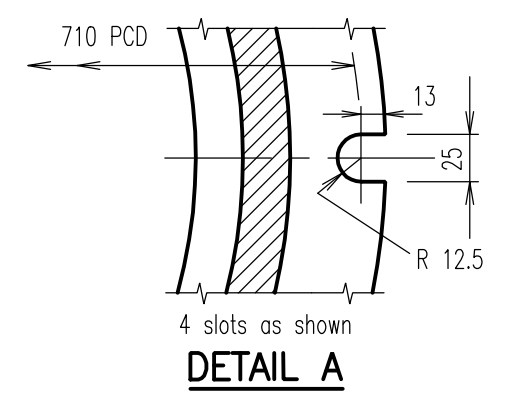
**DETAIL AT LIFTING SLOTS**



**PLAN COVER AND FRAME**



**DETAIL OF HOLDING DOWN BOLTS**



**DETAIL A**

**LEGEND**

✓ Denotes machined surface.

**NOTES:**

1. Mass of cover = 66 kg approx.
2. Mass of frame = 100 kg approx.
3. Cover and frame, grey cast iron Grade  $\geq$  T220 to AS 1830:2007.
4. Cover design Class D to AS 3996:2006.
5. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
6. Bitumen point cover & frame to AS/NZS 3750.4:1994.
7. All dimensions in millimetres.

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B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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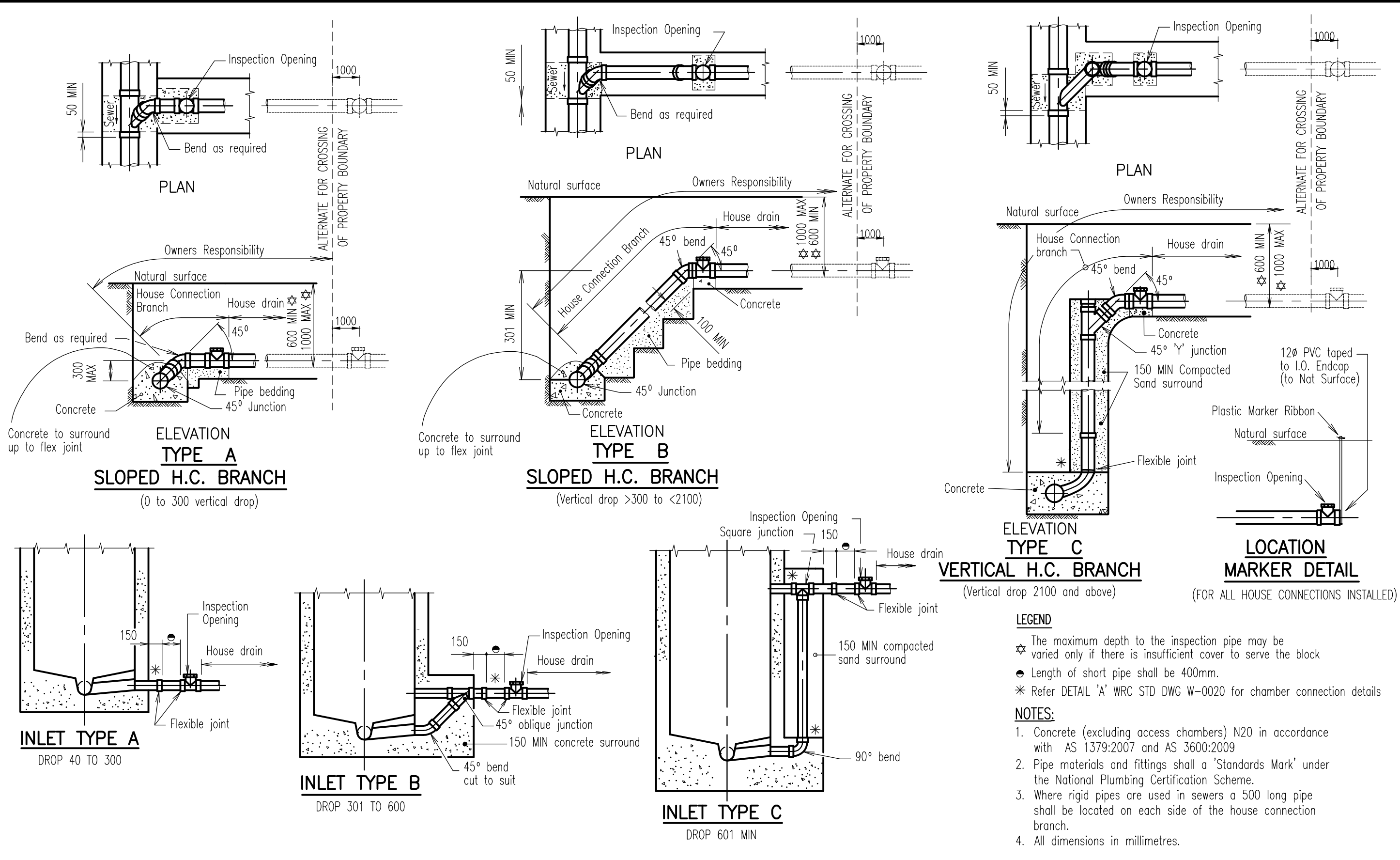
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**ACCESS CHAMBERS  
CAST IRON COVER AND FRAME  
BOLT DOWN**

**SEWERAGE  
Standard  
Drawing  
S-0026**

A	B		
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**LEGEND**

- ☆ The maximum depth to the inspection pipe may be varied only if there is insufficient cover to serve the block
- Length of short pipe shall be 400mm.
- \* Refer DETAIL 'A' WRC STD DWG W-0020 for chamber connection details

**NOTES:**

1. Concrete (excluding access chambers) N20 in accordance with AS 1379:2007 and AS 3600:2009
2. Pipe materials and fittings shall have a 'Standards Mark' under the National Plumbing Certification Scheme.
3. Where rigid pipes are used in sewers a 500 long pipe shall be located on each side of the house connection branch.
4. All dimensions in millimetres.

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A ORIGINAL ISSUE	1/3/97



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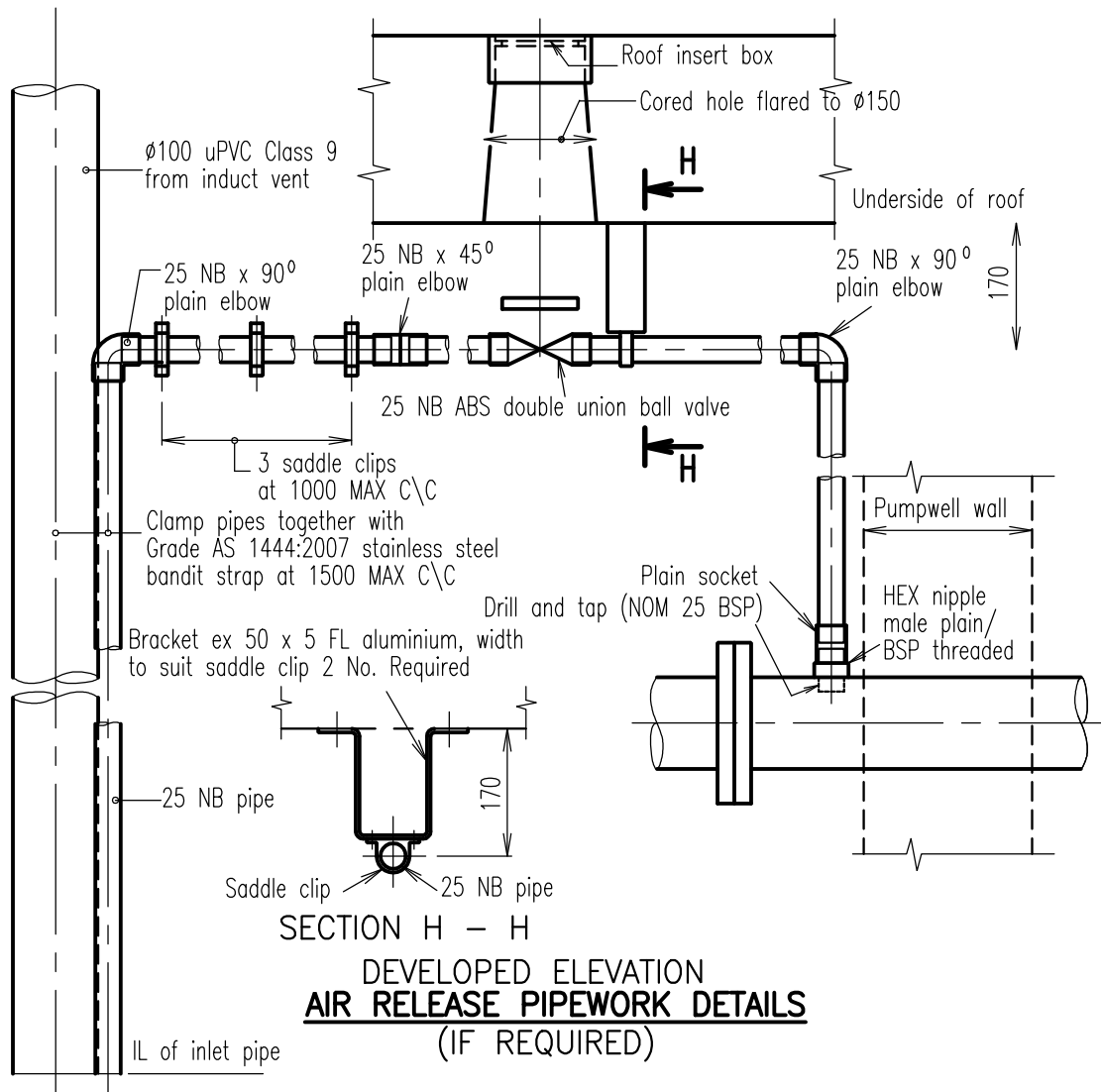
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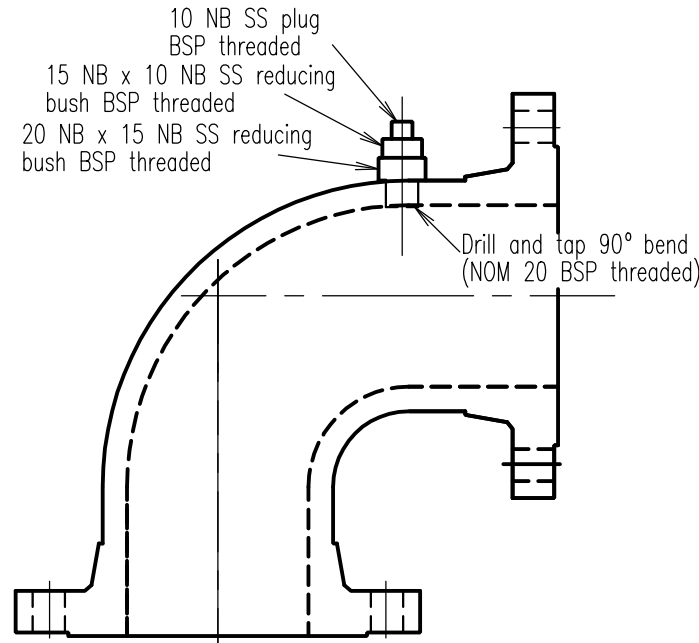
**HOUSE CONNECTION BRANCHES**

**SEWERAGE Standard Drawing S-0030**

A	B	C
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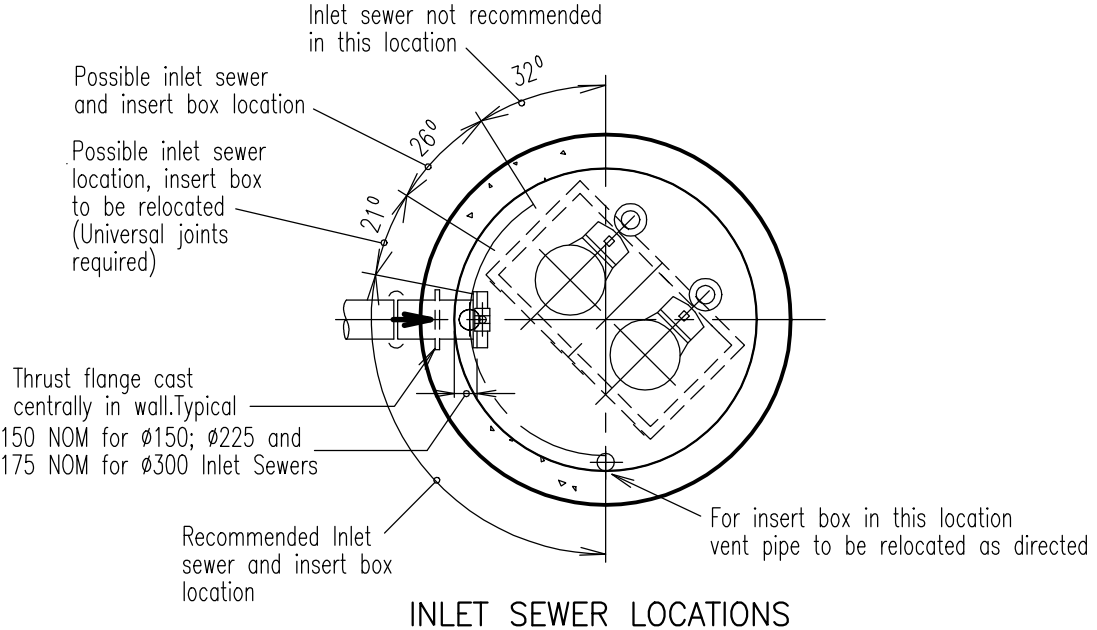
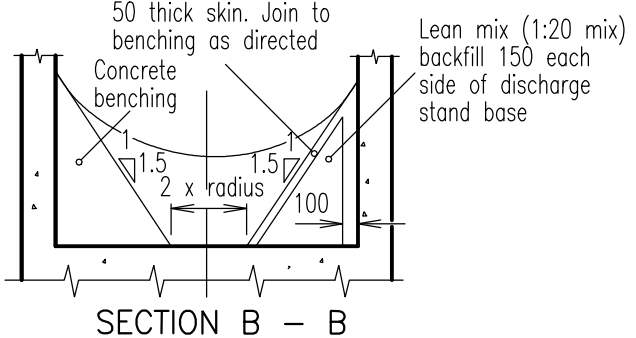
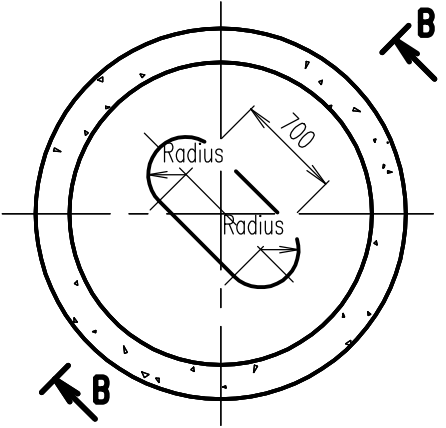
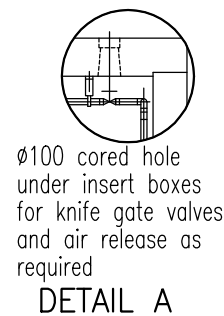


SECTION H - H  
DEVELOPED ELEVATION  
**AIR RELEASE PIPEWORK DETAILS**  
(IF REQUIRED)



**PRESSURE GAUGE ARRANGEMENT**  
SS INDICATES STAINLESS STEEL GRADE 316

- NOTES:**
- Benching dimensions shall be as directed by the Superintendent. The "Radius" at floor level shall be equal to the pump's volute radius with concurrent centre lines. The 700\* dimension shall be adjusted to suit the pump unit spacing. The 50mm thick skin shall be 2:1 fine sand and cement mortar.
  - (a) The isolating valve on the inlet sewer shall be a fully Grade AS 1444:2007 stainless steel lugged knife gate valve including stainless steel superstructure and non-rising spindle adaptor with stainless steel metal to metal seat.  
(b) Reflux valves shall be coated internally and externally with a fusion bonded epoxy and shall be counter weighted.
  - All dimensions in millimetres.



REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B COMBINED PARTS OF S-0050 & S-0054	10/3/98
A ORIGINAL ISSUE	1/3/97



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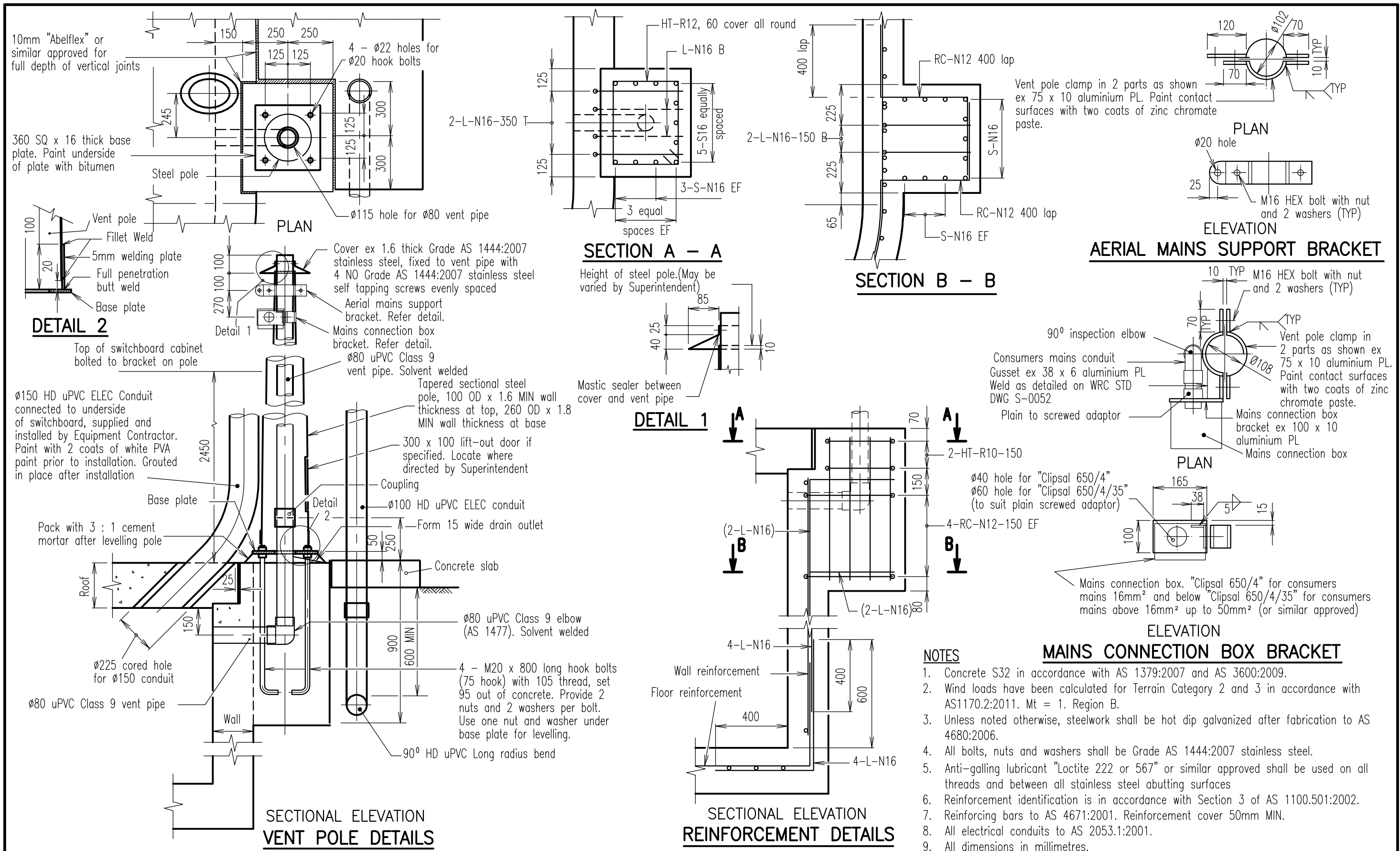
**PROSERPINE**  
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**1800 mm DIA. & 2400 mm DIA**  
**PRESSURE GAUGE ARRANGEMENT**  
**AIR RELEASE PIPEWORK DETAILS**

**SEWERAGE Standard Drawing S-0050**

A	B	C
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B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97


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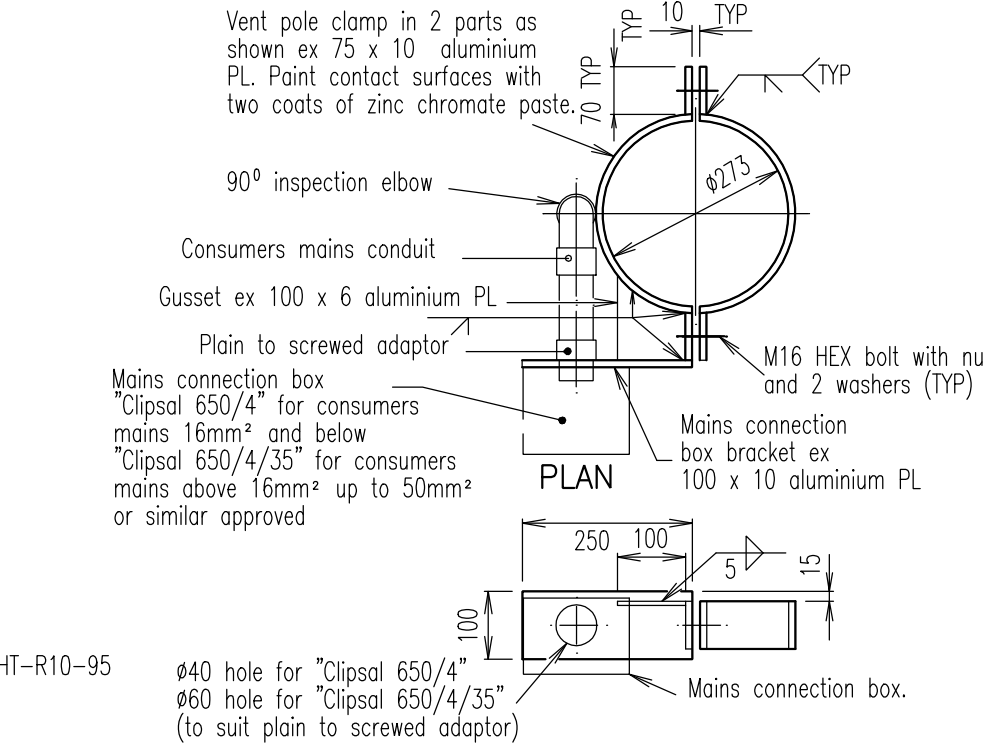
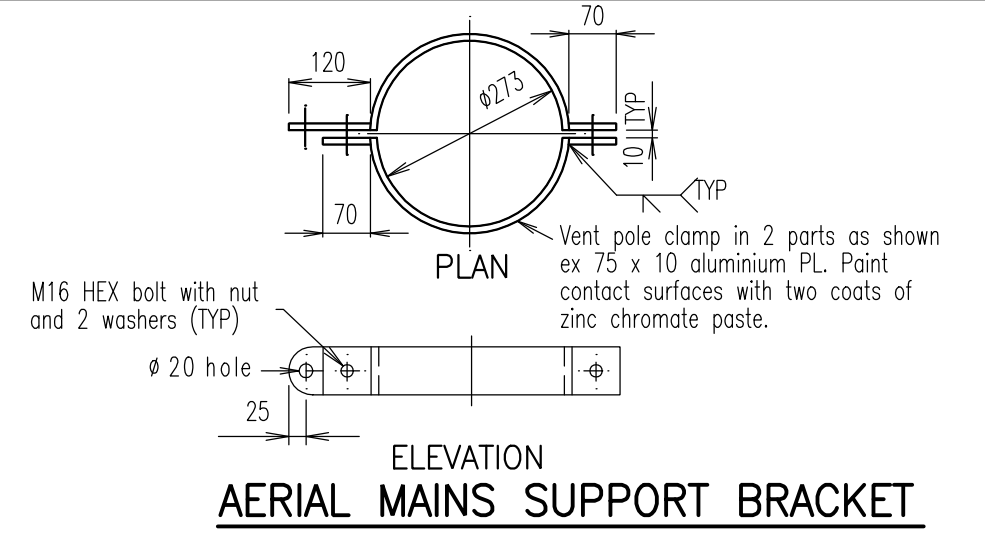
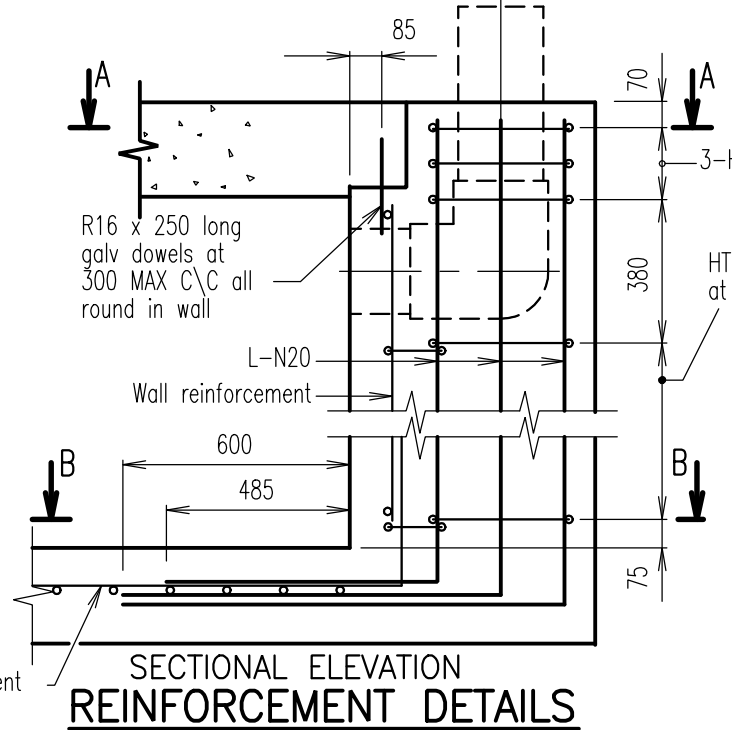
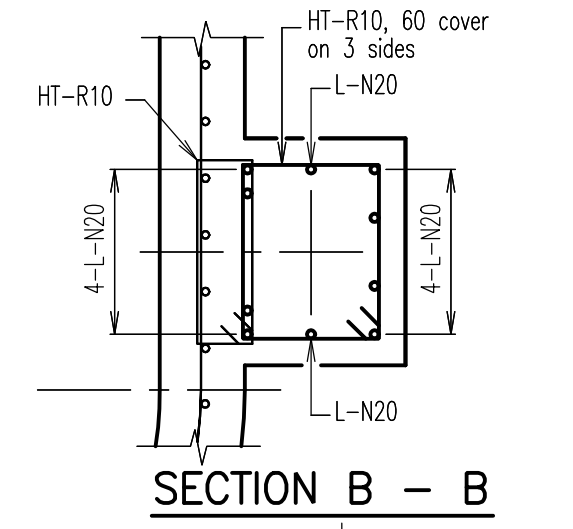
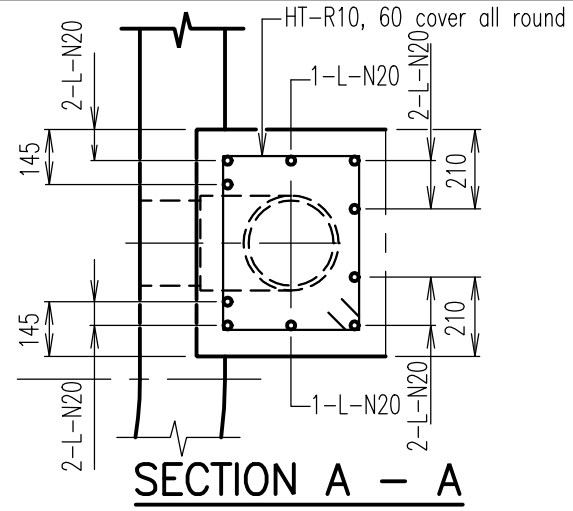
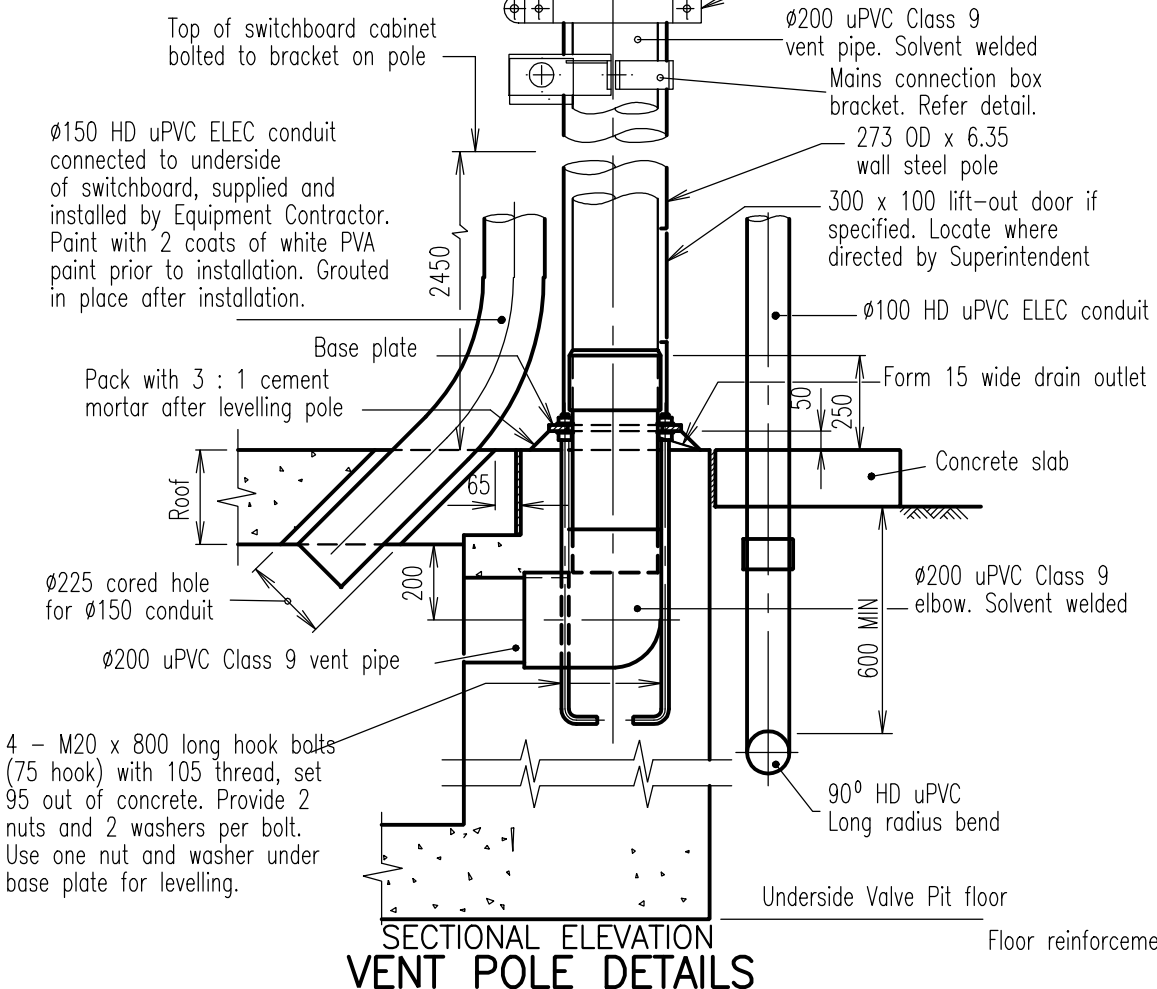
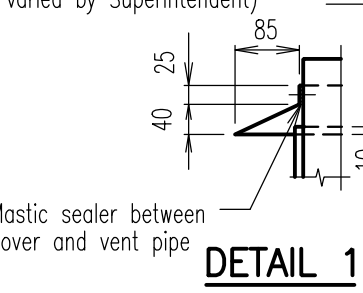
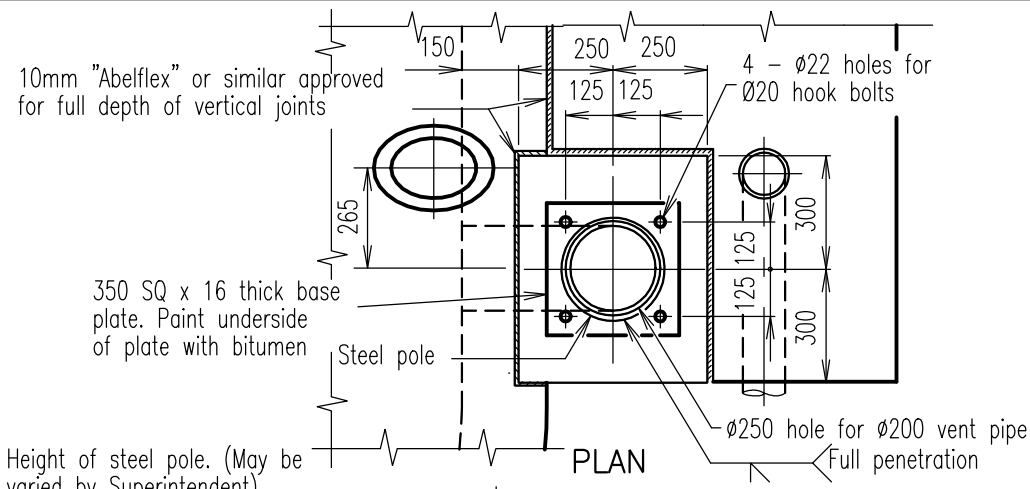
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**7.2m VENT POLE**  
**TERRAIN CAT 2 AND 3**

**SEWERAGE**  
 Standard Drawing  
**S-0051**

A B



- NOTES:
- Concrete S32 in accordance with AS 1379:2007 and AS 3600:2009.
  - Wind loads have been calculated for Terrain Category 2 and 3 in accordance with AS 1170.2:2011. Mt = 1. Region B.
  - Unless noted otherwise, steelwork shall be hot dip galvanized after fabrication to AS 4680:2006.
  - All bolts, nuts and washers shall be Grade AS 1444:2007 stainless steel.
  - Anti-galling lubricant "Loctite 222 or 567" or similar approved shall be used on all threads and between all stainless steel abutting surfaces
  - Reinforcement identification is in accordance with Section 3 of AS 1100.501:2002.
  - Reinforcing bars to AS 4671:2001. Reinforcement cover 50mm MIN.
  - All electrical conduits to AS 2053.1:2001.
  - All dimensions in millimetres.

REVISIONS	DATE
B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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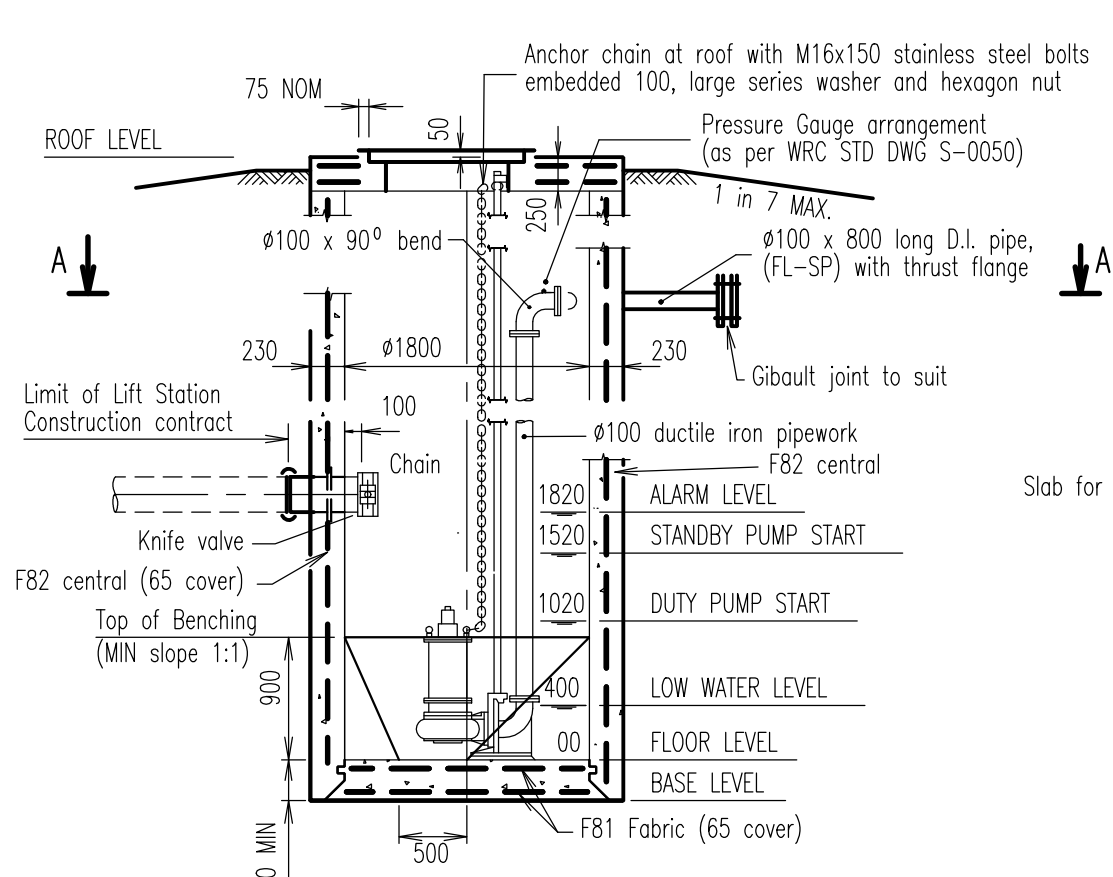
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**12.0m VENT POLE**  
**TERRAIN CAT 2 AND 3**

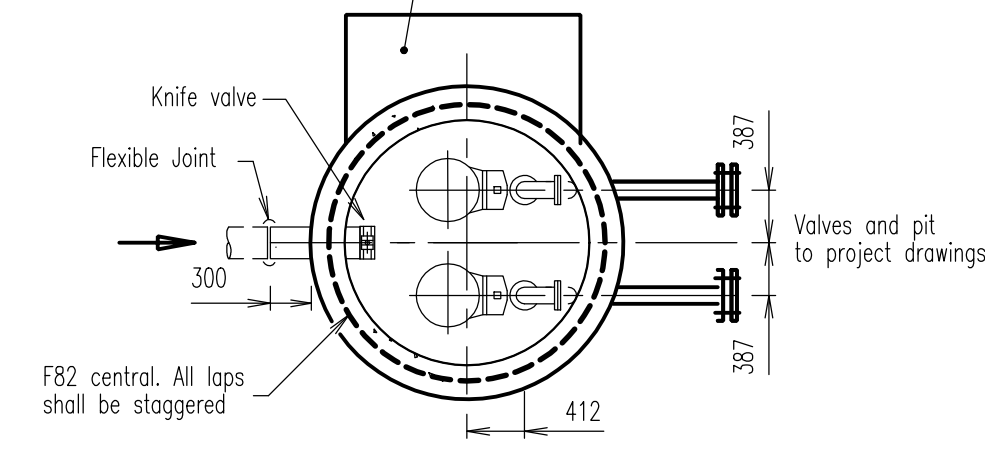
**SEWERAGE Standard Drawing S-0052**

A	B		
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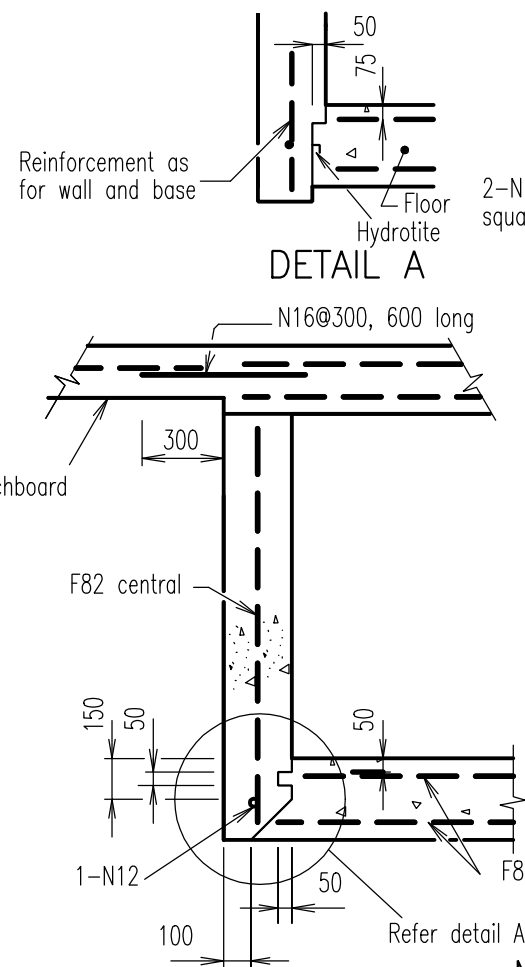


**SECTIONAL ELEVATION**

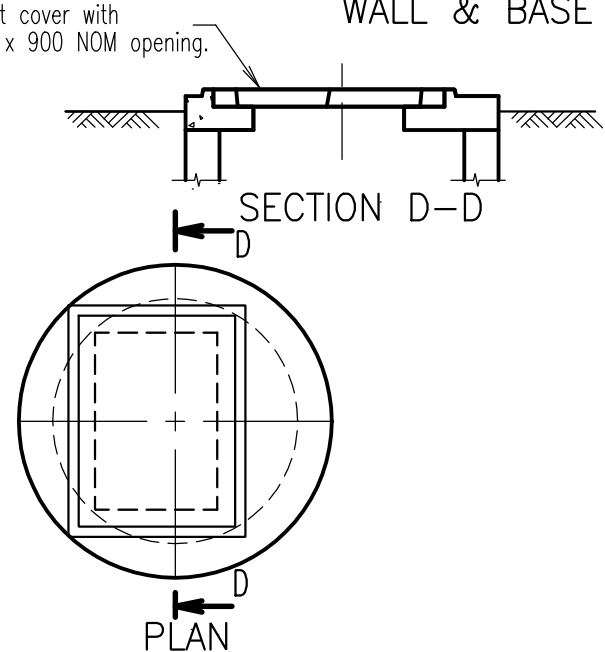
Concrete slab for switchboard 150mm thick reinforced with F82 placed centrally 50 edge cover. Refer project drawings for shape of slab and conduit requirements



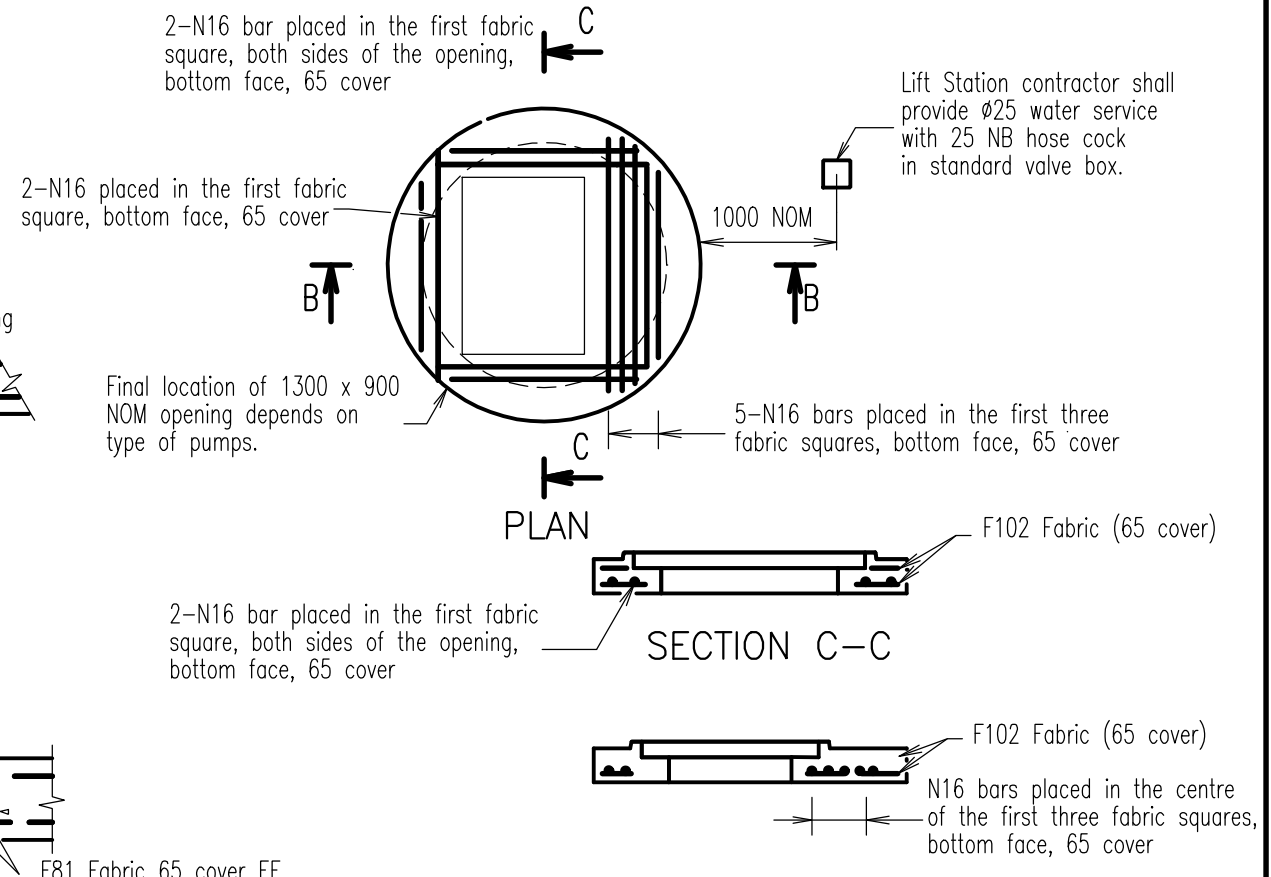
**SECTION A-A**



**WALL & BASE**



**ALUMINIUM COVERS**



**SECTION B-B**

**NOTES: REINFORCEMENT DETAILS**

1. Refer project documentation for specific details.
2. Joint between roof and walls shall be well scabbled and roof shall be bedded in mortar containing an approved waterproof adhesive additive to manufacturer's instructions.
3. Concrete S32 in accordance with AS 1379:2007 and AS 3600:2009.
4. Steel reinforcing bars and fabric to AS 4671:2001.
5. All internal surfaces of the pumpwell and valve pit shall be coated with Peerless Emulsion "Epigen 1311" or Wattyl "Sigmaguard CSF75". The concrete surface shall be smooth and free from holes and lightly sandblasted or acid-etched before painting. The concrete surface shall have cured for not less than 28 days. The paint shall be applied in two coats with a total dry film thickness of not less than 600 microns.
6. Floor thicknesses shown are minimum only, thickness to counter flotation of structure shall be determined by the designer.
7. The covers shall be gastight similar to those produced by Halco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998 All embedded surfaces shall be painted with two coats of alkali resistant bitumous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
8. If covers are subject to vehicular loading, use appropriately rated C.I. covers to AS 3996:2006.
9. All welds to AS 1554.1:2014 All welding symbols comply with AS 1101.3:2005.
10. An overflow shall be provided with the invert level 300 below the surface level of the lowest chamber in the system, subject to the approval by D.E.H.
11. Roof design to Austroads W7 wheel load, dynamic factor 0.4.
12. Wall reinforcement based on well depth of 8m MAX.
13. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B KNIFE VALVES ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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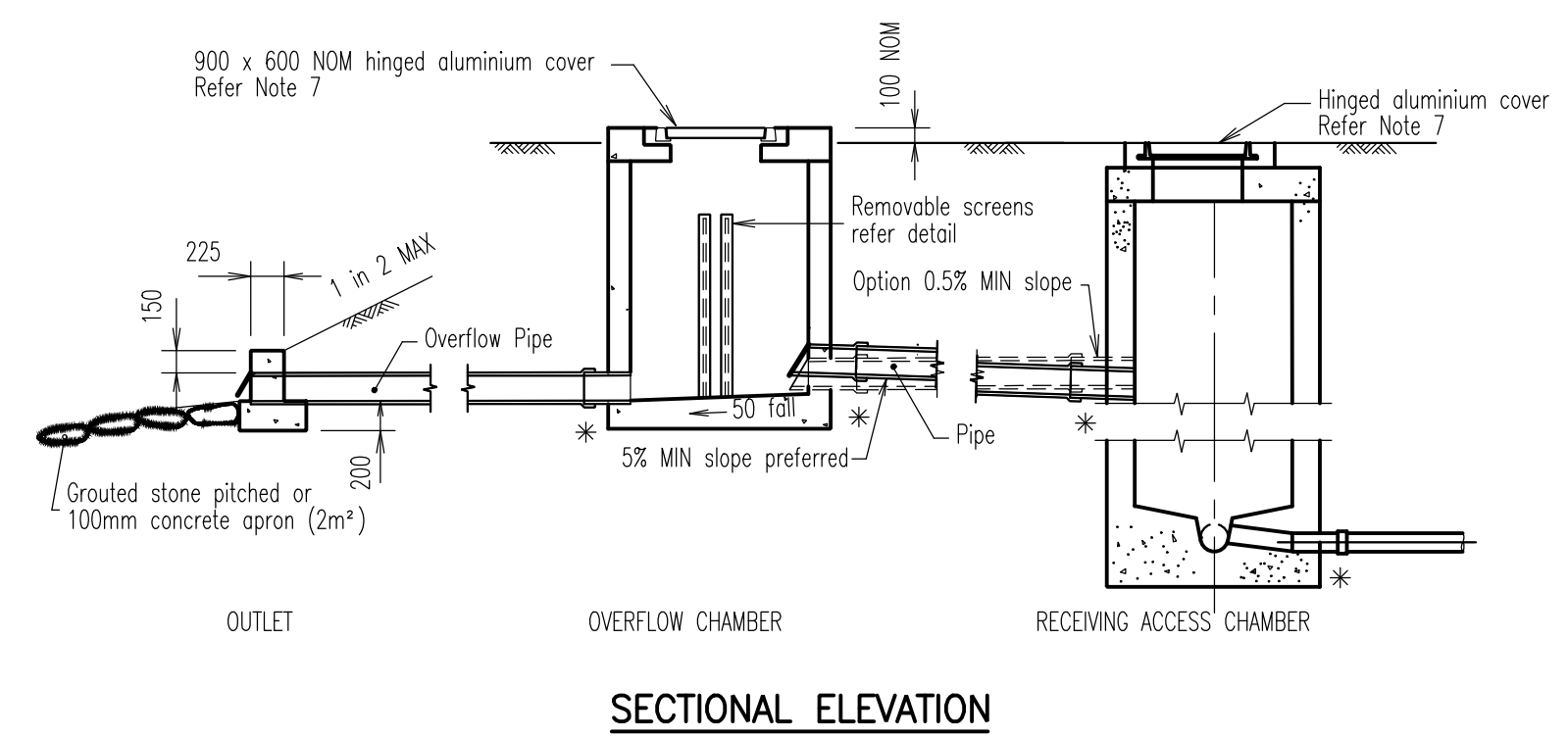
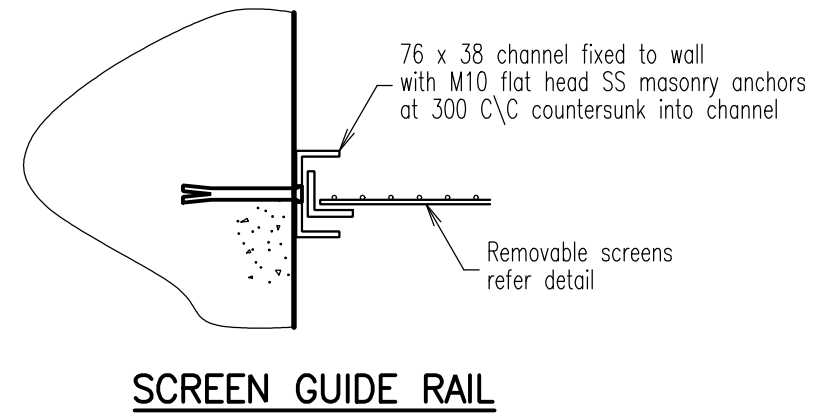
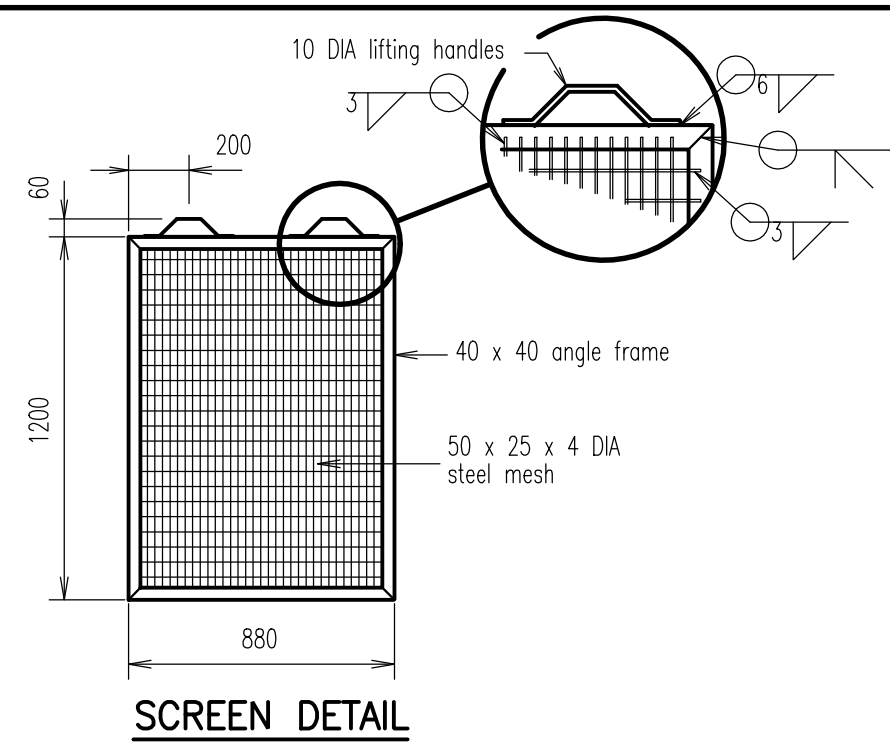
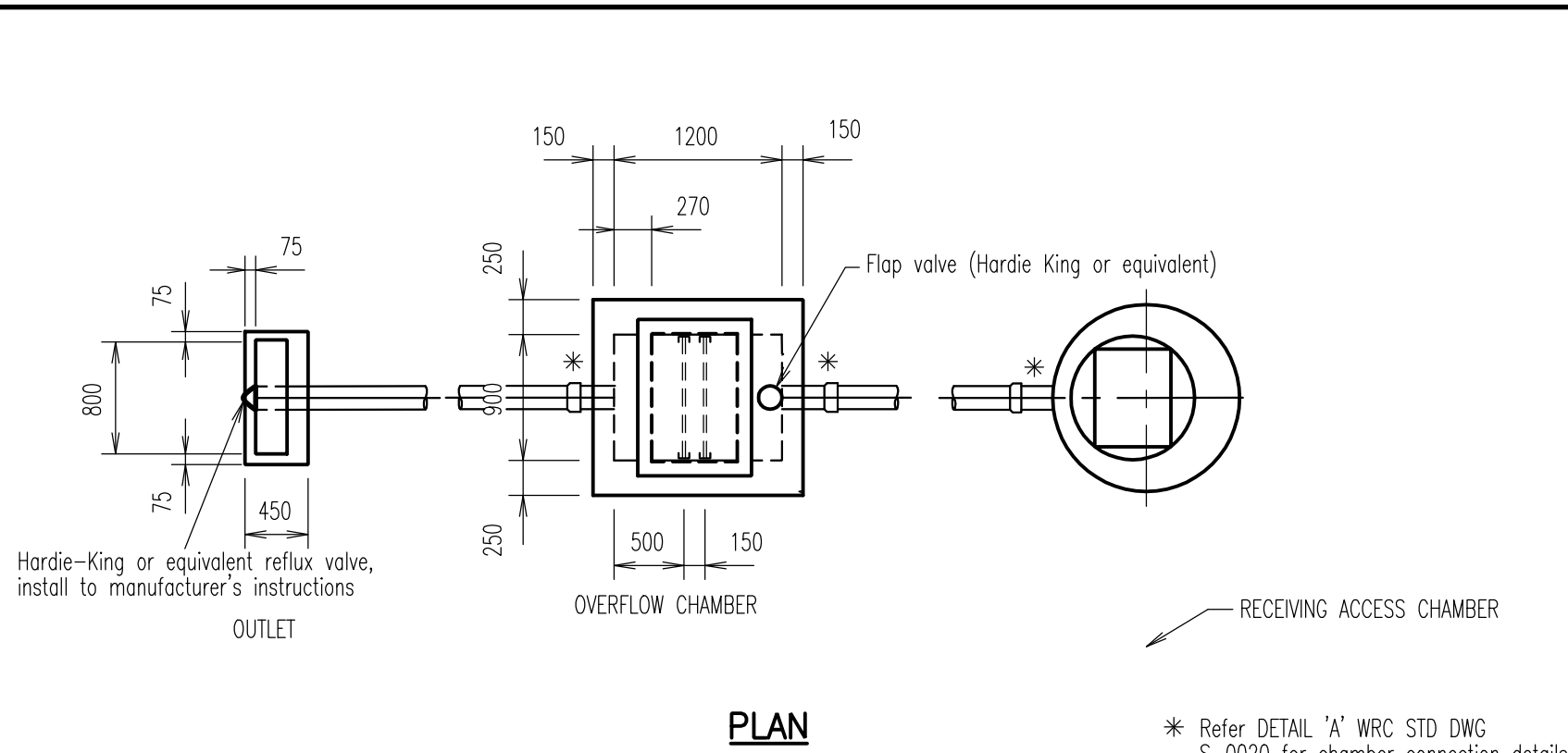
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**LIFT STATION - SUBMERSIBLE  
1800mm DIAMETER (0-20L/Sec)**

**SEWERAGE  
Standard  
Drawing  
S-0057**

A	B	C
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- NOTES:**
1. Pipes shown are diagrammatic only, refer project drawings for layout and levels.
  2. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  3. All steelwork hot dip galvanised to AS/NZS 4680:2006 after fabrication.
  4. All bars and angles Grade 250 to AS/NZS 3679.1:2016.
  5. All bolts, nuts and washers shall be Grade AS 1444:2007 stainless steel with approved anti-galling compound.
  6. All welds to AS 1554.1:2014 All welding symbols comply with AS 1101.3:2005.
  7. The covers shall be gastight similar to those produced by Hallco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998. All embedded surfaces shall be painted with two coats of alkali resistant bitumous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
  8. If covers are subject to vehicular loading, use appropriately rated C.I. covers.
  9. All dimensions in millimetres.

REVISIONS	DATE
B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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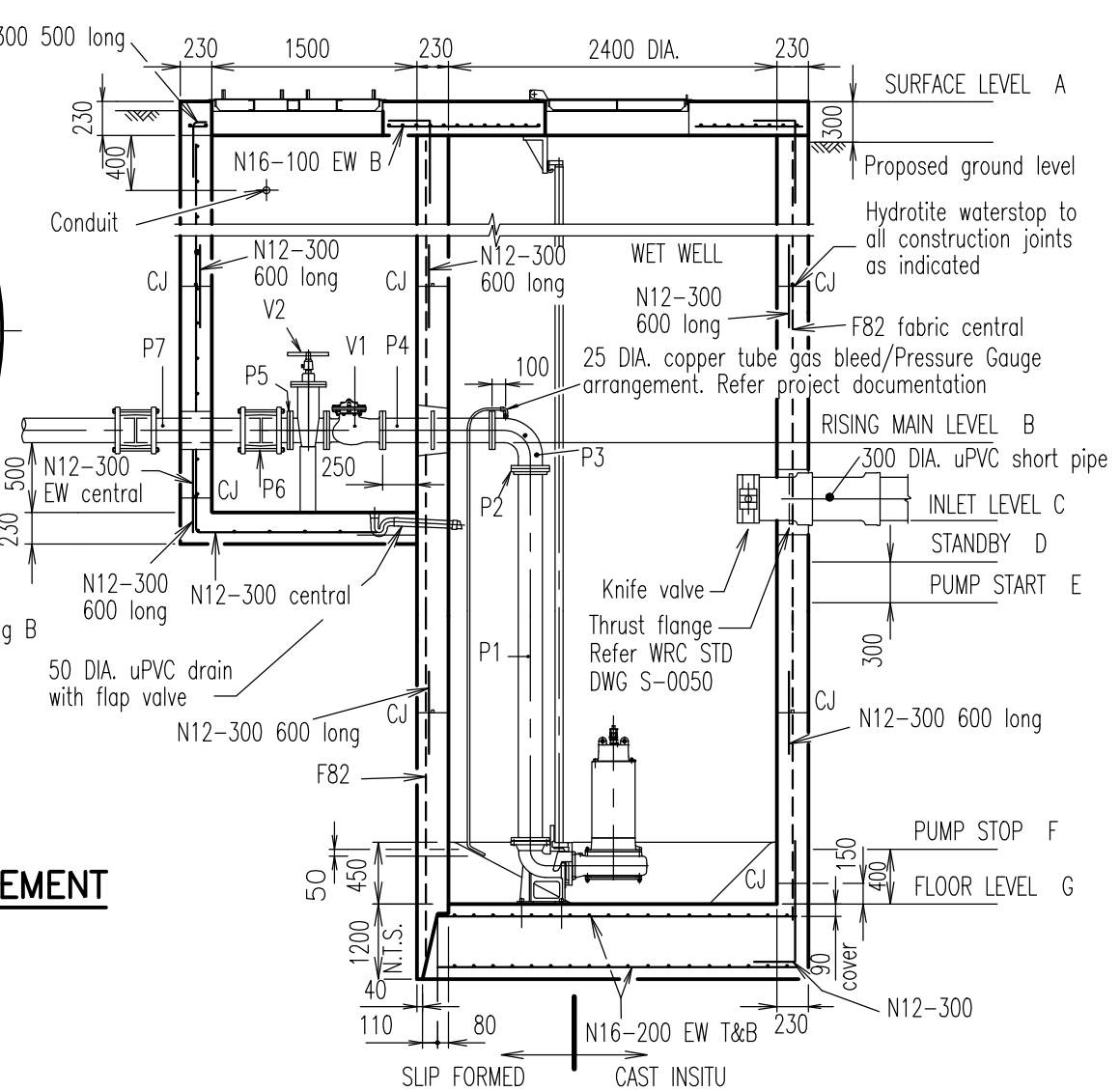
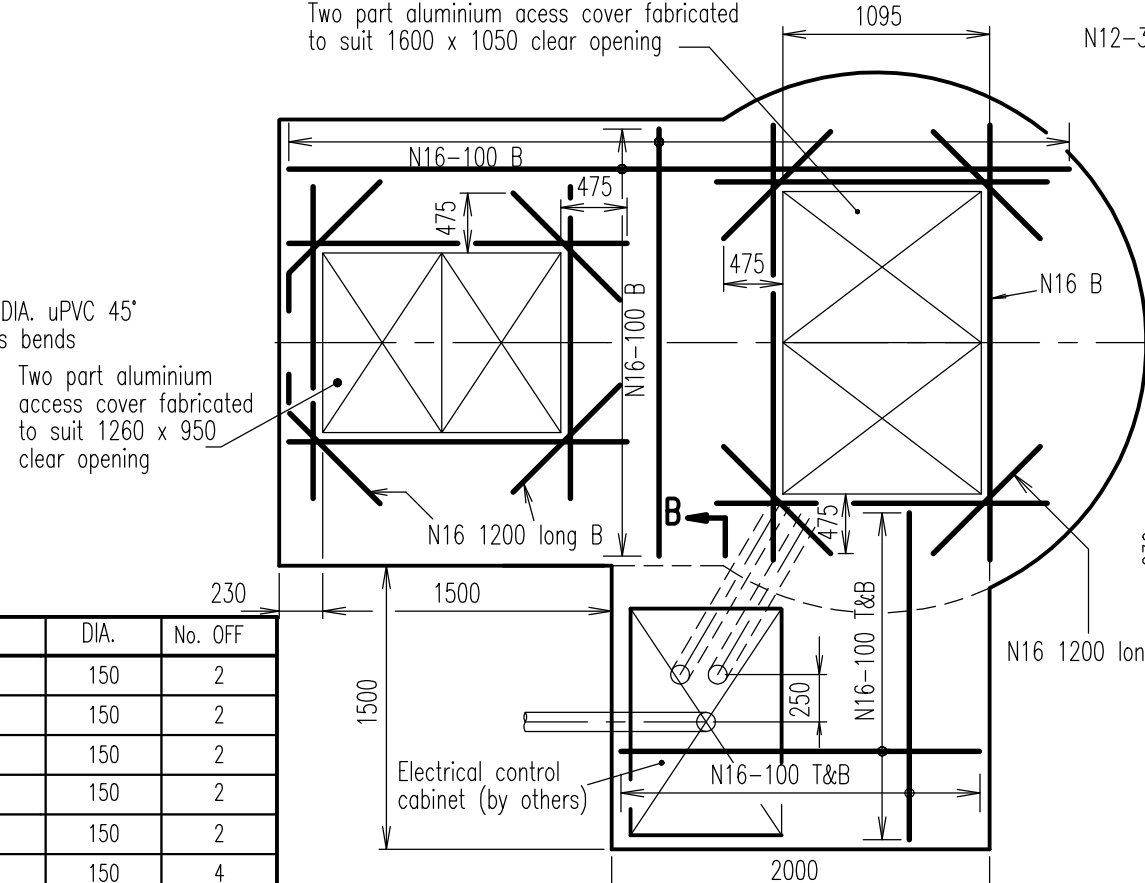
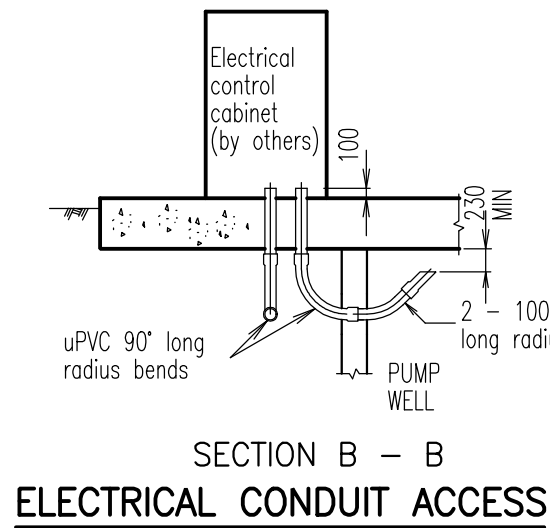
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**PUMP STATION OVERFLOW**

**SEWERAGE  
Standard  
Drawing  
S-0058**

A	B		
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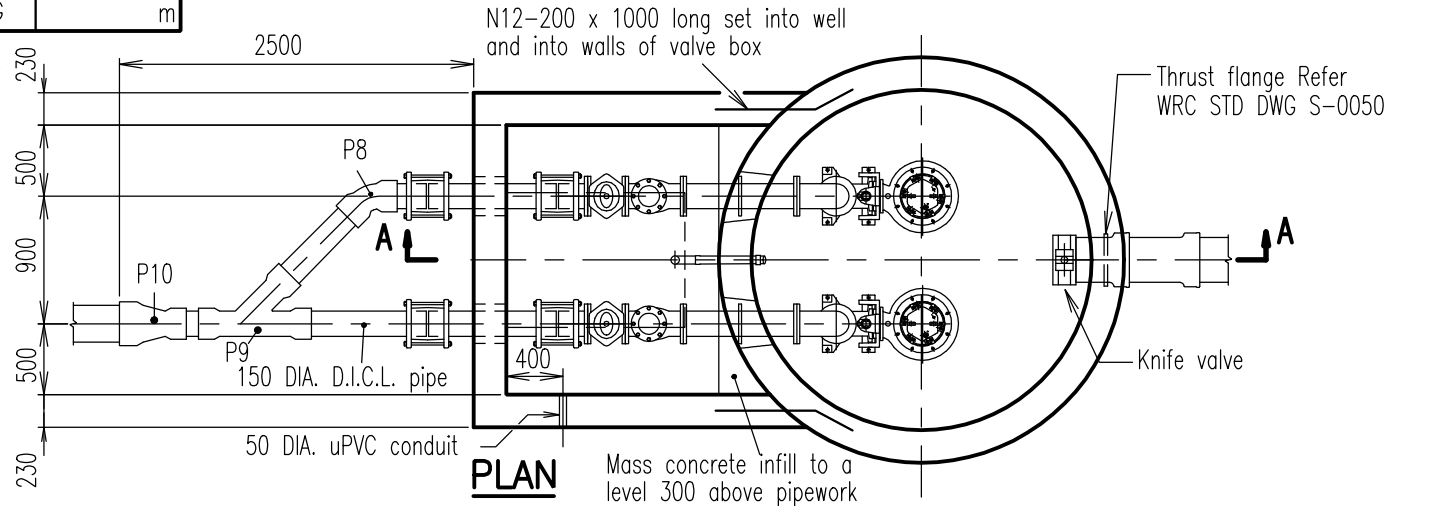
**PIPE SCHEDULE**

MARK	DESCRIPTION	DIA.	No. OFF
P1	Flange and plain pipe x 3600 - Length cut to suit	150	2
P2	Uniflange	150	2
P3	Flanged 90° bend with 25mm DIA. B.S.P. tapping	150	2
P4	Flanged pipe x 800 long with central thrust flange	150	2
P5	Flange and spigot connector	150	2
P6	Gibault joint (long type)	150	4
P7	Plain pipe x 900 long	150	2
P8	Socketed 45° D.I.C.L. bend	150	1
P9	Socketed 45° D.I.C.L. angle branch	150	1
P10	Socketed D.I.C.L. taper	150x225	1
V1	Flanged reflux valve with counter weight	150	2
V2	Flanged sluice valve with hardwheel	150	2

**STATION DATA**

Make of pump	
Model number	
Duty flow / head	As specified
Surface Level	A m
Rising Main Level	B m
Inlet Level	C m
Standby Level (300 below C)	D m
Duty Start Level	E m
Pump Stop Level	F m
Floor Level (400 below F)	G m

- NOTES:**
- Concrete S40 in accordance with AS 1379:2007 and AS 3600:2009.
  - Cored holes in well for pipework shall be tapered, being 25 larger in diameter than the flange at the inside face and 50 larger at the outside face.
  - Steel wire fabric to AS/NZS 4671:2001.
  - Steel reinforcing bars Grade 400 to AS/NZS 4671:2001.
  - Laps in reinforcing shall be 300 MIN. for bars and 1 (one) mesh spacing for fabric.
  - Reinforcement cover 65 MIN except where noted otherwise.
  - All internal surfaces of the pumpwell and valve pit shall be coated with Peerless Emulsion "Epigen 1311" or Wattyl "Sigmaguard CSF75". The concrete surface shall be smooth and free from holes and lightly sandblasted or acid-etched before painting. The concrete surface shall have cured for not less than 28 days. The paint shall be applied in two coats with a total dry film thickness of not less than 600 microns.
  - Pumpwell concrete opening size shall be 1600 x 1050 and valve box concrete opening size shall be 1260 x 950 with aluminium covers, refer WRC STD DWG S-0060. (Consult Pump manufacturer)
  - Location of conduits to be confirmed by Superintendent prior to construction of plinth.
  - All dimensions in millimetres unless otherwise specified.



REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B KNIFE VALVES ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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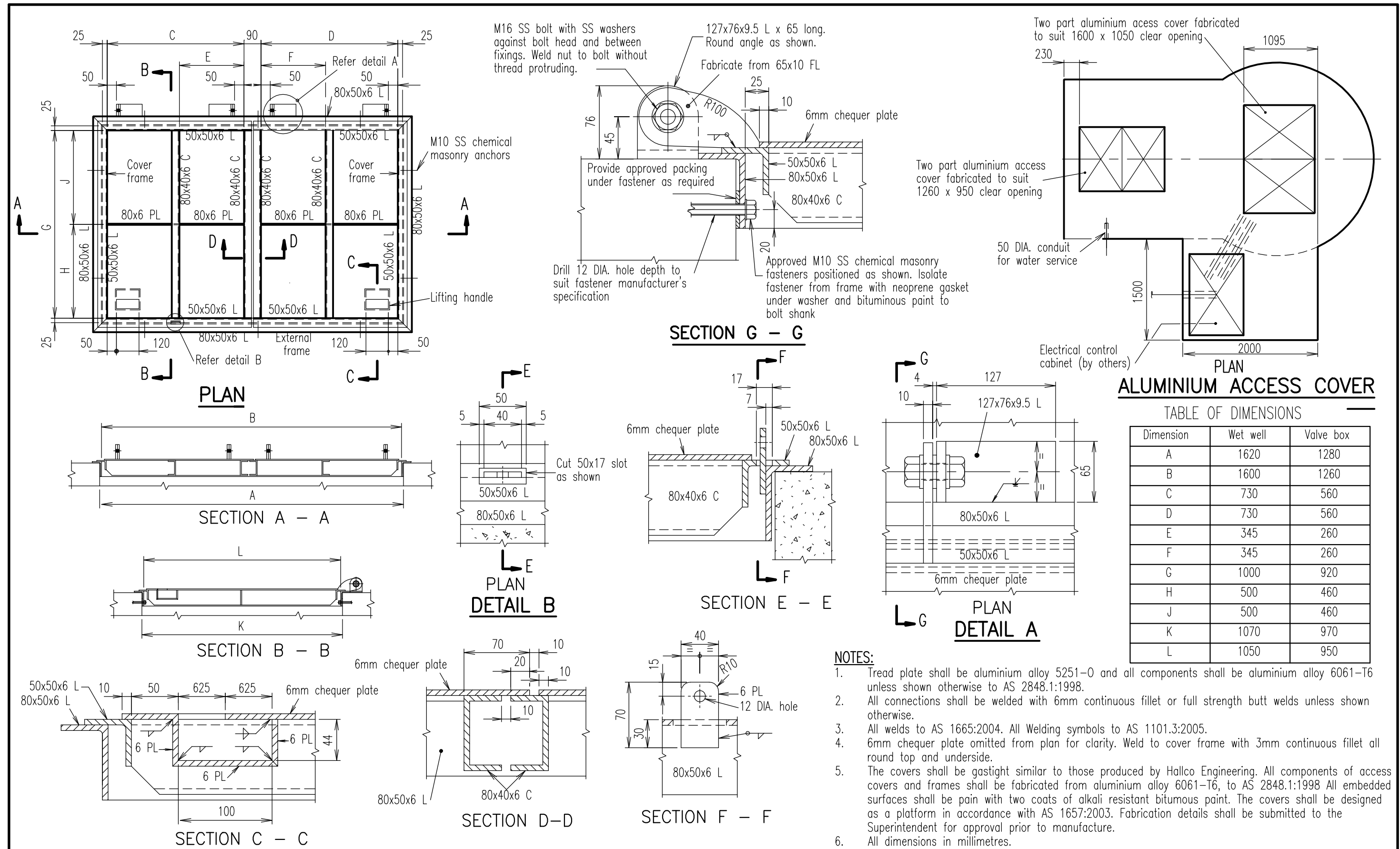
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**GENERAL ARRANGEMENT - REINFORCEMENT 2400mm DIA.**

**SEWERAGE Standard Drawing S-0059**



**ALUMINIUM ACCESS COVER**

TABLE OF DIMENSIONS

Dimension	Wet well	Valve box
A	1620	1280
B	1600	1260
C	730	560
D	730	560
E	345	260
F	345	260
G	1000	920
H	500	460
J	500	460
K	1070	970
L	1050	950

**NOTES:**

1. Tread plate shall be aluminium alloy 5251-0 and all components shall be aluminium alloy 6061-T6 unless shown otherwise to AS 2848.1:1998.
2. All connections shall be welded with 6mm continuous fillet or full strength butt welds unless shown otherwise.
3. All welds to AS 1665:2004. All Welding symbols to AS 1101.3:2005.
4. 6mm chequer plate omitted from plan for clarity. Weld to cover frame with 3mm continuous fillet all round top and underside.
5. The covers shall be gastight similar to those produced by Halco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998 All embedded surfaces shall be pain with two coats of alkali resistant bituminous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
6. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B NOTE 5 ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97

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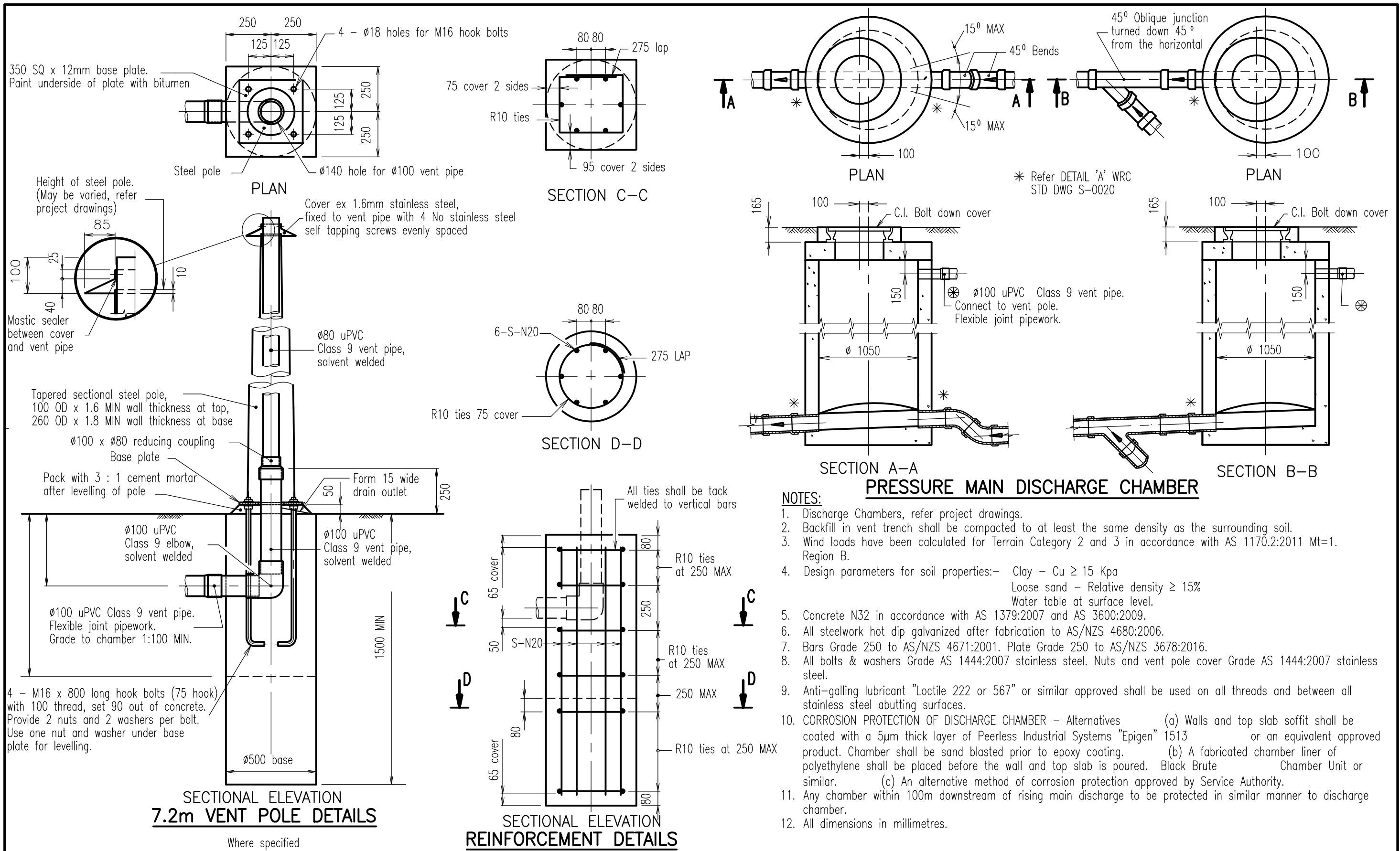
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**ALUMINIUM COVERS AND FRAMES**  
**2400mm DIA.**

**SEWERAGE Standard Drawing S-0060**

A B C



REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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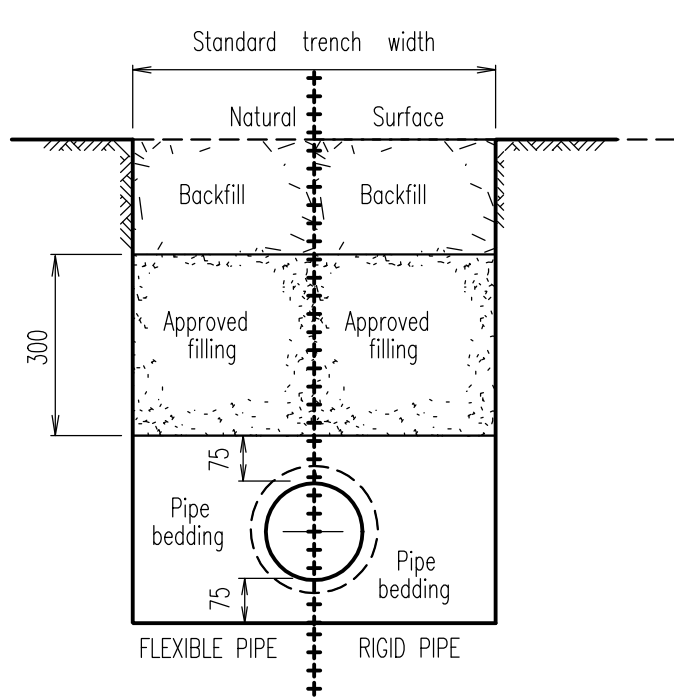
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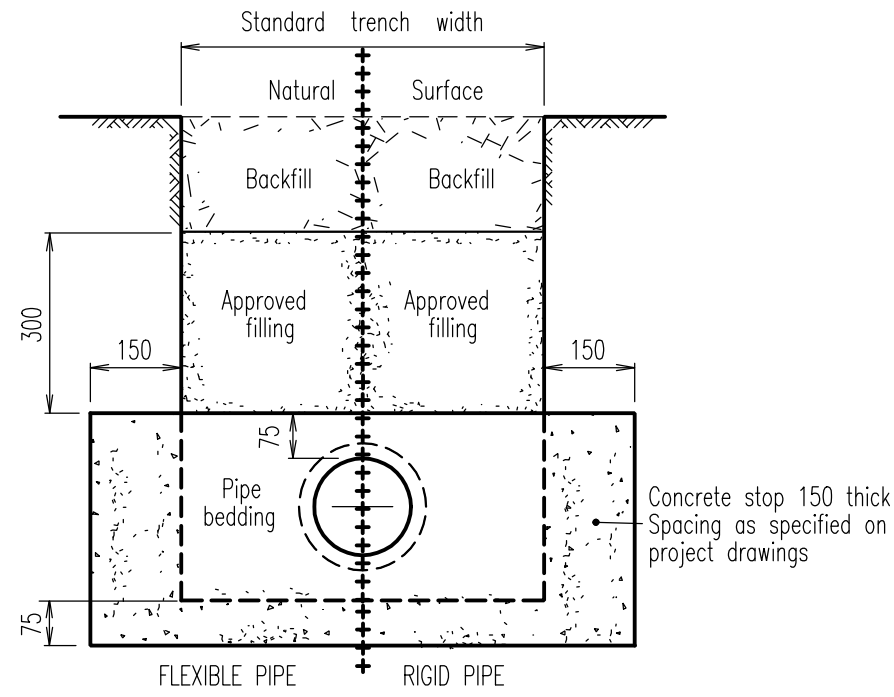
**PRESSURE MAIN DISCHARGE DETAILS**

**SEWERAGE Standard Drawing S-0070**

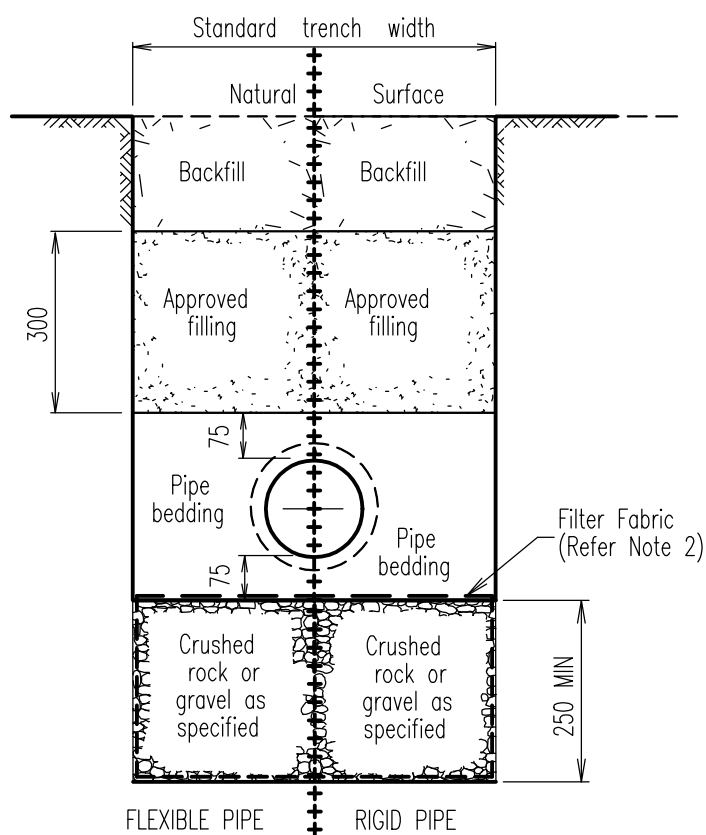
A	B	C
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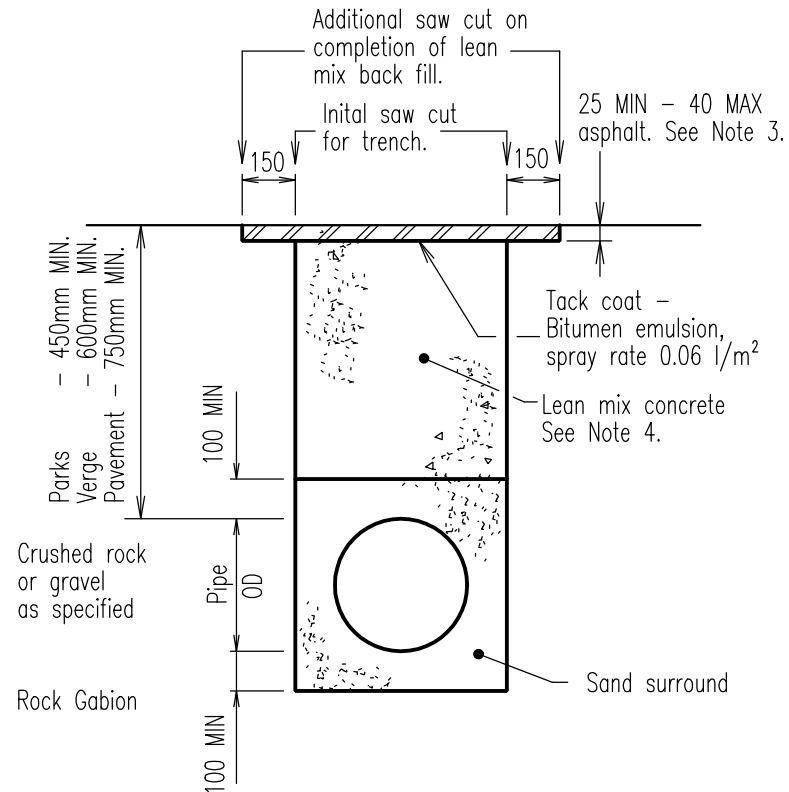
**TYPICAL BEDDING**



**TRENCH STOP/BULKHEAD**



**TYPICAL BEDDING IN POOR GROUND**



**TYPICAL BEDDING UNDER EXISTING ROADS**

Refer to WSA-02 for bedding and backfill details where conditions vary from these shown hereon.

**NOTES:**

- Pipe bedding classification
  - Rigid Pipes : Vitrified clay, steel, ductile iron, fibre cement and concrete.
  - Flexible Pipes : Unplasticised polyvinyl chloride, glass filament reinforced thermosetting plastics, acrylonitrile butadiene styrene and polyethylene.
- An approved geotextile fabric shall be used in all trenches around crushed rock pipe bedding.
- The road surface finish shall be asphaltic concrete or other surface specified in the project drawings or by the Superintendent.
- Backfilling under roads shall be lean mix (1:20) low slump concrete (or an approved equivalent) compacted in lifts of 125 to 150mm.
- Sand surround (compacted in 150mm layers) > 70% D.I. or 95% standard compaction in bedding and side support. Density index (D.I.) as per AS 1289.5.6.1:1998 Standard compaction as per AS 1289.5.1.1:2003.
- Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
- All dimensions in millimetres.

DIA of Pipe	100	150	225	300	375	450	525	600	675	750	825	900
Standard trench width	600	600	675	750	825	900	1000	1075	1150	1300	1375	1450

B	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A	ORIGINAL ISSUE	1/3/97
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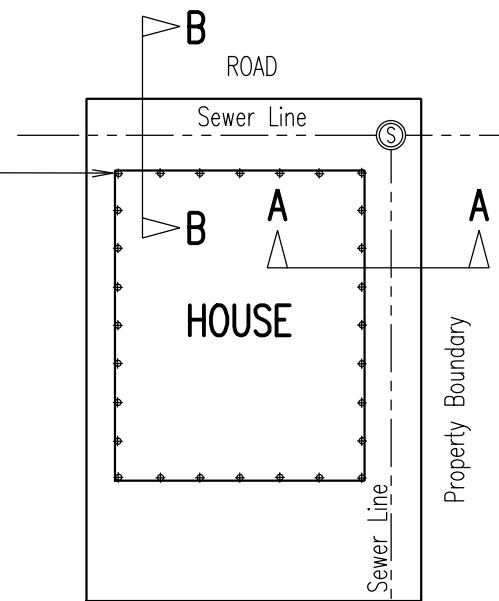
**SEWER CONSTRUCTION  
PIPELINE CONSTRUCTION TYPES**

**SEWERAGE  
Standard  
Drawing  
S-0090**

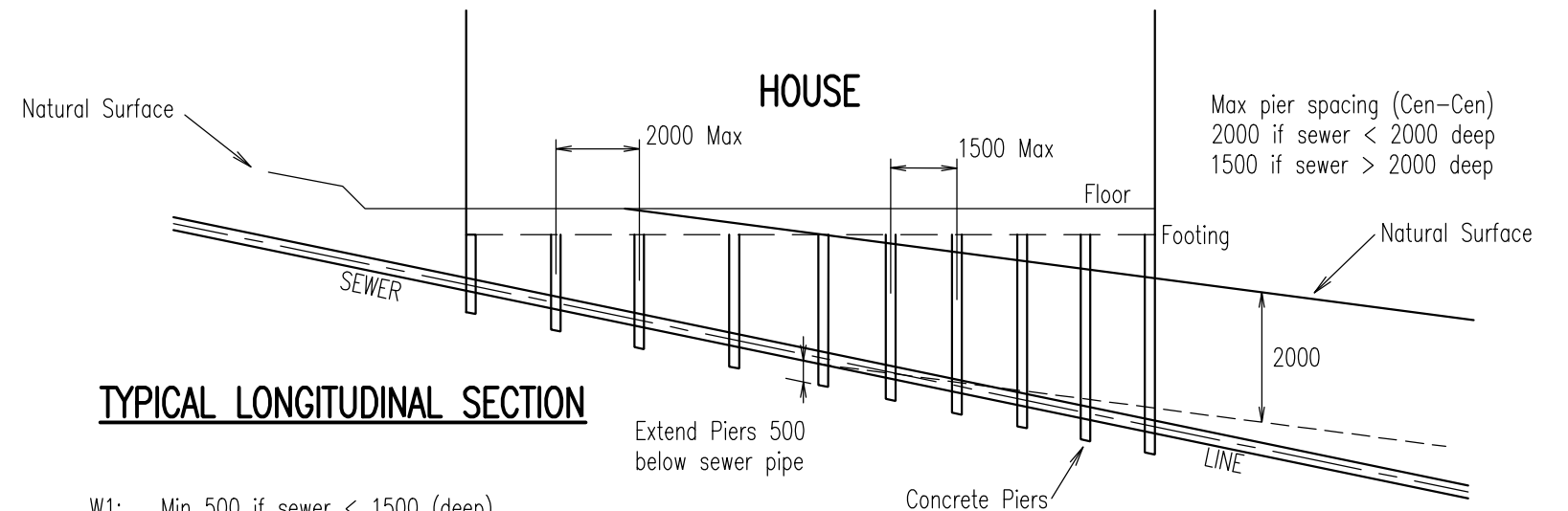
A	B		
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Concrete Piers  
 Max pier spacing (Cen-Cen)  
 2000 if sewer < 2000 deep  
 1500 if sewer > 2000 deep



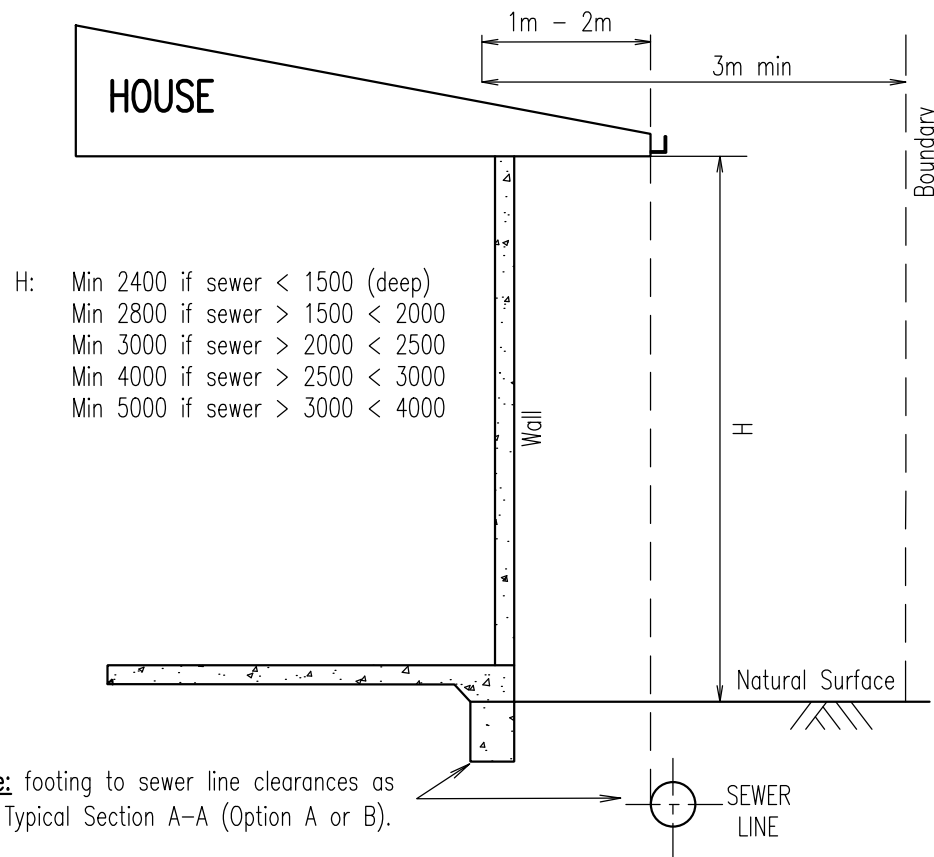
**TYPICAL SITE PLAN**



**TYPICAL LONGITUDINAL SECTION**

W1: Min 500 if sewer < 1500 (deep)  
 Min 800 if sewer > 1500 < 2000  
 Min 1000 if sewer > 2000 < 2500  
 Min 1200 if sewer > 2500

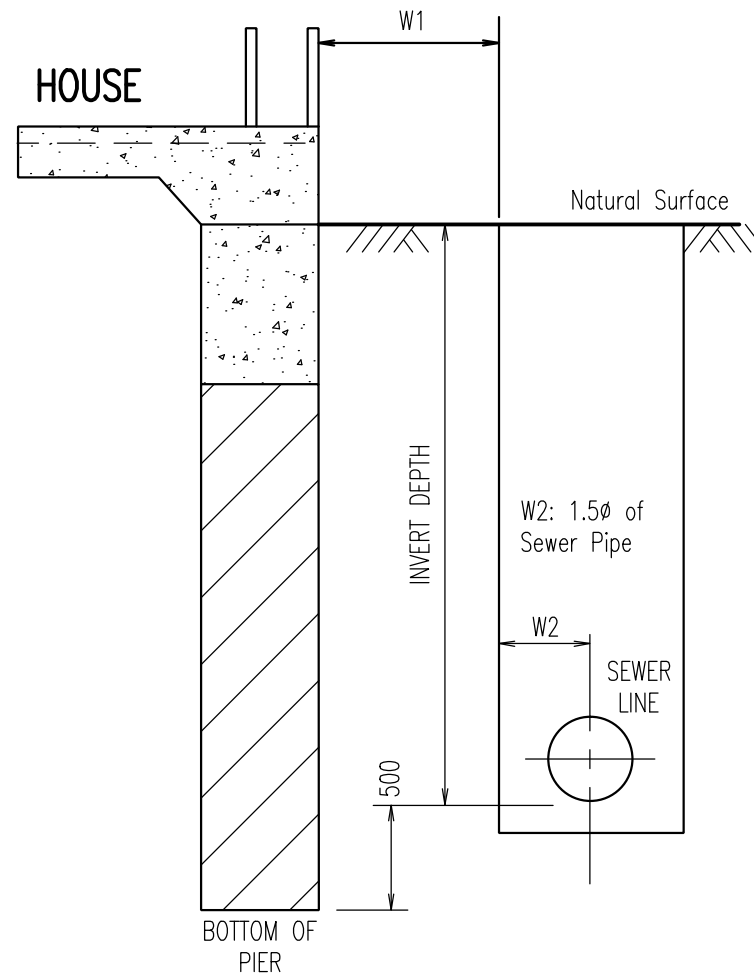
**Note:** Invert Depths of conc piers sewer pipe to be supplied with building plans



H: Min 2400 if sewer < 1500 (deep)  
 Min 2800 if sewer > 1500 < 2000  
 Min 3000 if sewer > 2000 < 2500  
 Min 4000 if sewer > 2500 < 3000  
 Min 5000 if sewer > 3000 < 4000

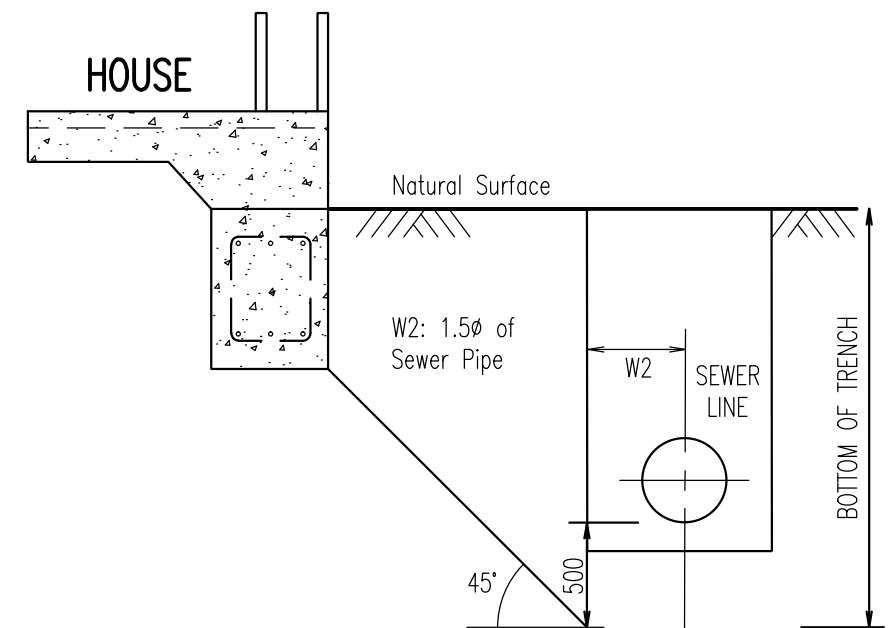
**Note:** footing to sewer line clearances as per Typical Section A-A (Option A or B).

**TYPICAL SECTION B-B ROOF EAVE CLEARANCE**



**TYPICAL SECTION A-A OPTION A (PIERS)**

Where line of influence cannot be achieved



**TYPICAL SECTION A-A OPTION B (RING BEAM)**

• Alternatively provide soil analysis, specifically pressure bulb testing.

**NOTES:**

1. Design to be Certified as providing for adequate support to building in the event of maintenance excavation to adjacent sewer pipeline.
2. All dimensions in millimetres.

REVISIONS	DATE
F GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
E DIMENSIONAL CHANGES, EAVE CLEARANCE ADDED	25/8/10
D MINOR DIMENSIONAL CHANGES	06/9/07
C 1500 MIN CHANGE	15/6/98
B DIMENSIONAL CHANGES	10/3/98
A ORIGINAL ISSUE	1/3/97



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**PIER DETAILS FOR BUILDINGS  
 IN CLOSE VICINITY TO SEWER LINE**

**SEWERAGE  
 Standard  
 Drawing  
 S-0091**

B C D E F

Std. Dwg. No.	Descriptions	Std. Dwg. No.	Descriptions
	<b>AIR VALVES</b>		<b>WATER CONNECTIONS AND METERING</b>
W-0010	AIR VALVE PIT, ø50 AND ø80 VALVES	W-0090	WATER CONNECTIONS SINGLE AND DOUBLE ABOVE GROUND METER
	<b>AS CONSTRUCTED</b>	W-0091	WATER CONNECTION SINGLE AND DOUBLE BELOW GROUND METER
W-0020	WATER RETICULATION, SAMPLE AS CONSTRUCTED PLAN	W-0092	WATER CONNECTION SINGLE AND DOUBLE ABOVE GROUND METER ALTERNATIVES
W-0021	WATER TRUNK MAIN, SAMPLE AS CONSTRUCTED PLAN	W-0093	SUPPLY WITH AND WITHOUT BYPASS
	<b>BACKFLOW</b>	W-0094	INDUSTRIAL WATER METERING COMBINED FIRE MAIN & DOMESTIC SUPPLY 80mm OR GREATER
W-0030	BACKFLOW PREVENTION DEVICE, SLAB AND POLE MOUNTED CUBICLE	W-0095	WATER SERVICE METERS MULTIPLE OFF-TAKE MANIFOLD WITH 50mm INPUT SUPPLY
W-0031	BACKFLOW PREVENTION, FIRE AND DOMESTIC SERVICE CONNECTION DETAILS, TYP. LAYOUT	W-0096	WATER SERVICE METERS MULTIPLE OFF-TAKE MANIFOLDS WITH 100mm INPUT SUPPLY
	<b>BEDDING AND THRUST BLOCKS</b>	W-0097	STANDARD WATER METER LOCATIONS
W-0040	BEDDING AND BACKFILL FOR WATER MAIN CONSTRUCTION	W-0100	DOMESTIC/COMMERCIAL SUPPLY 50mm METER
W-0041	WATER MAIN, THRUST BLOCK DETAILS		
W-0042	ROAD CONDUIT CROSSINGS FOR WATER AND IRRIGATION LINES (100mm TO 800mmø)		
W-0043	WATER MAIN OFFSET CONNECTION NEW TO EXISTING		
	<b>HYDRANTS AND VALVES</b>		
W-0060	HYDRANT AND VALVE INSTALLATION		
W-0061	C.I. HYDRANT AND VALVE BOXES		
W-0062	TYPICAL VALVE BOX INSTALATION DETAILS TO SUIT 500ø MAIN		
W-0063	TYPICAL VALVE AND HYDRANT TREATMENT WHEN LOCATED IN SEALED DRIVEWAYS AND FOOTPATHS		
	<b>SCOUR</b>		
W-0080	SCOUR DETAILS		

	REVISIONS	DATE
E	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D	W-0043b ADDED	27/9/10
C	STANDARD TEMPLATE, 92 TO 97 ADDED	8/7/08
B	W-0010,W-0020-21,W-0030-31,W-0041-42,W-0090-91	10/3/98
A	ORIGINAL ISSUE	1/3/97



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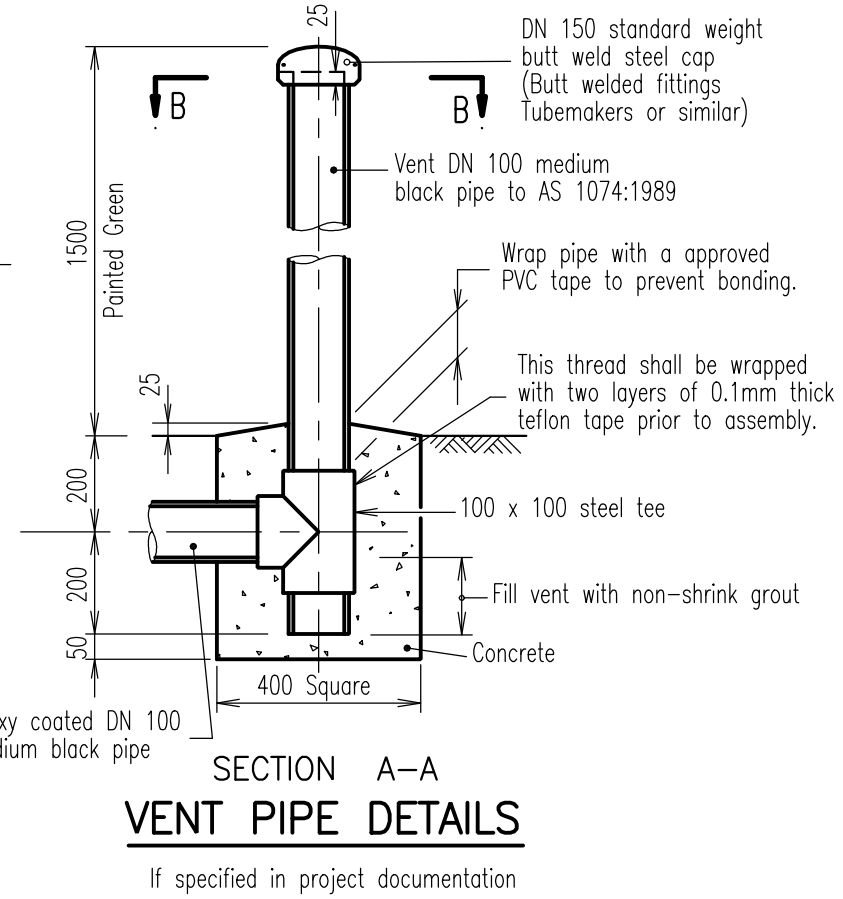
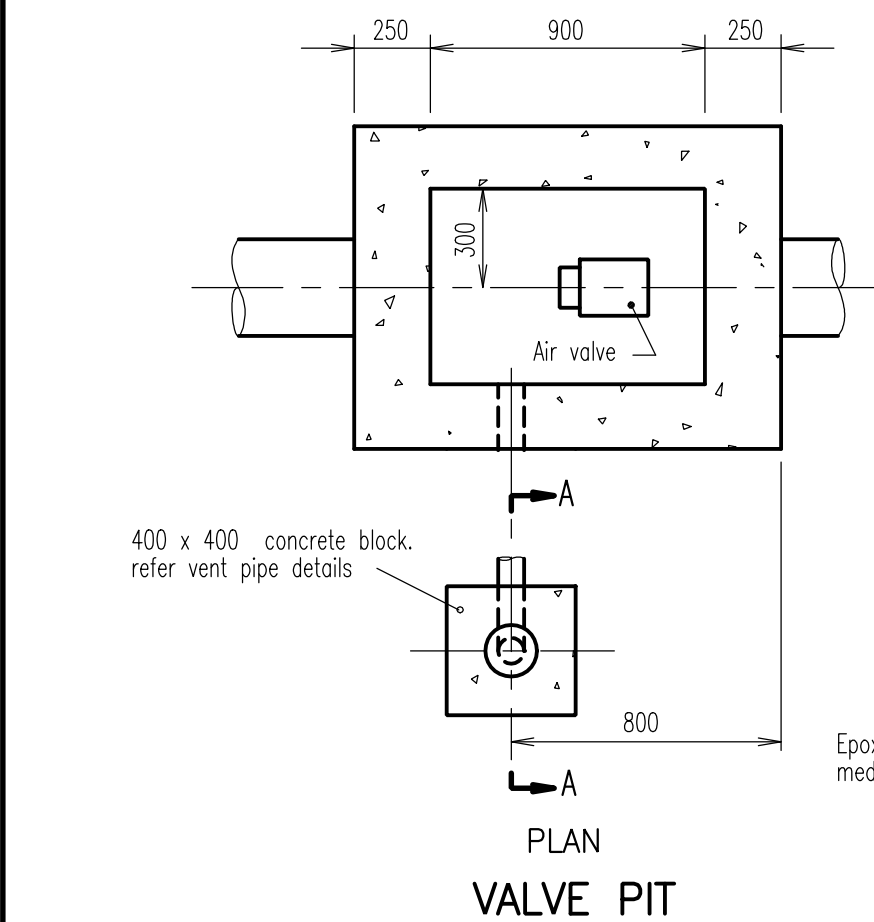
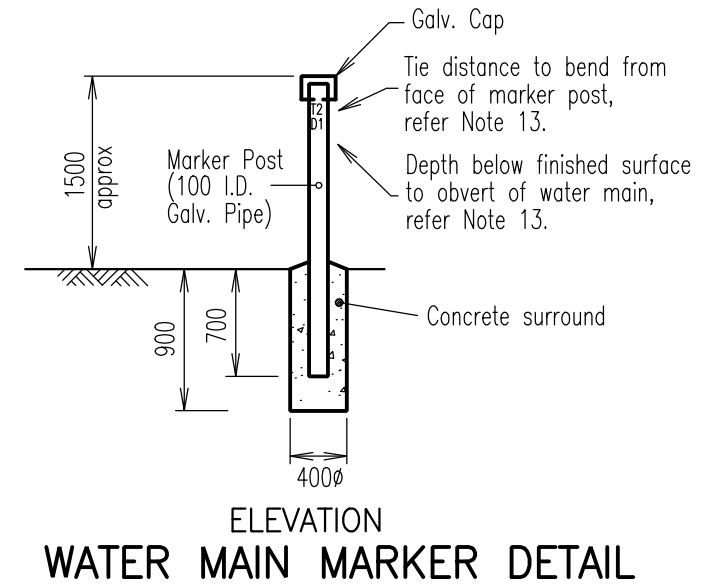
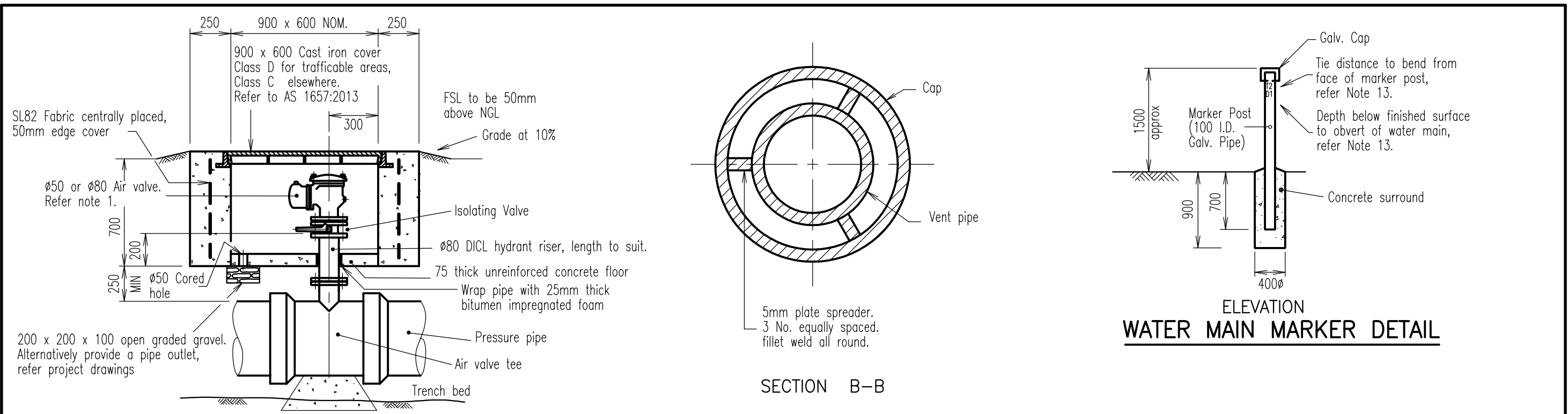
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<b>INDEX</b>
<b>STANDARD DRAWINGS</b>
<b>WATER</b>

<b>WATER</b>
<b>Standard</b>
<b>Drawing</b>
<b>W-0001</b>
A   B   C   D   E



**NOTES:**

- Approved Ø50 and Ø80 Air Valves, fitted with Ø80 butterfly valves for isolation purposes. The installation shall be such that the air valve can be removed while the butterfly valve remains in place.
- Ø50 Air Valves shall be supplied with adaptor flange suitable for connection to the Ø80 DICL riser.
- The full length of the DICL riser pipe including underground flanges shall be epoxy coated or wrapped with 'Denso' protective coating applied in accordance with the manufacturer's instructions:
  - Denso 360 primer to clean metal;
  - Wrap of cold applied Denso 760 tape;
  - Wrap of Denso 931 self adhesive PVC tape.
- Water mains Ø250 and smaller:-  
Walls of pit to extend below pipe, provide 200mm space between water main and floor of pit.
- Concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement fabric to AS 4671:2001.
- Provide a fine non-slip surface with a wood float to the top surface of all walls.
- Refer project drawing for Vent pipe location. Vent steelwork shall be painted with System Reference LP2-A to AS/NZS 2312:2014.
- Compacted sand backfill shall be brought up to the underside of the air valve pit.
- Air valves shall be placed on the high point of all trunk mains.
- All flanges shall be in accordance with AS 2129:2000 - Table C unless noted otherwise on project drawings.
- Position markers at changes of direction and all fence lines.
- Lettering on side of marker shall be positioned directly on line between marker and water main bend. All lettering shall be painted yellow and shall be minimum 30 high x 20 wide.
- All dimensions in millimetres.

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	15/3/12
B MINOR CHANGES TO ELEVATION DETAIL	24/8/10
A ORIGINAL ISSUE	1/3/97



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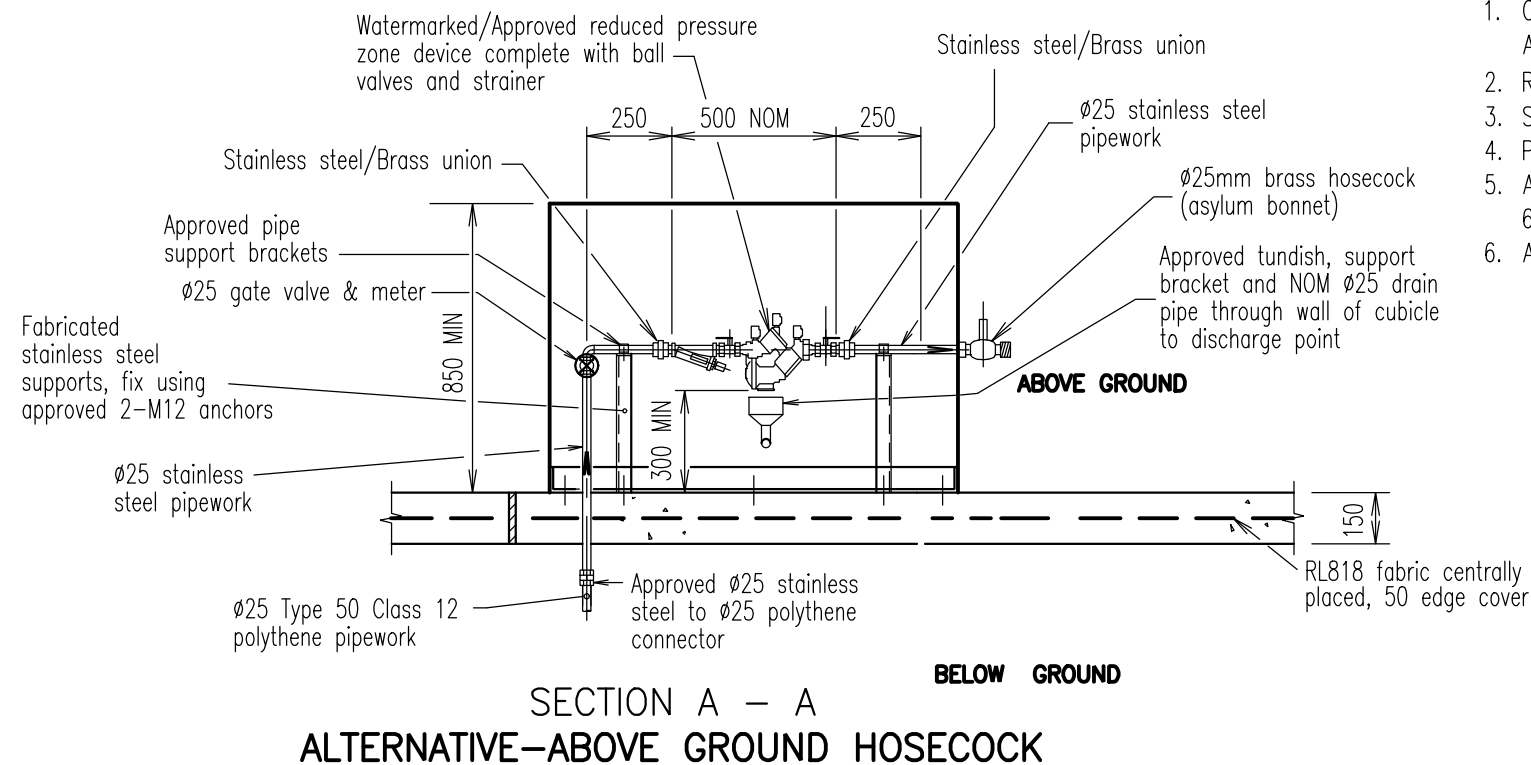
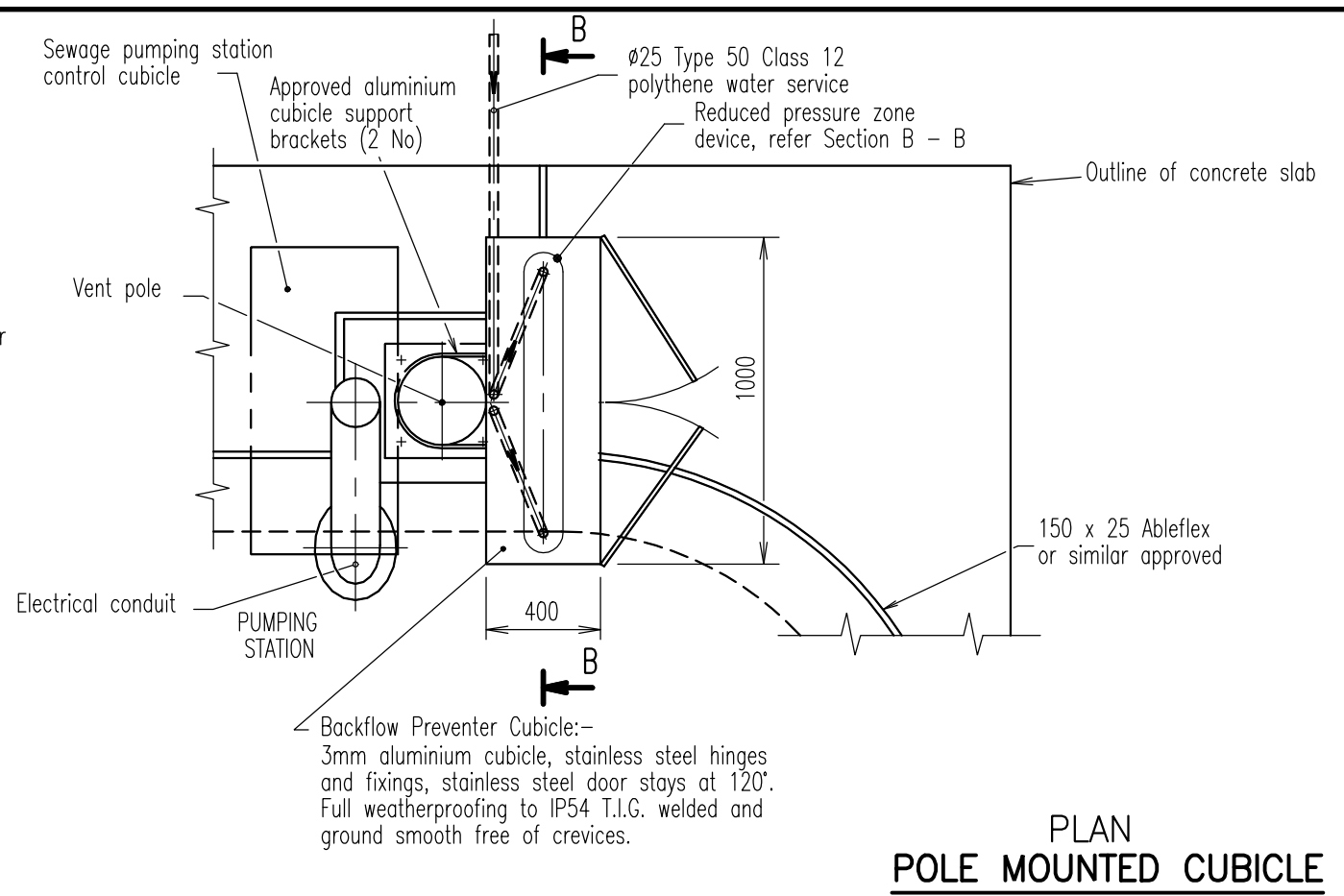
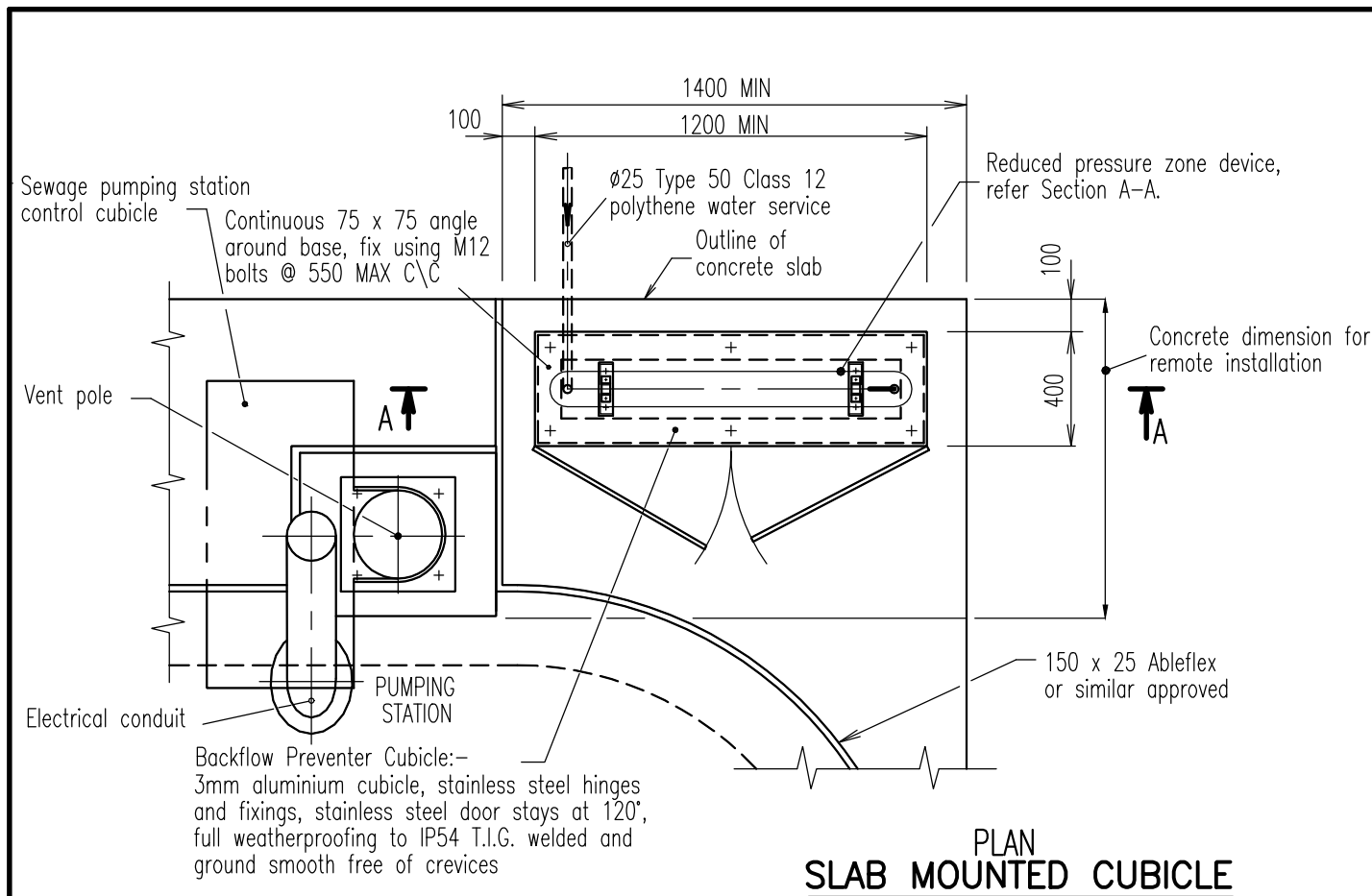
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**AIR VALVE PIT**  
**Ø50 AND Ø80 AIR VALVES**

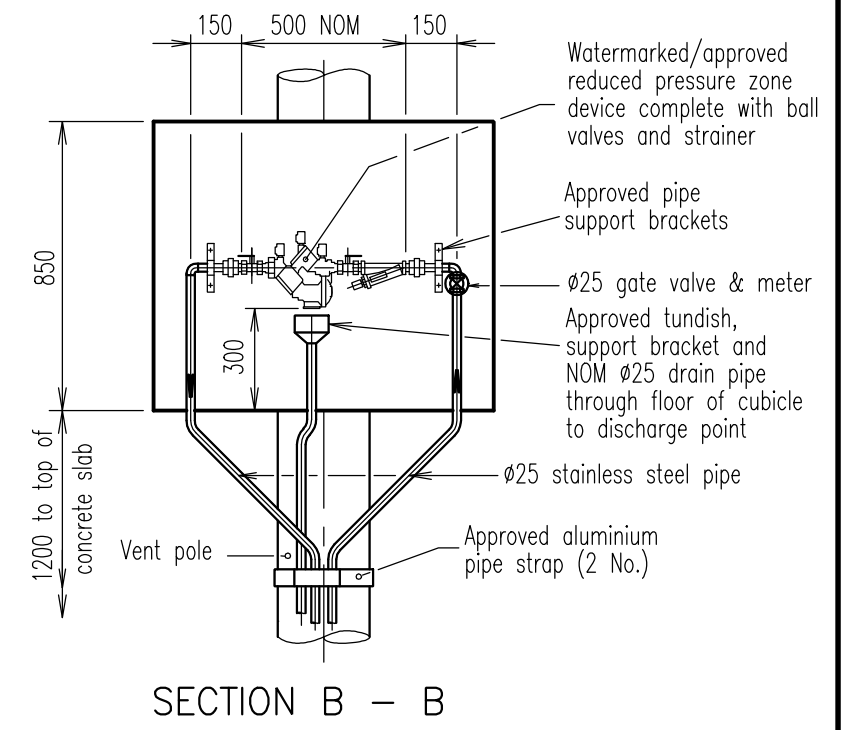
**WATER**  
Standard  
Drawing  
**W-0010**

A	B	C	D
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**NOTES:**

1. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
2. Reinforcement fabric to AS/NZS 4671:2001.
3. Stainless steel Grade AS 1444:2007.
4. Polythene pipework to AS 4130:2001.
5. Aluminium Sheet 5083-H321, Extruded sections 6061-T6, to AS 2848:1998.
6. All dimensions in millimetres.



REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D GENERAL UPDATES	26/3/12
C TEXT CHANGES	24/8/10
B MINOR AMENDMENT	1/3/97
A ORIGINAL ISSUE	1/3/97



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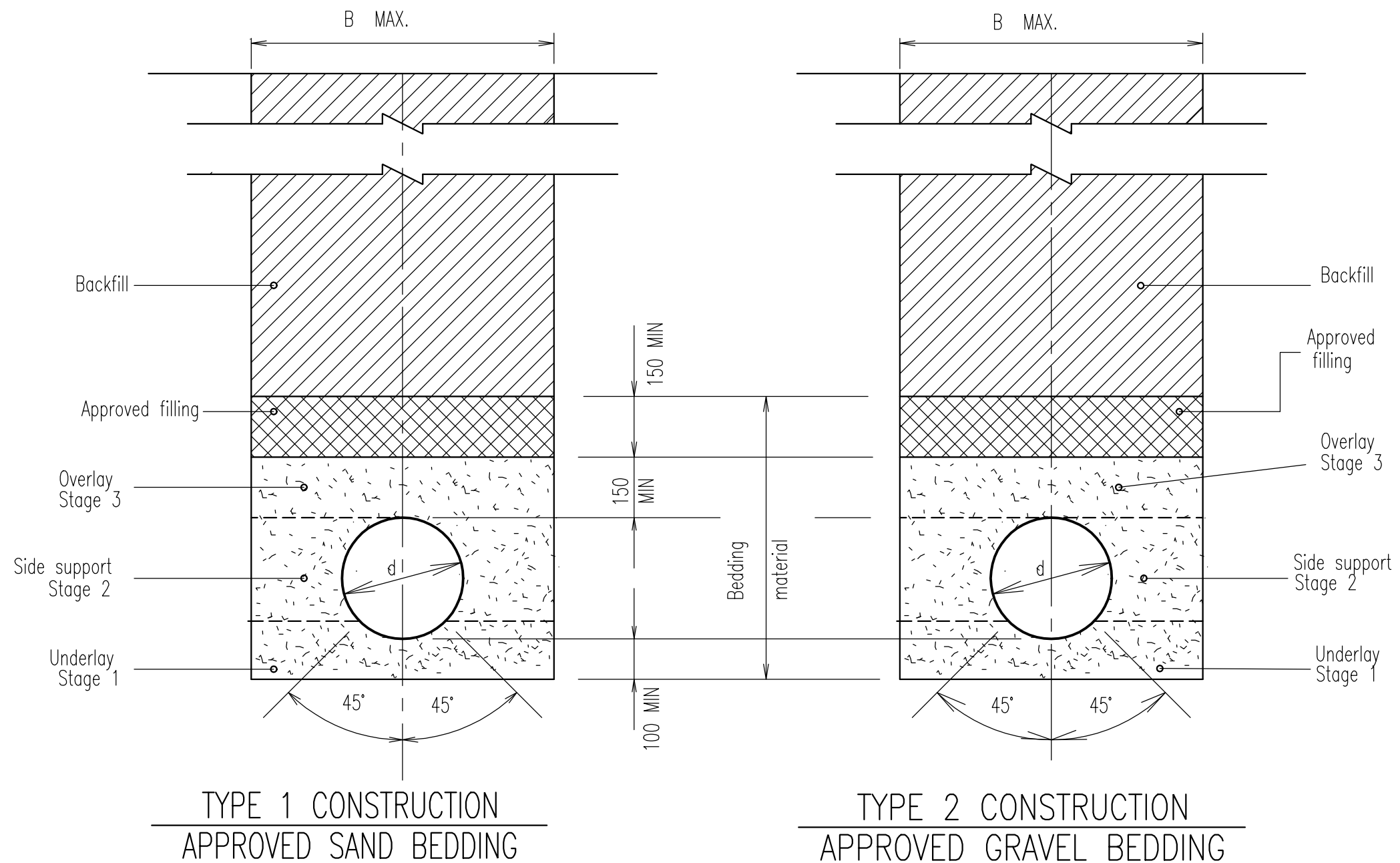
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**BACKFLOW PREVENTION DEVICE  
SLAB AND POLE MOUNTED CUBICLE**

**WATER  
Standard  
Drawing  
W-0030**

A B C D E



Refer to TMR standards for bedding and backfill details where conditions vary from those shown hereon, and when required under local & TMR roadways.

- NOTES:**
- Refer specification for definition of:
    - (a) Bedding material
    - (b) Approved filling
    - (c) Flexible pipe systems
    - (d) Geofabric
    - (e) Backfill
    - (f) Stabilized sand filling
    - (g) Lean mix concrete
    - (h) Pavement
  - Spacing of concrete anchor blocks
    - Slope 1 in 5 to 1 in 6 – every 4th pipe
    - Slope 1 in 4 to 1 in 5 – every 3rd pipe
    - Slope 1 in 3 to 1 in 4 – every 2nd pipe
    - Slope greater than 1 in 3 – every pipe.
  - Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
  - Refer project drawings for dimensions to be adopted where MIN's have been shown.
  - All dimensions in millimetres

**TYPE 1 CONSTRUCTION**  
**APPROVED SAND BEDDING**

**TYPE 2 CONSTRUCTION**  
**APPROVED GRAVEL BEDDING**

NOM DIA. PIPE	d	Ø100	Ø150	Ø225	Ø300	Ø375	Ø450	Ø525	Ø600	Ø675	Ø750	Ø825	Ø900
OPEN TRENCH	B	600	600	700	750	850	900	1000	1050	1150	1300	1300	1450
TUNNEL CONST.	B	750	750	750	900	900	1000	1050	1150	1220	1300	1350	1450
	H	1100	1100	1100	1200	1200	1400	1400	1400	1450	1500	1600	1650

NOTE:- d = NOMINAL DIAMETER OF PIPE

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B GENERAL UPDATES	26/3/12
A ORIGINAL ISSUE	1/3/97



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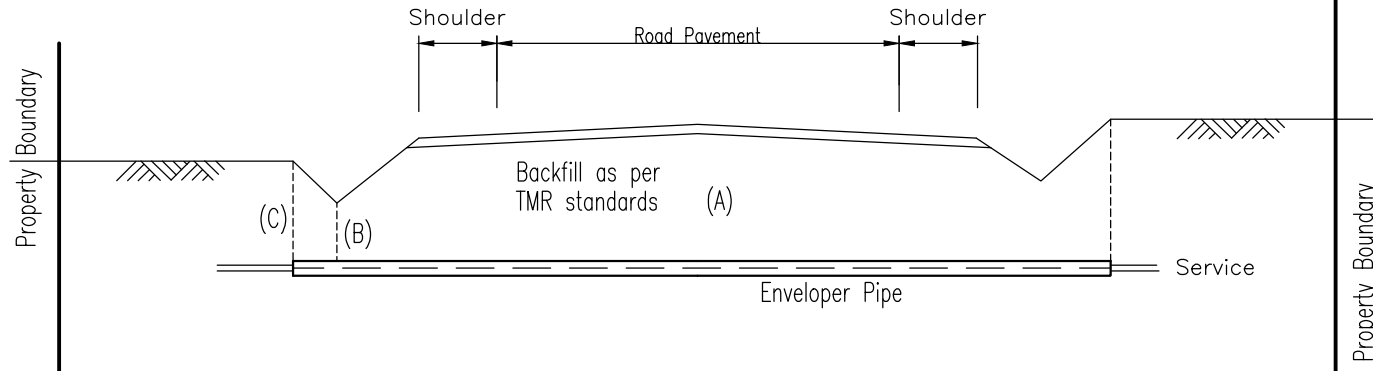
**BEDDING AND BACKFILL FOR  
WATER MAIN CONSTRUCTION**

**WATER**  
Standard  
Drawing  
**W-0040**

A	B	C	
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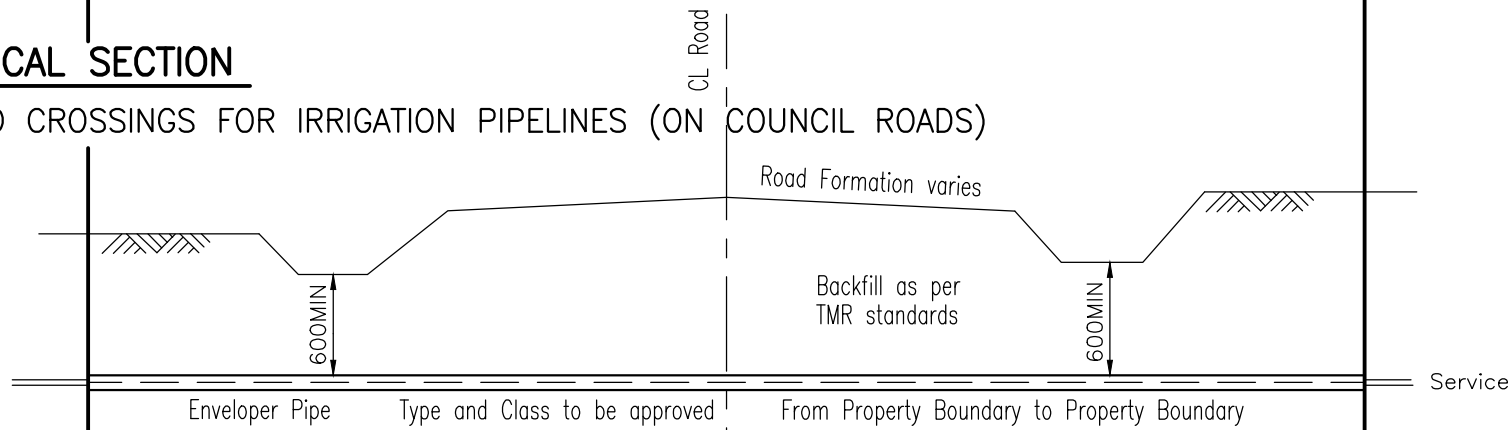
**TYPICAL SECTION**

**TMR ROAD CROSSINGS—TRENCHING**



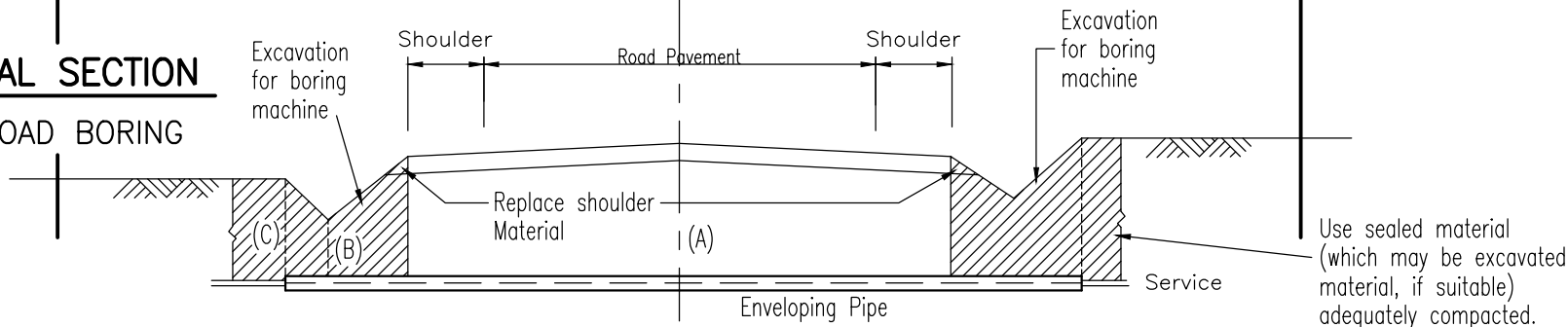
**TYPICAL SECTION**

**ROAD CROSSINGS FOR IRRIGATION PIPELINES (ON COUNCIL ROADS)**



**TYPICAL SECTION**

**TMR ROAD BORING**



**NOTES:**

1. Backfilling of trenching details as per TMR standards.
2. Enveloper pipe class details and treatments refer to Water Services Association of Australia (WSAA) drawings 1212 and 1214

**NOTES FOR TMR ROAD CROSSINGS:**

1. Minimum depth of service shall be (A) 750mm below road surface, (B) 450mm below lowest level of table drain, or (C) 600mm below natural Surface, whichever is the lowest.
2. Where there is no Bitumen seal, the Lean Mix Concrete is to be continued to 150mm below surface level of road.
3. All work shall be in accordance with TMR Standard Conditions.

REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D GENERAL UPDATES	27/3/12
C "OUTSIDE DECLARED WATER AREA" BLOCK, STAR PKT. TO BOUNDRY	11/7/07
B QT ROAD BORING ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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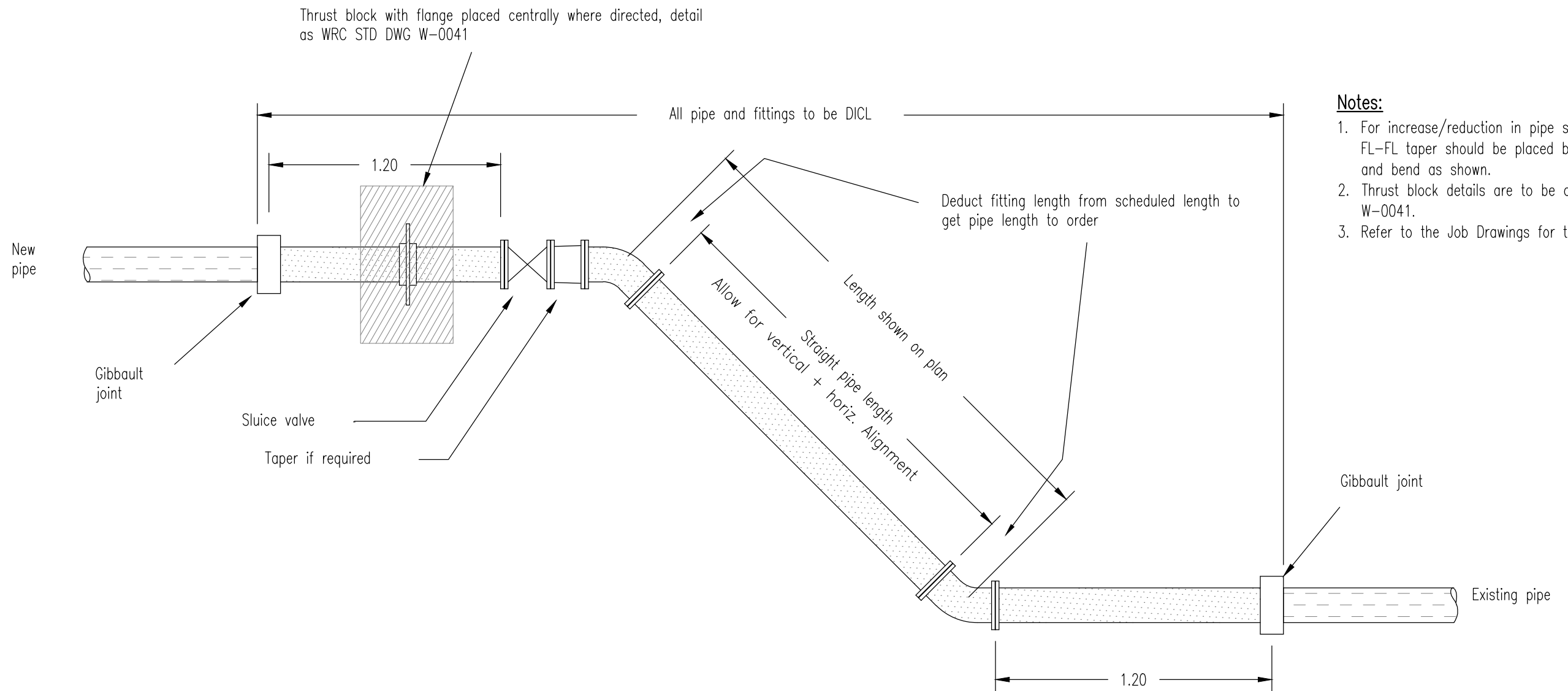
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**ROAD CONDUIT CROSSINGS FOR  
WATER AND IRRIGATION LINES  
(100mm TO 800mm  $\phi$ )**

**WATER  
Standard  
Drawing  
W-0042**

A B C D E



**Notes:**

1. For increase/reduction in pipe sizes a FL-FL taper should be placed between the SV and bend as shown.
2. Thrust block details are to be as WRC STD DWG W-0041.
3. Refer to the Job Drawings for the fitting list.

REVISIONS		DATE
D	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C	GENERAL UPDATES	27/3/12
B	CHANGES TO TEXT	25/8/10
A	ORIGINAL ISSUE	1/3/97



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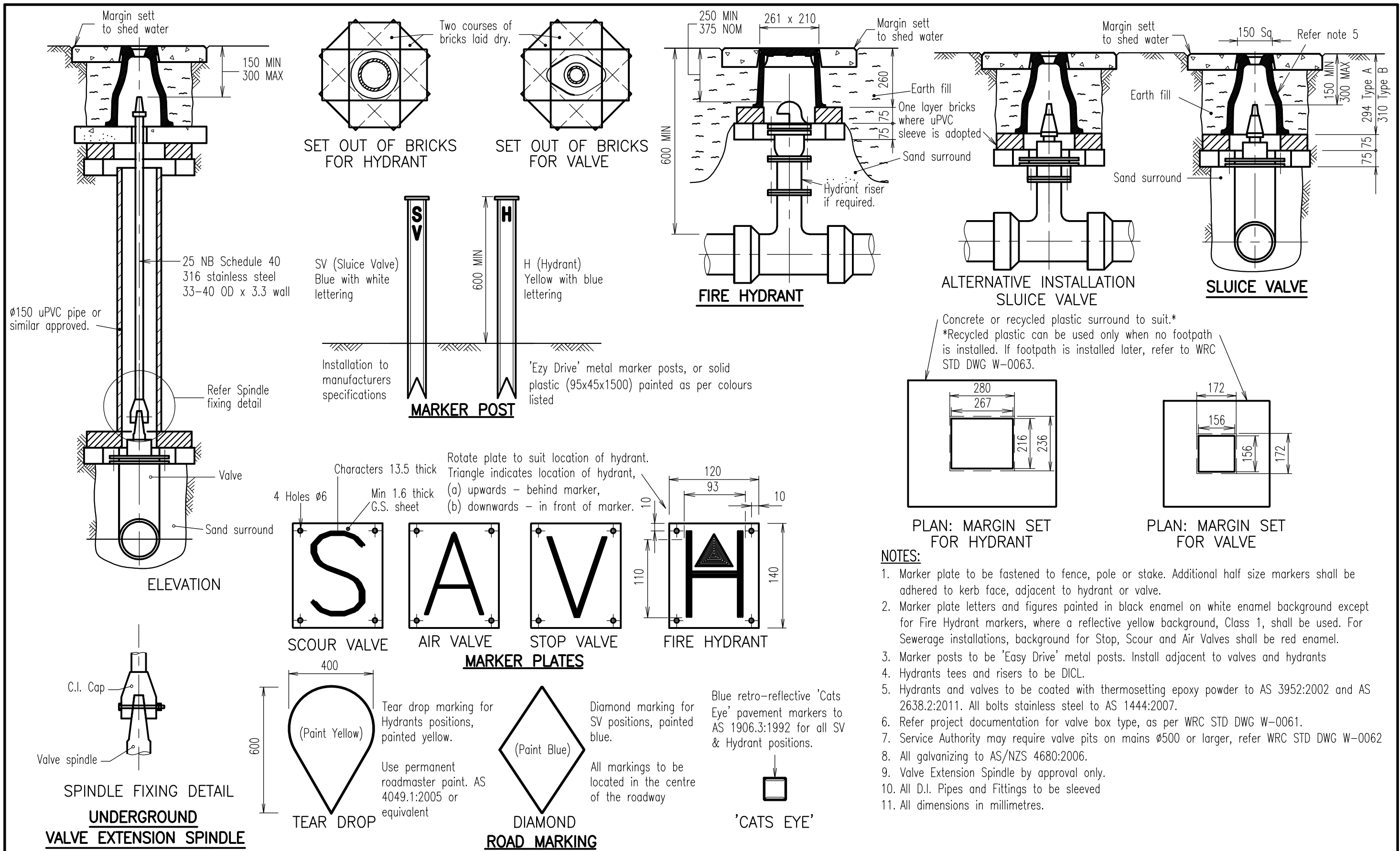
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**WATER MAIN  
OFFSET CONNECTION  
NEW TO EXISTING**

**WATER  
Standard  
Drawing  
W-0043**

A B C D



REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	28/3/12
B DETAILS ADDED AND MODIFIED	8/10
A ORIGINAL ISSUE	1/3/97


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**HYDRANT AND VALVE INSTALLATION**

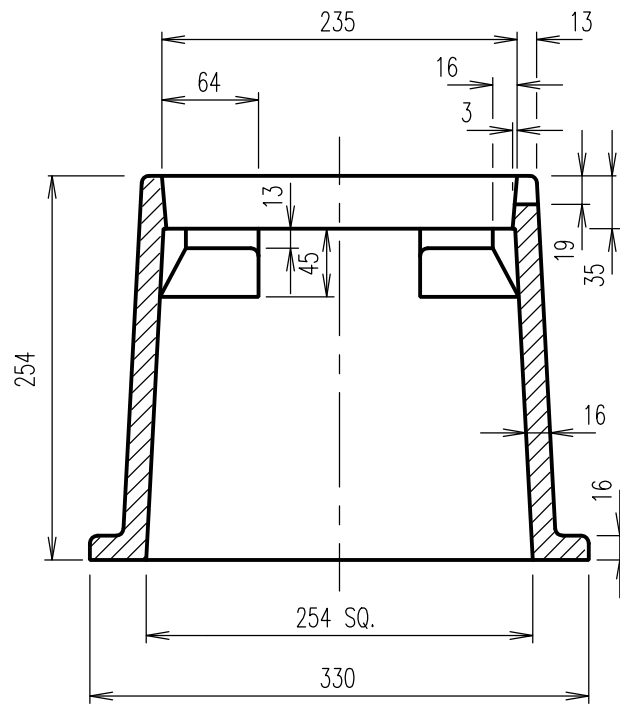
**WATER Standard Drawing W-0060**

A B C D

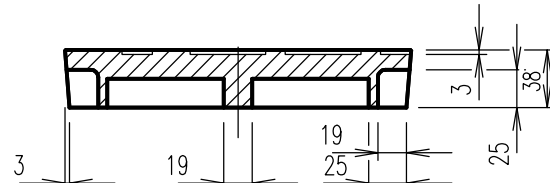


**NOTES:**

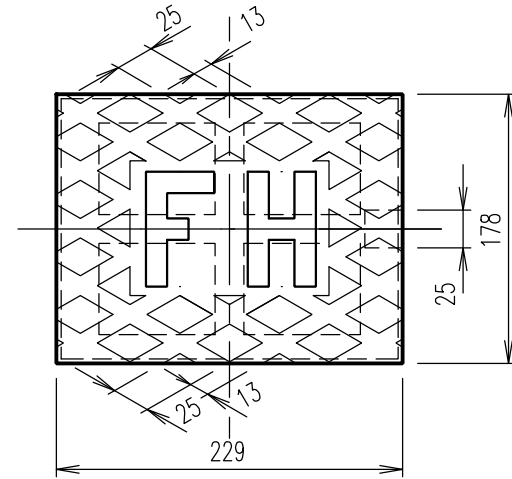
1. Rounding of 5mm NOM. RAD. at all corners.
2. Grey cast Iron, grade  $\geq$  T180 to AS 1830:2007.
3. Alternative valve boxes may be adopted where approved by the Service Authority.
4. Refer to WRC STD DWG W-0060 & W-0063 for other installation details.
5. All dimensions in millimetres.



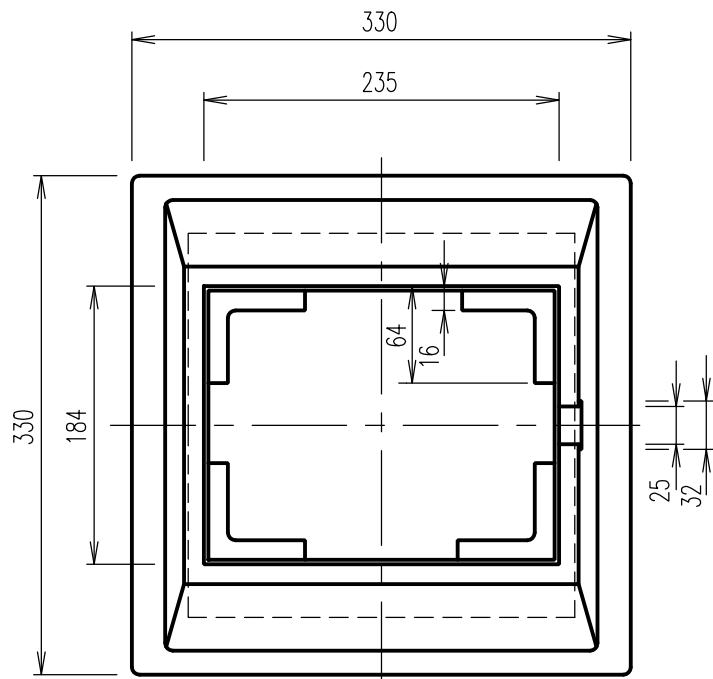
ELEVATION



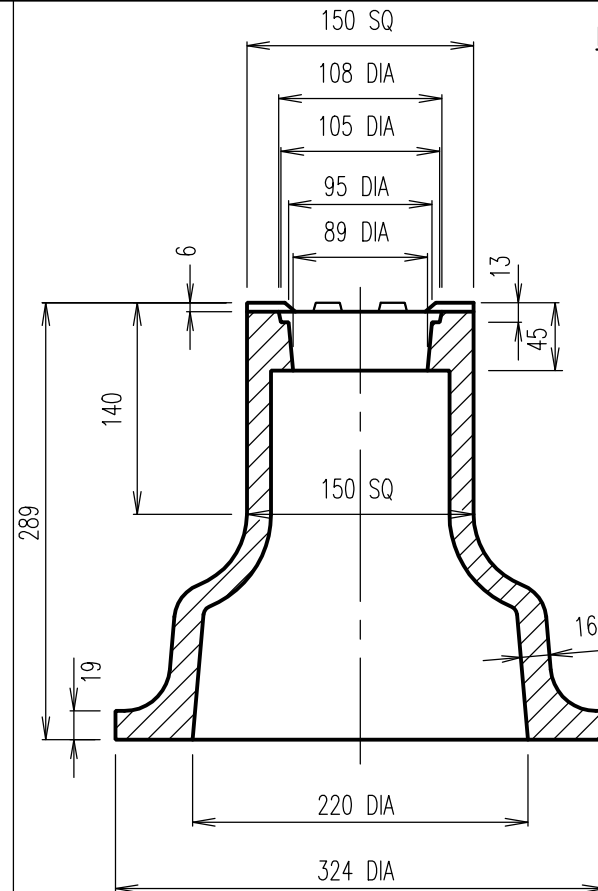
SECTIONAL VIEW



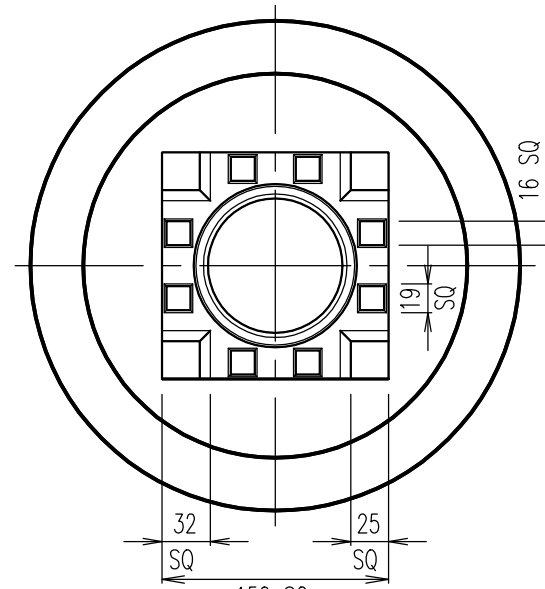
PLAN HYDRANT COVER



PLAN INSPECTION BOX – HYDRANT



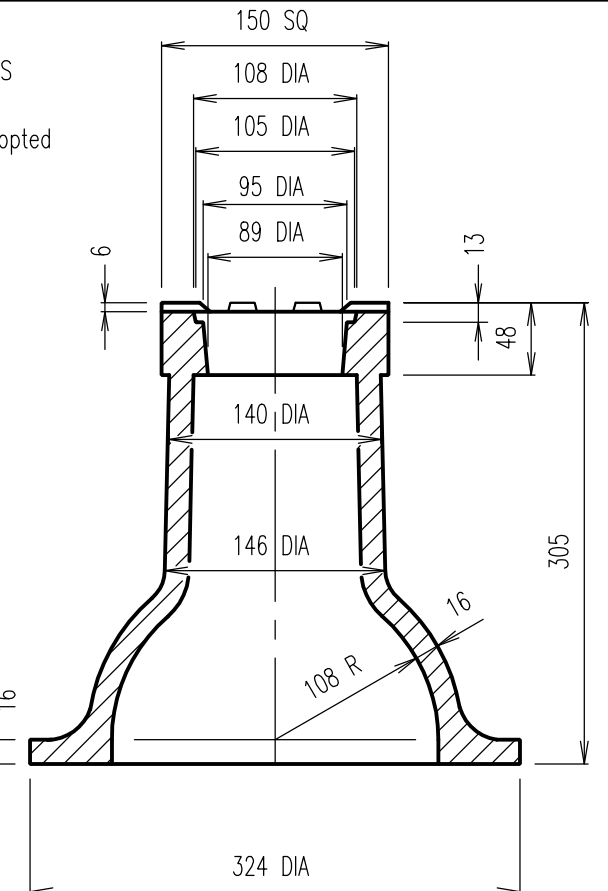
SECTIONAL ELEVATION



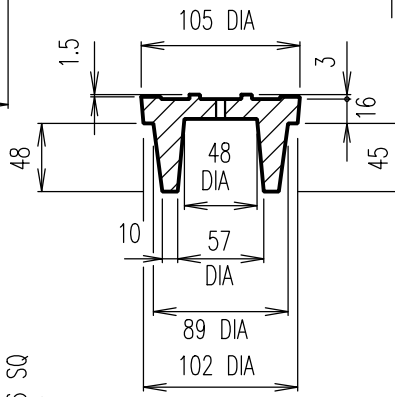
PLAN TYPE A

**NOTES:**

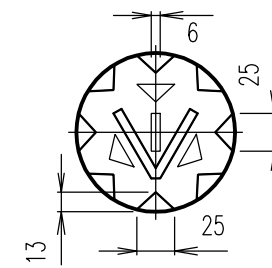
1. Grey cast Iron, grade  $\geq$  T180 to AS 1830:2007.
2. Alternative valve boxes may be adopted where approved by the Service Authority.
3. All dimensions in millimetres.



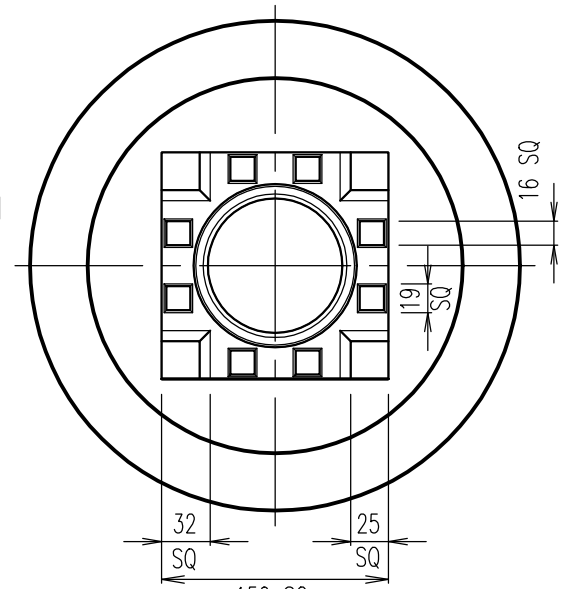
SECTIONAL ELEVATION



SECTIONAL ELEVATION



PLAN COVER



PLAN TYPE B

VALVE BOXES

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	27/3/12
B DETAIL DELETED	9/8/10
A ORIGINAL ISSUE	1/3/97



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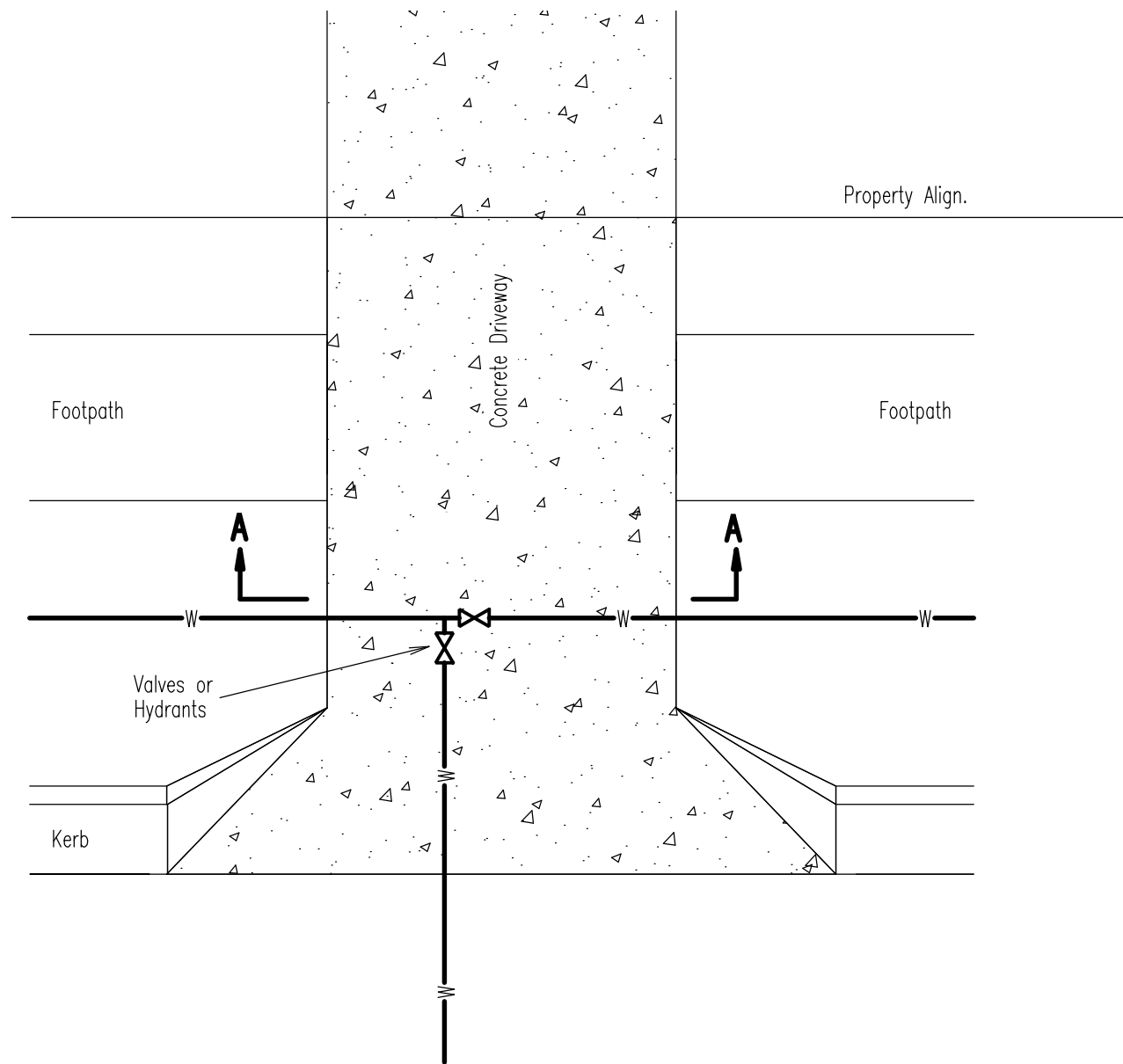
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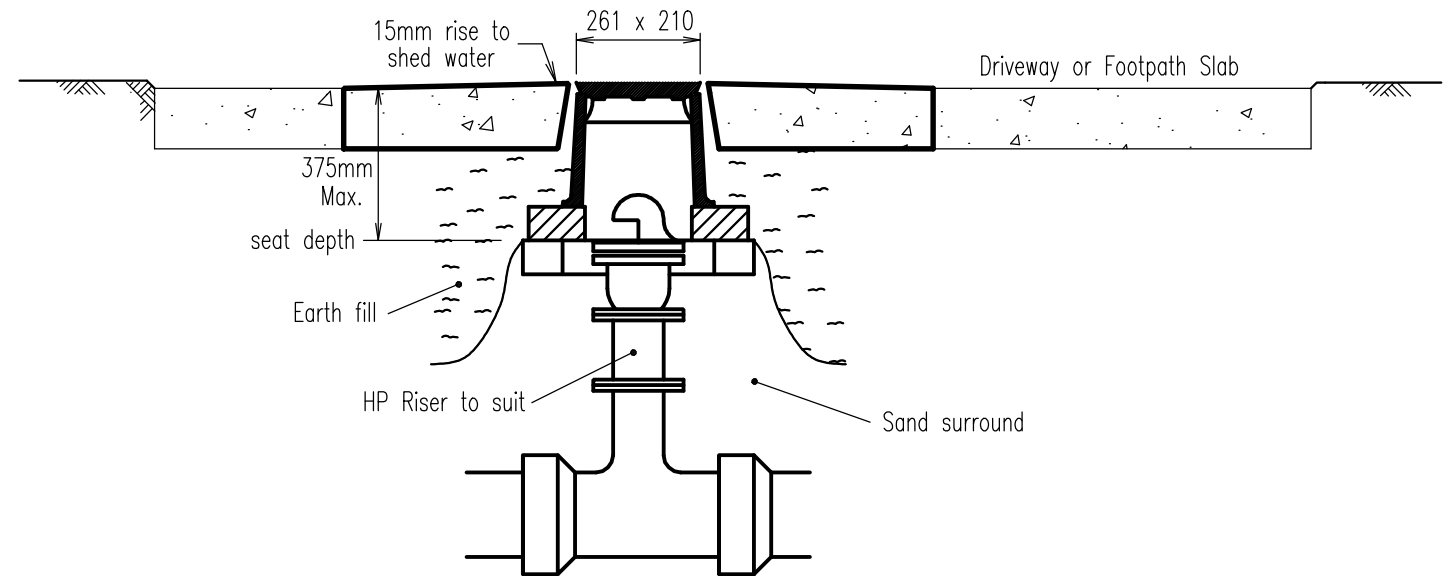
C.I. HYDRANT AND VALVE BOXES

WATER Standard Drawing W-0061

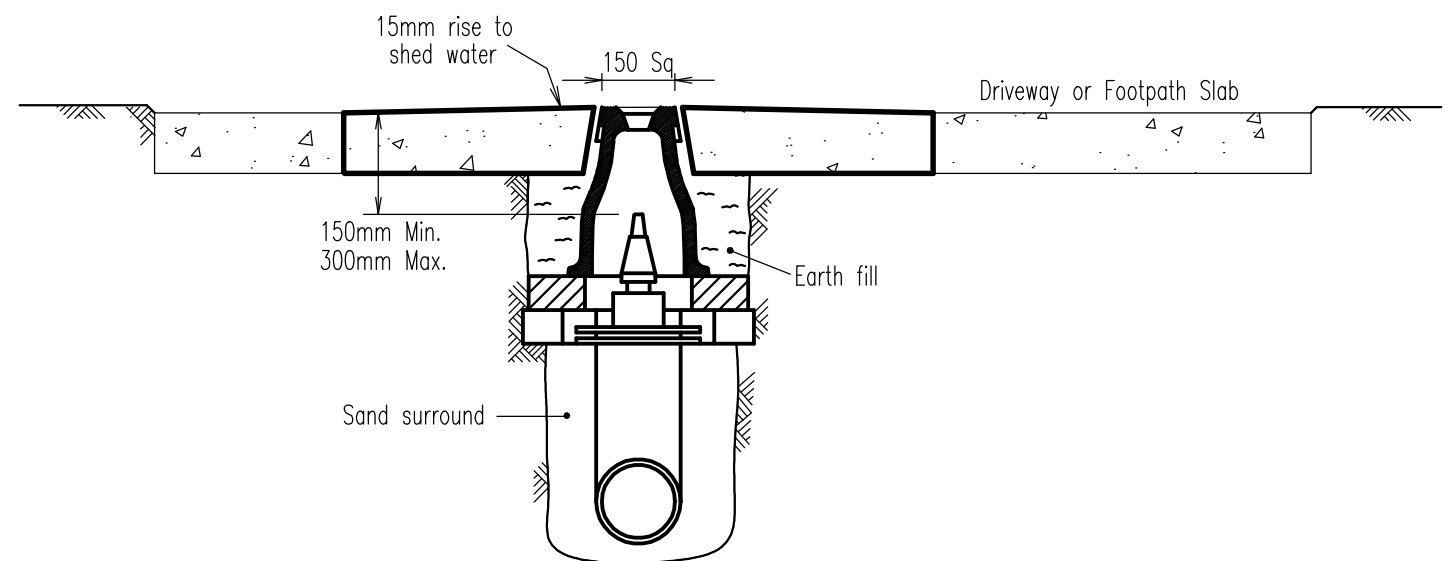
A B C D



**VALVES & HYDRANTS IN DRIVEWAYS & FOOTPATHS**  
 Repair method for concrete driveways and footpaths.



**SECTION A-A (HYDRANTS)**



**SECTION A-A (VALVES)**

**NOTES:**

1. Valve boxes are to be raised to new driveway height.
2. Works are to be inspected by Council.
3. SV marker to be removed from current position and relocated to a suitable position under the direction of council water officers.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	28/3/12
A ORIGINAL ISSUE	05/2009



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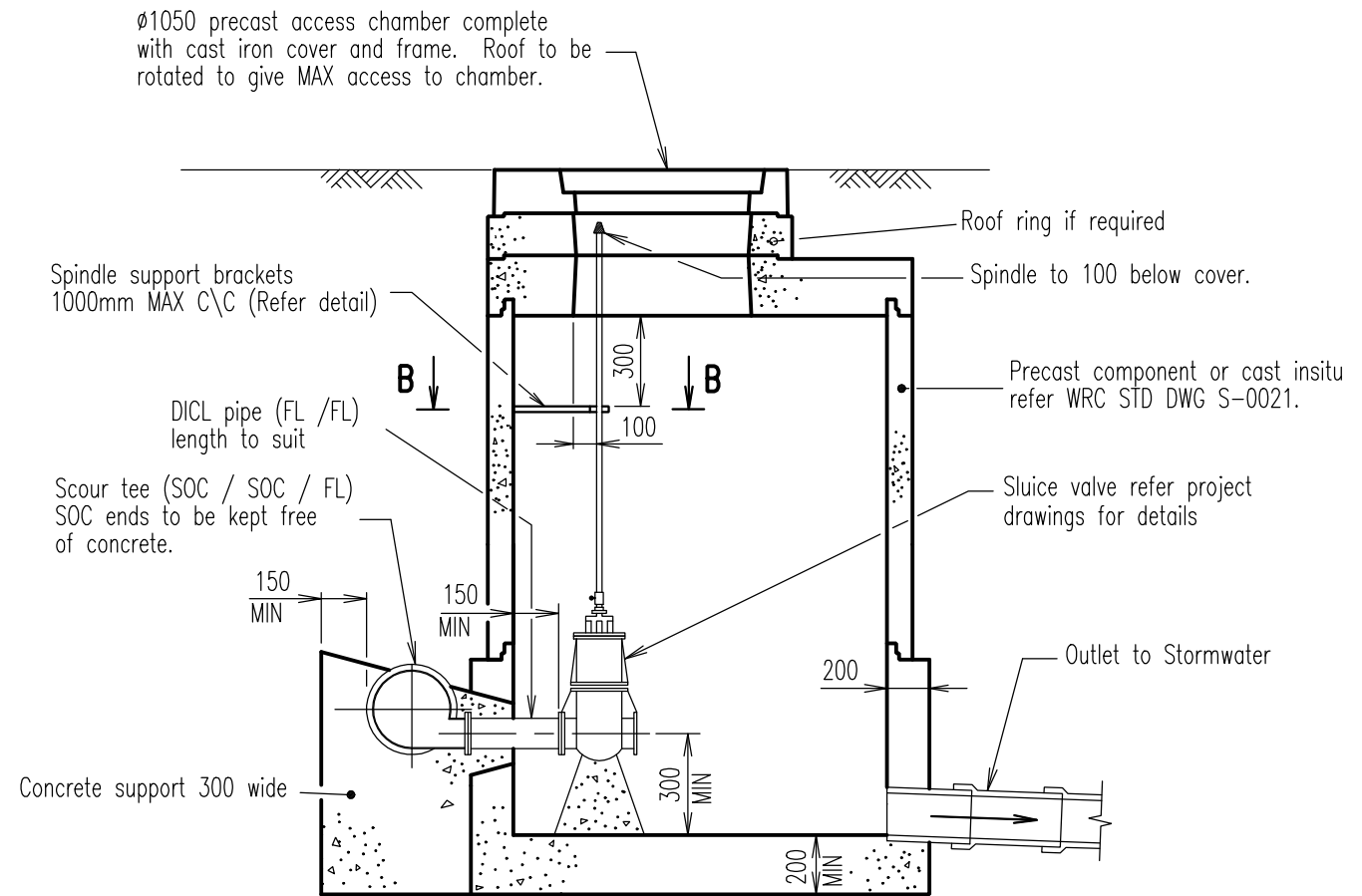
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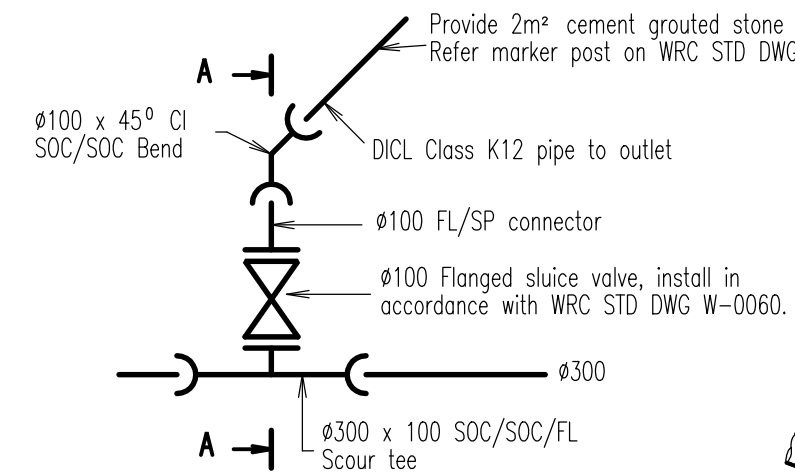
**TYPICAL VALVE & HYDRANT  
 TREATMENT WHEN LOCATED IN  
 SEALED DRIVEWAYS & FOOTPATHS**

**WATER  
 Standard  
 Drawing  
 W-0063**

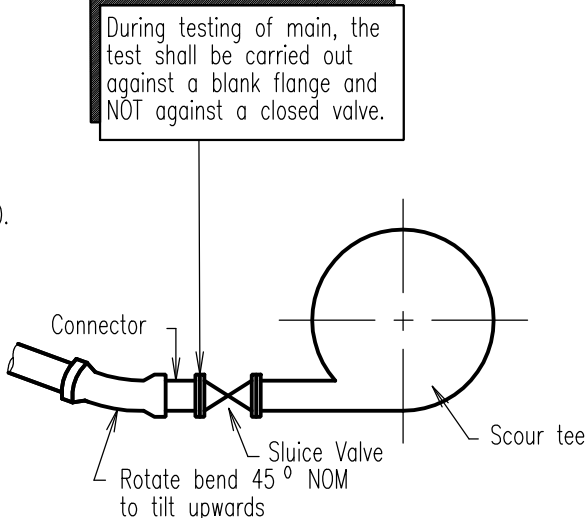
A	B	B		
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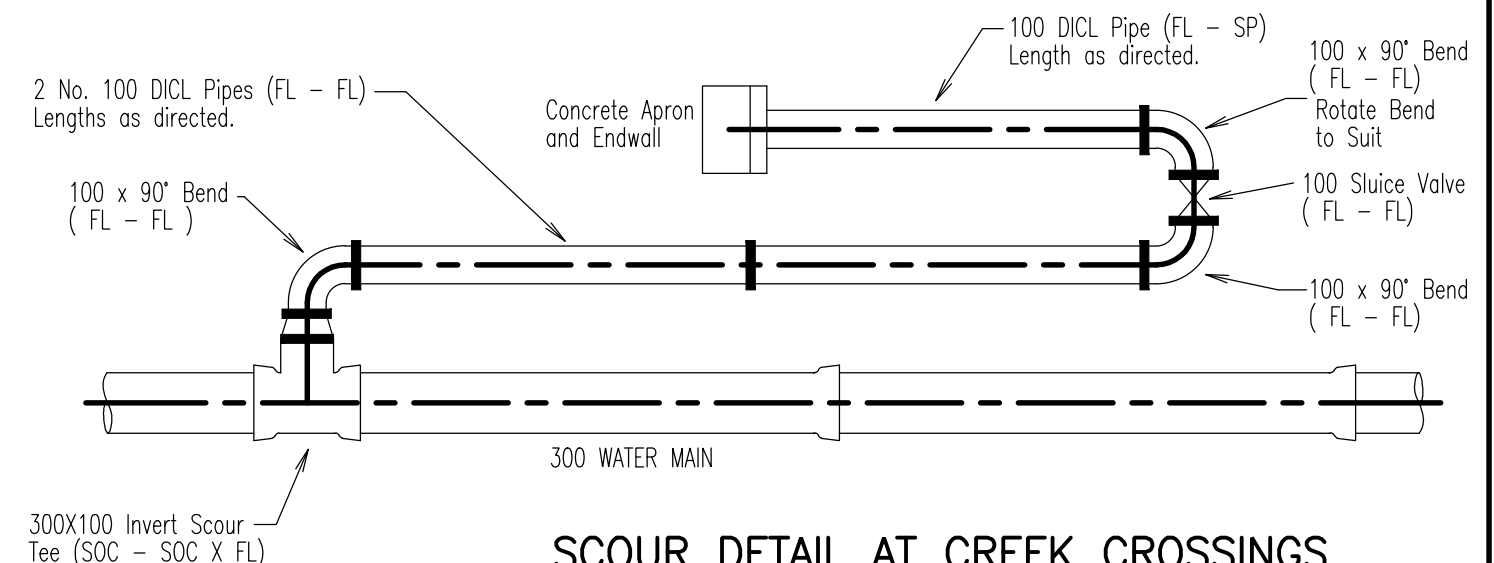
ELEVATION  
**SCOUR DETAIL AT ACCESS CHAMBER**



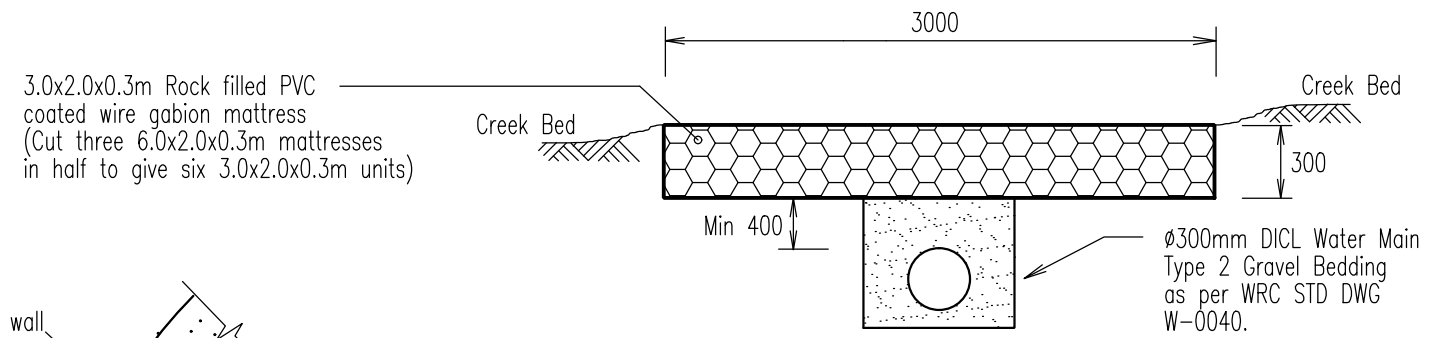
PLAN OF SCOUR



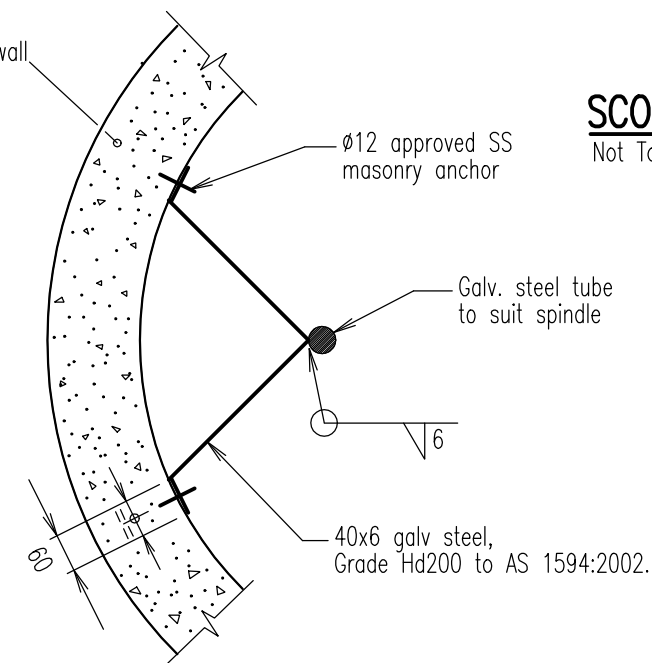
SECTIONAL ELEVATION  
OF SCOUR TEE AT A-A



**SCOUR DETAIL AT CREEK CROSSINGS**  
Not To Scale



**SCOUR PROTECTION DETAIL - CREEK CROSSINGS**  
Not To Scale



SECTION B-B  
**BRACKET DETAIL**

**NOTES:**

1. Refer WRC STD DWGS S-0020 and S-0025 for details of access chambers and covers.
2. Where foundation bearing pressure is less than 50kPa, excavate and replace unsatisfactory material with compacted CBR15 material to the depth ordered by the Superintendent.
3. Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
4. All steelwork hot dip galvanized after fabrication to AS/NZS 4680:2006.
5. All welds to AS/NZS 1554:2014. All welding symbols to AS 1101.3:2005.
6. The location of the scour valve and extent of scour discharge pipe are indicated on project drawings.
7. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	9/4/12
A ORIGINAL ISSUE	1/3/97



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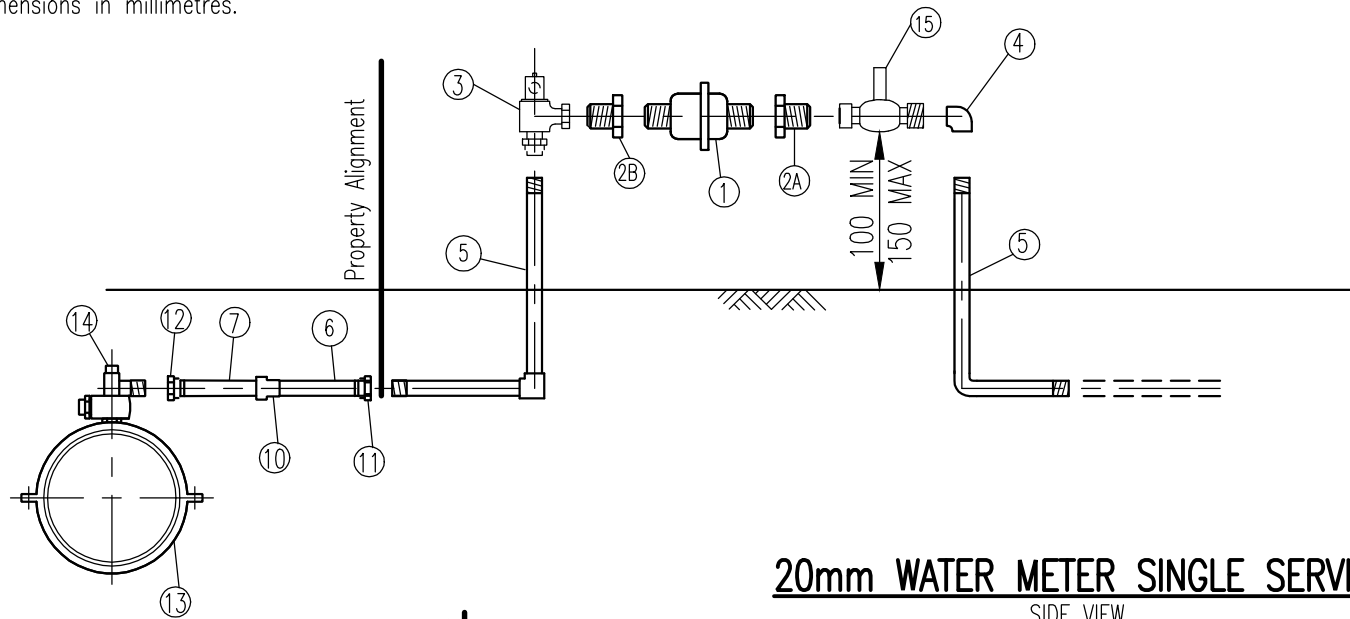
**SCOUR DETAILS**

**WATER**  
Standard  
Drawing  
**W-0080**

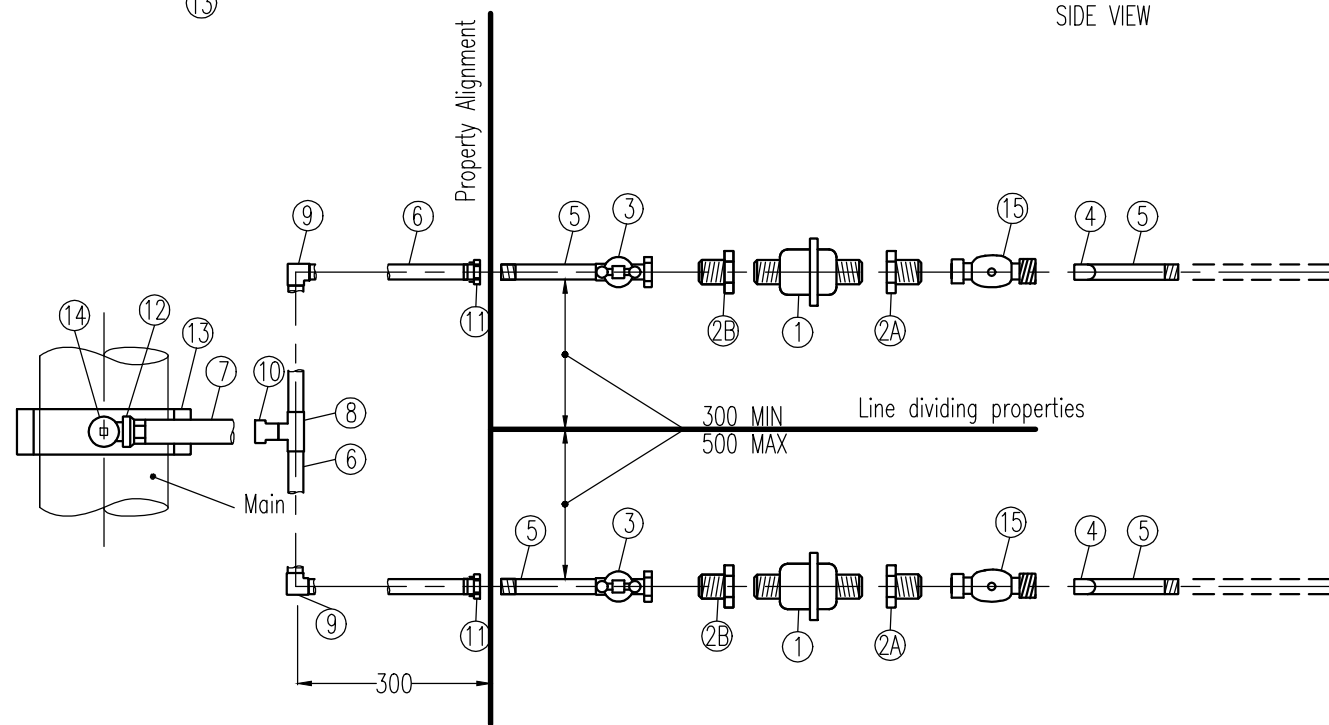
A	B	C
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**NOTES:**

1. Polythene pipe and connectors:
  - (a) All polythene pipe shall be MDPE Class 12 in accordance with AS 4130:2009
  - (b) All mechanical joint fittings shall be in accordance with AS 4129:2008.
2. Cross road services shall be located 500mm downhill from dividing allotments so as not to conflict with electrical supply authority poles.
3. Service pipes to lots other than a single dwelling shall have the service connection pipes upgraded to suit the use. These sizes should be sized to comply with AS3500.1:2003.
4. All dimensions in millimetres.

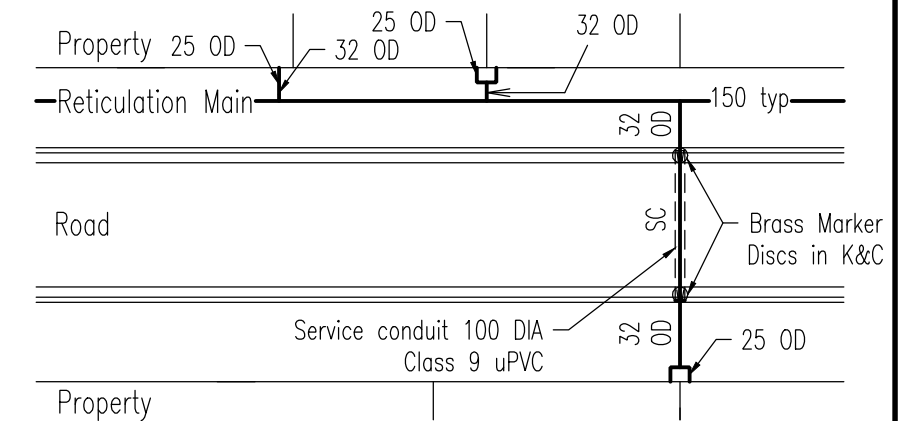


**20mm WATER METER SINGLE SERVICE**  
SIDE VIEW



**20mm WATER METER 2 LOT SERVICE**  
PLAN VIEW

MARK NO	DESCRIPTION
1.	Water Meter. Complete with Backflow to comply with AS 2845.1:2010
2A.	Meter tail piece with BSP-MI end, supplied with meter
2B.	As above except pre-drilled to suit wire seal.
3.	Rt. angled ball valve F-F
4.	Std'nless Steel FL Elbow
5.	316 stainless steel pipe (20 NB) pre-bent fixed length pipe to be purchased from council.
6.	Polyethylene 25 OD Class 12
7.	Polyethylene 32 OD Class 12
8.	Poly 25 tee fitting
9.	Poly 25 elbow fitting
10.	Poly reducing fitting 32-25
11.	25 FI-Poly end connector
12.	32 FI-Poly end connector
13.	Gunmetal tapping brand or Ready Tap Connection
14.	25x32 OD Poly TPR bonnet poly ferrule stop cock
15.	House hold isolating valve FM Ball



**TYPICAL MAIN CONNECTIONS**  
PLAN VIEW

REVISIONS	DATE
F GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
E GENERAL UPDATES	9/4/12
D FITTINGS AND DETAILS AMENDED	9/8/10
C MINOR AMENDMENTS	11/7/07
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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**WATER CONNECTIONS  
SINGLE AND DOUBLE  
ABOVE GROUND METER**

**WATER  
Standard  
Drawing  
W-0090**

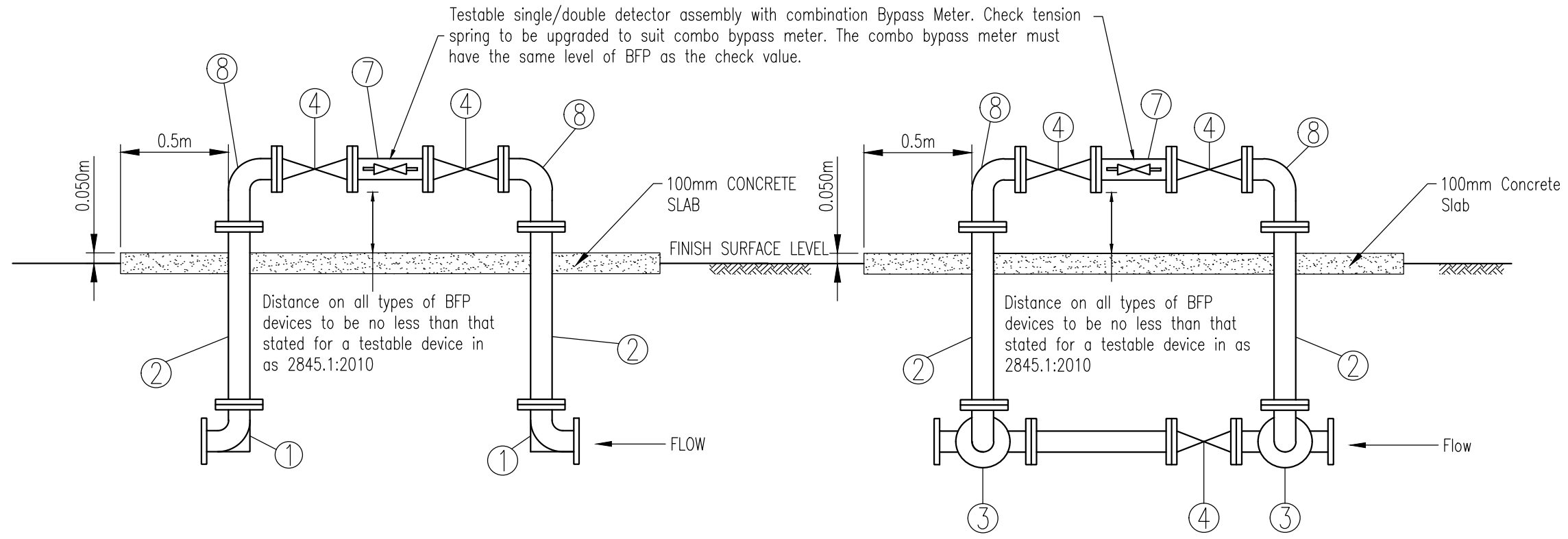
B C D E F



**NOTES:**

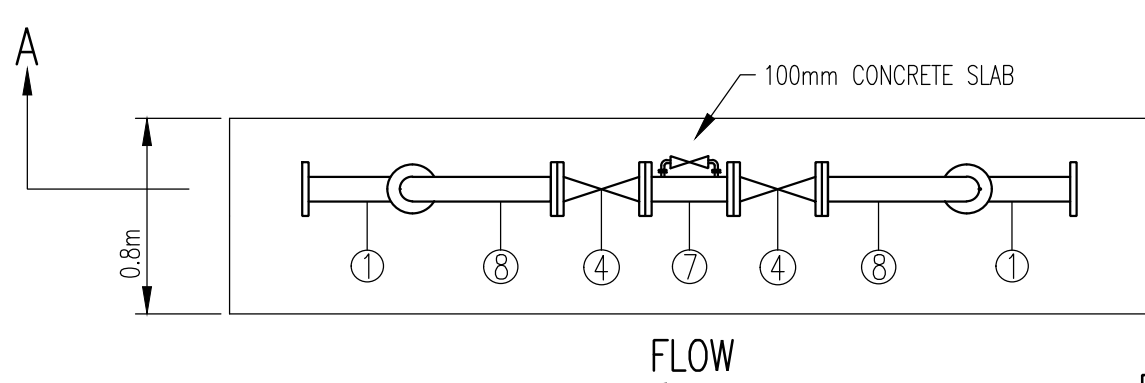
1. Flanged DICL pipe to suit or as otherwise noted.
2. Combination Bypass Meter (Size of meters to be determined for use.). Refer to AS/NZS 3500.1:2003.
3. Bypass Meter must be able to be isolated independently to rest of service.
4. The Isolating Valves must be able to be locked in open position.
5. Council's preferred supplier to BFP devices are TYCO flow control.
6. Check valve for low hazard application shall be used. Isolating valves shall either be gear operated butterfly valves for fire services or resilient sluice valves to suit fire services
7. All works are to comply with AS 3500.1:2003, water supply
  - (a) AS 24.1:2005, fire hydrant installation
  - (b) AS 2845.1:2010, back flow prevention devices
  - (c) Materials, design and performance requirements. Council policy, sewerage water
  - (d) Supply act.
8. Sizing to be indicated on plans as required.
9. Class of pipe
  - (a) mPVC class 16 series 2 (Diod compatible)
  - (b) DI PN20

Testable single/double detector assembly with combination Bypass Meter. Check tension spring to be upgraded to suit combo bypass meter. The combo bypass meter must have the same level of BFP as the check value.

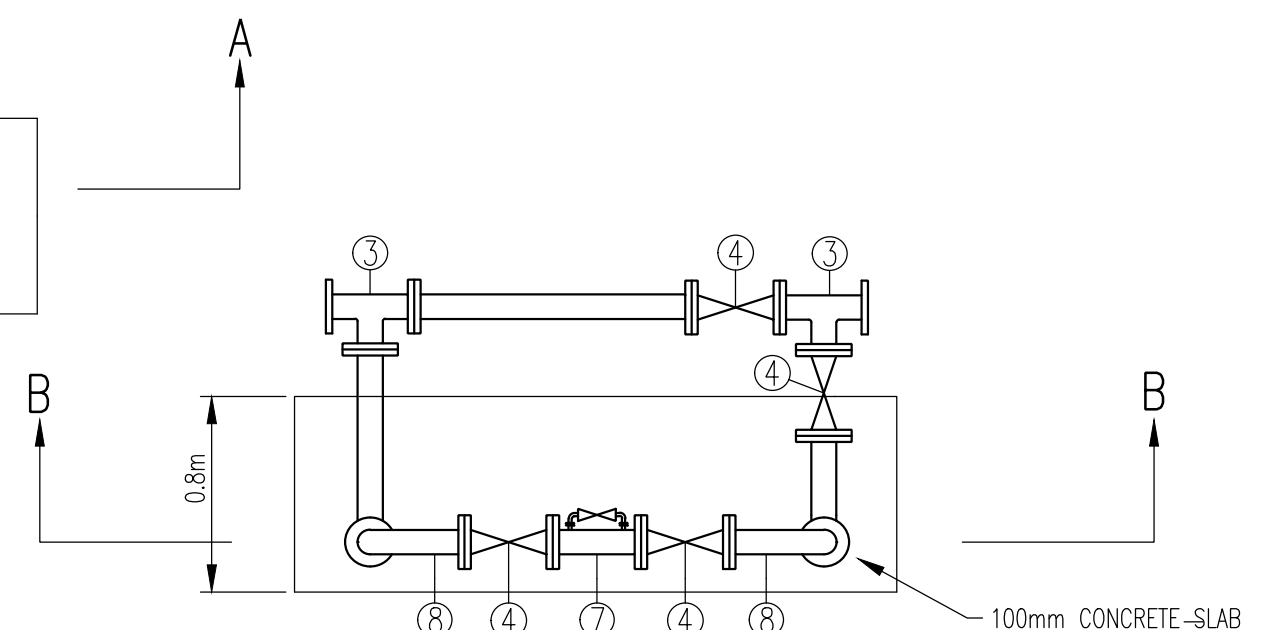


**SECTION A-A**

**SECTION B-B**



**PLAN WITHOUT BYPASS**



**PLAN WITH BYPASS**

FITTING LIST	
①	Duckfoot bend FL-FL
②	FL-FL DICL K16 pipe-length to suit.
③	FL-FL-FL Tee
④	FL-FL Sluice Valve
⑦	Testable (Single/Double) check detector assembly with combination bypass meter (Size of meters to be determined by applicant). Refer to AS/NZS 3500.1:2003
⑧	FL-FL 90° Bend

REVISIONS	DATE
D	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS 27/4/16
C	GENERAL UPDATES 9/4/12
B	MINOR CHANGES TO ELEVATION DETAIL 03/10
A	ORIGINAL ISSUE 06/09



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**WATER TRUNK MAIN COMBINED  
FIRE MAIN AND DOMESTIC SUPPLY  
WITH AND WITHOUT A BYPASS**

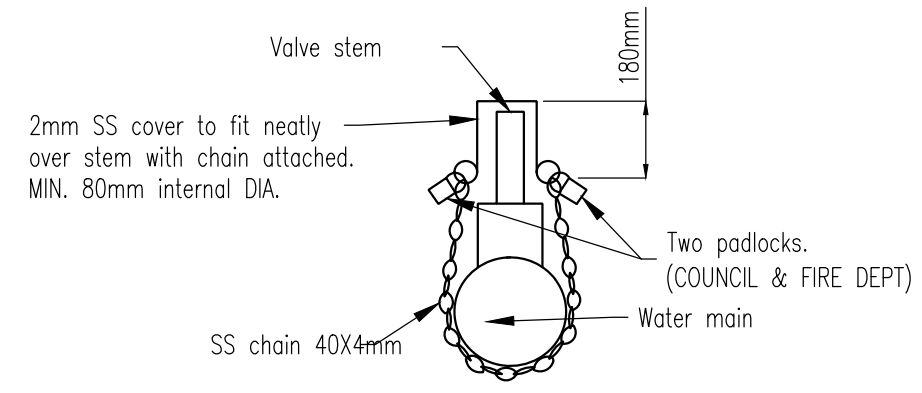
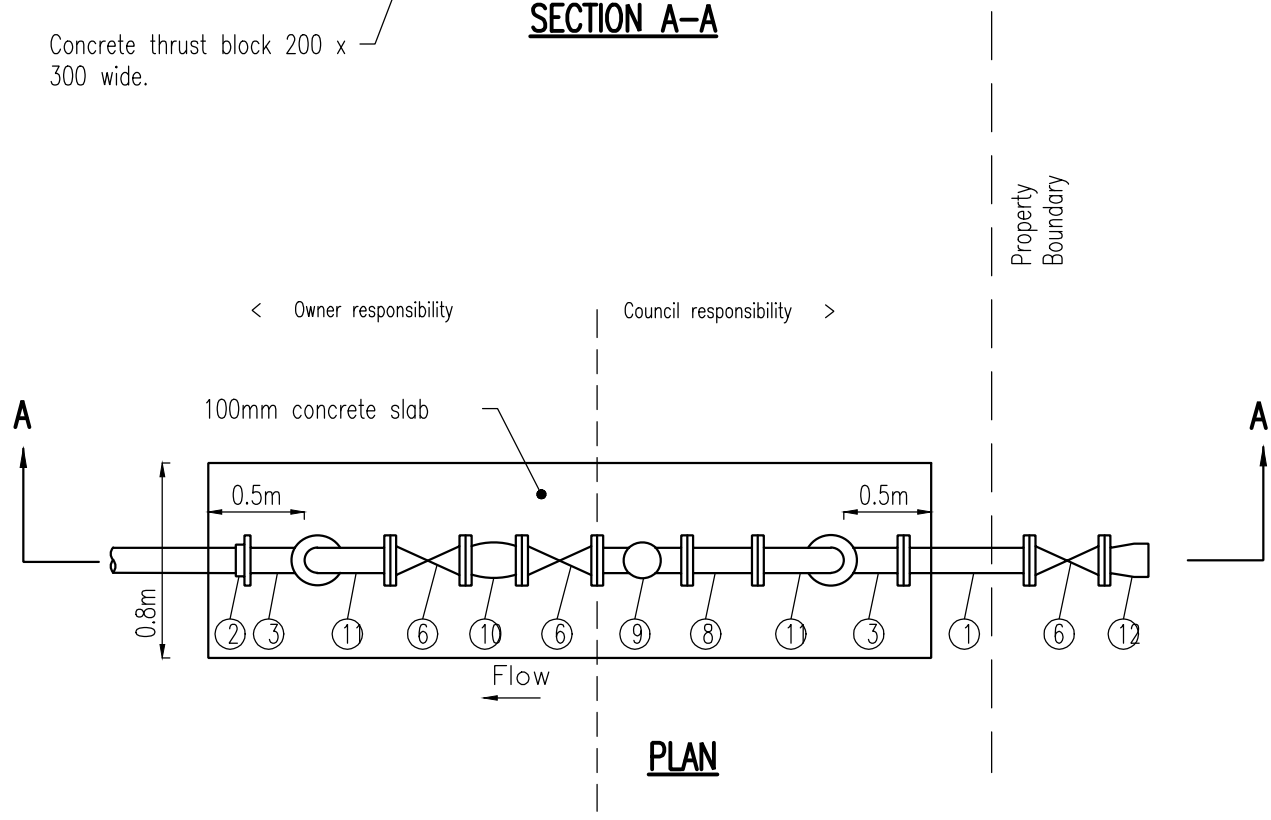
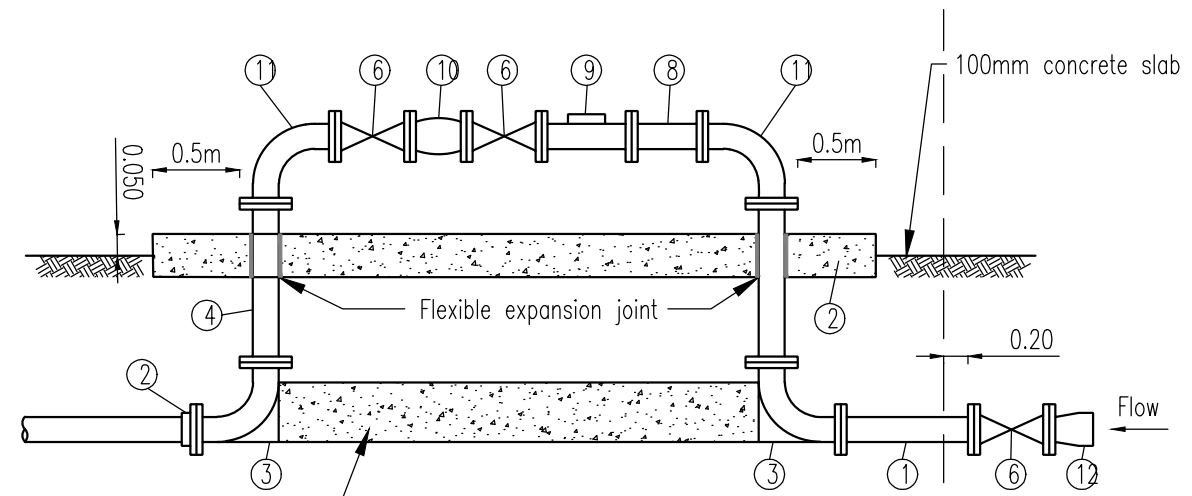
**WATER  
Standard  
Drawing  
W-0093**

A	B	C	D
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**NOTES:**

1. Flanged DICL pipe to suit or as otherwise noted.
2. Combination Bypass Meter (Size of meters to be determined for use). refer to AS/NZS 3500.1:2003.
3. The Isolating Valves must be able to be locked in open position.
4. Council's preferred supplier to BFP devices are TYCO flow control.
5. Check valve for low hazard application shall be used. Isolating valves shall either be gear operated butterfly valves for fire services or resilient sluice valves to suit fire services.
6. All works are to comply with as 3500 water supply
  - (a) AS 2419-1, fire hydrant installation
  - (b) AS 2845-1, back flow prevention devices
  - (c) Materials, design and performance requirements. council policy, sewerage and water.
  - (d) Supply act.
7. Sizing to be indicated on plans as required
8. Class of pipe
  - (a) mPVC class 16 series 2 (DIOD compatible)
  - (b) DI PN20

FITTING LIST	
①	DI FL-FL Pipe length 800mm
②	DI SP-FL Connector
③	Duckfoot bend FL-FL
④	FL-FL DICL K16 Pipe-length to suit
⑤	FL-FL-FL Tee
⑥	FL-FL Sluice Valve.
⑧	Flanged DICL Length = 5X $\phi$ of pipe
⑨	Combo meter
⑩	FL-FL BFP Device to suit the use
⑪	FL-FL 90° Bend
⑫	DI SO-FL Connection



**TAMPER PROOF VALVE COVER**

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	10/4/12
B MINOR CHANGES TO ELEVATION DETAIL	06/09
A ORIGINAL ISSUE	07/08



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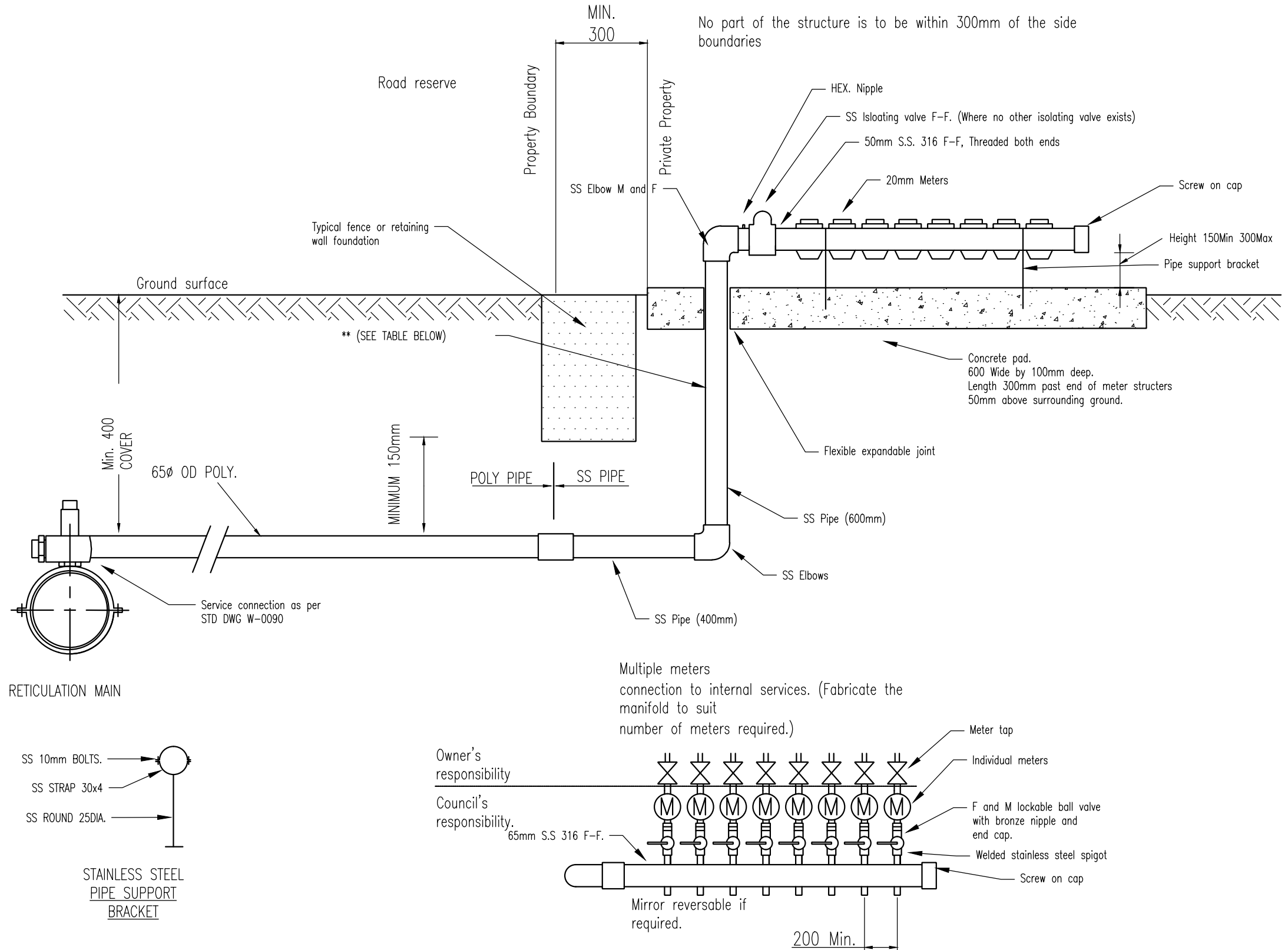
**INDUSTRIAL WATER METERING  
COMBINED FIRE MAIN AND DOMESTIC  
SUPPLY 80mm OR GREATER**

**WATER  
Standard  
Drawing  
W-0094**

A B C D

**NOTES:**

1. A maximum of 10 meters may be connected to any particular manifold before a sub meter is required.
2. The minimum meter size is 20mm, but each installation must be individually sized to suit the usage proposed.
3. Each installation is to be sized to suit the installation proposed by a hydro engineer.
4. The location of the manifold is to be approved by the council in writing before installation.
5. Council may require an approved vehicle proof buffer placed 500mm clear on any side exposed to vehicular traffic.
6. Each offtake is to be clearly engraved with the number of the unit to be served by that meter.
7. Any proposed manifold is to be designed and submitted to council for approval prior to any construction being carried out and no work is to start until council's written approval is received.
8. Meters must be able to be read from the road reserve and if a fence is constructed, an appropriate gate system is to be provided to allow unhindered access by the meter reader.



REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D GENERAL UPDATES	11/4/12
C EXTRA DETAILS ADDED	06/09
B EXTRA DETAILS ADDED	09/08
A ORIGINAL ISSUE	07/08



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**PROSERPINE**  
83-85 Main St  
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Ph 07 4945 0200

**WATER SERVICE METERS MULTIPLE  
OFF-TAKE MANIFOLDS 50mmø  
INPUT SUPPLY**

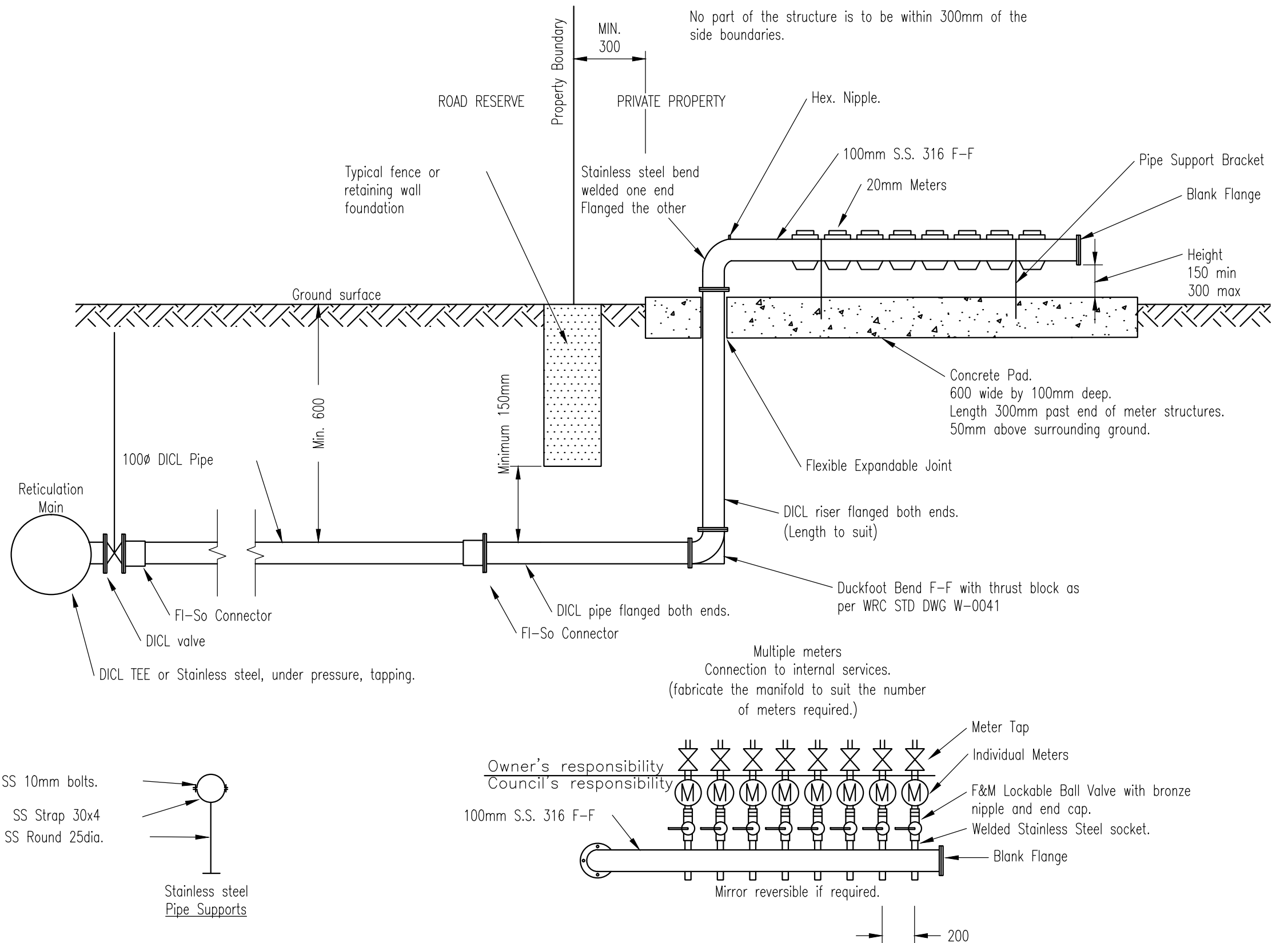
**WATER  
Standard  
Drawing  
W-0095**

A B C D E



**NOTES:**

1. A maximum of 20 meters may be connected to any particular manifold before a sub meter is required.
2. The minimum meter size is 20mm, but each installation must be individually sized to suit the usage proposed.
3. Each installation is to be sized to suit the installation proposed by a Hyrdo Engineer.
4. The location of the manifold is to be approved by the Council in writing before installation.
5. Council may require an approved vehicle proof buffer placed 500mm clear on any side exposed to vehicular traffic.
6. Each offtake is to be clearly engraved with the number of the unit to be served by that meter.
7. Any proposed manifold is to be designed and submitted to Council for approval prior to any construction being carried out and no work is to start until Council's written approval is received.
8. Meters must be able to be read from the road reserve and if a fence is constructed, an appropriate gate system is to be provided to allow unhindered access by the meter reader.



REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	11/4/12
B EXTRA DETAILS ADDED	06/09
A ORIGINAL ISSUE	07/08



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**WATER SERVICE METERS  
MULTIPLE OFF-TAKE MANIFOLDS  
WITH 100mmØ INPUT SUPPLY.**

**WATER  
Standard  
Drawing  
W-0096**

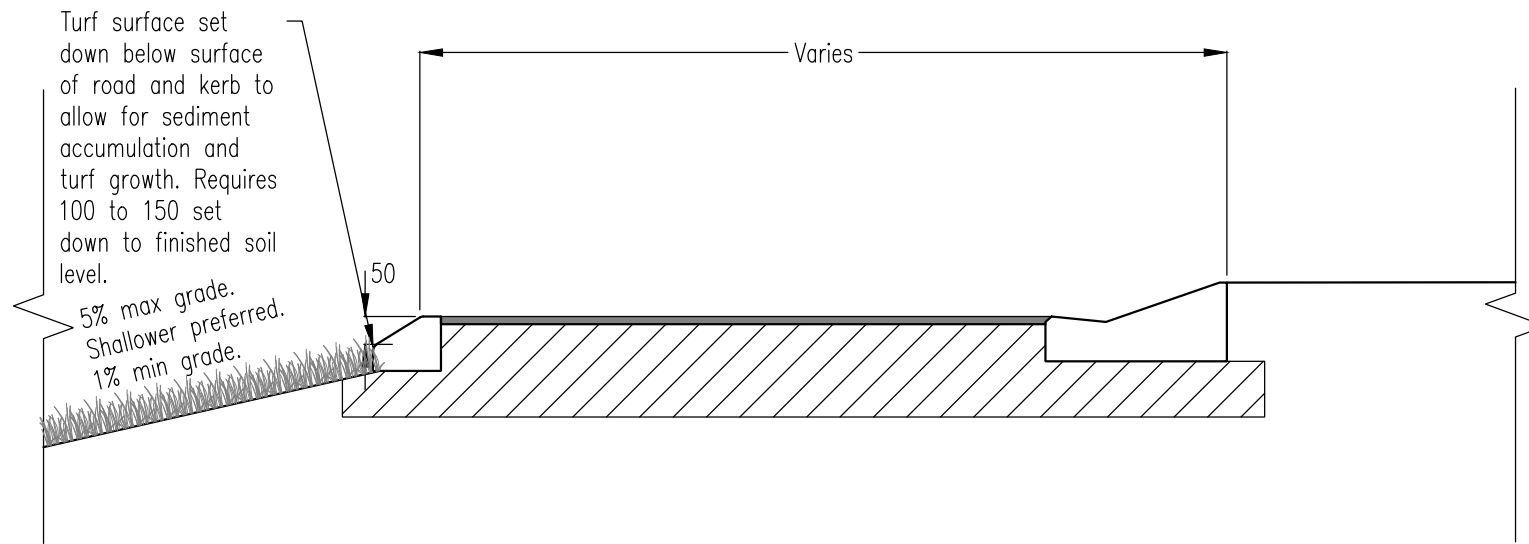
A B C D





**NOTES:**

1. Engineering works to be in accordance with councils engineering guidelines, standards and specifications.
2. All dimensions in millimetres unless specified otherwise.
3. Ensure appropriate drainage downstream of buffer. Design to suit context (eg. open space, swale).



TYPICAL SECTION

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE



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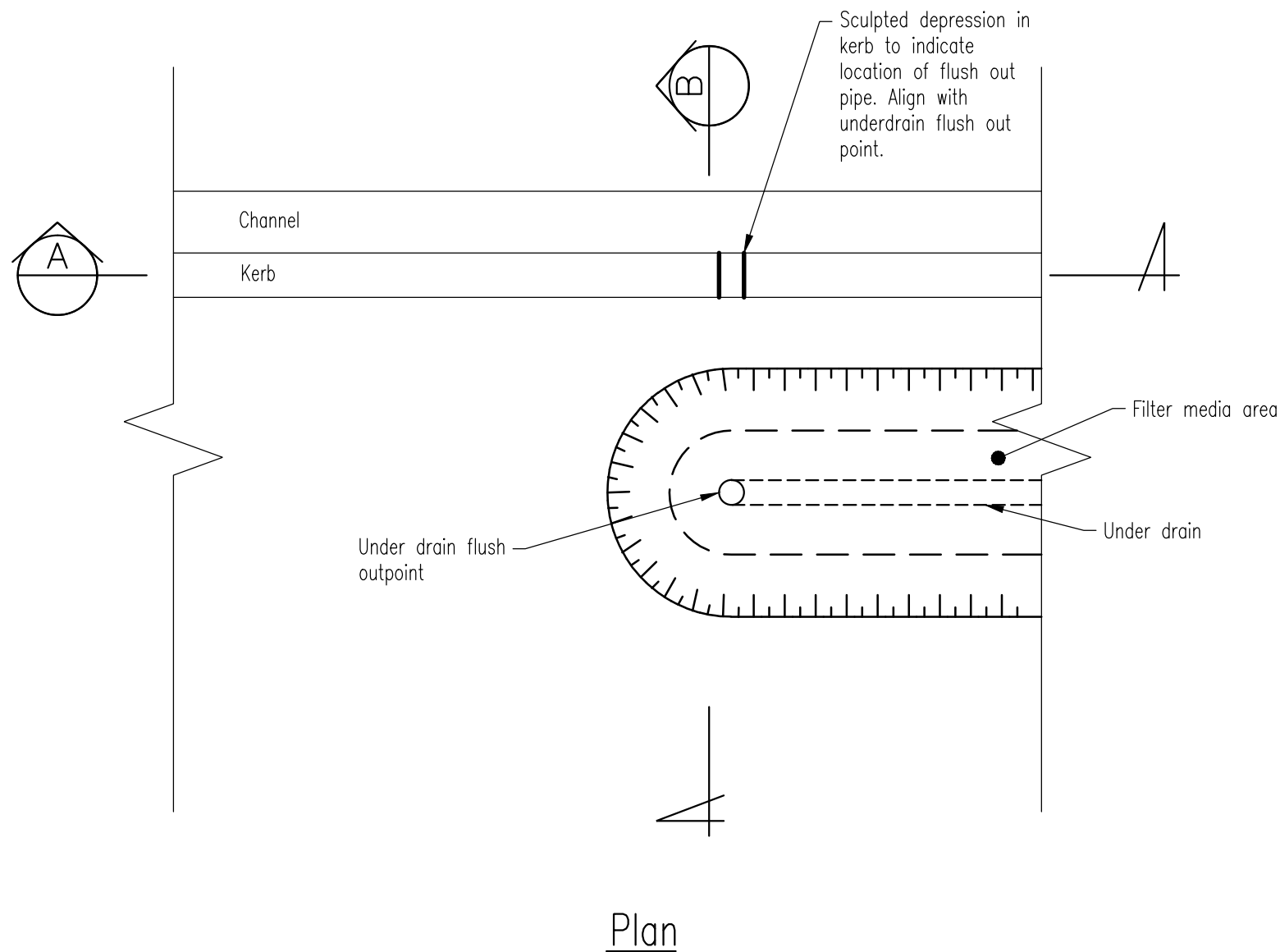
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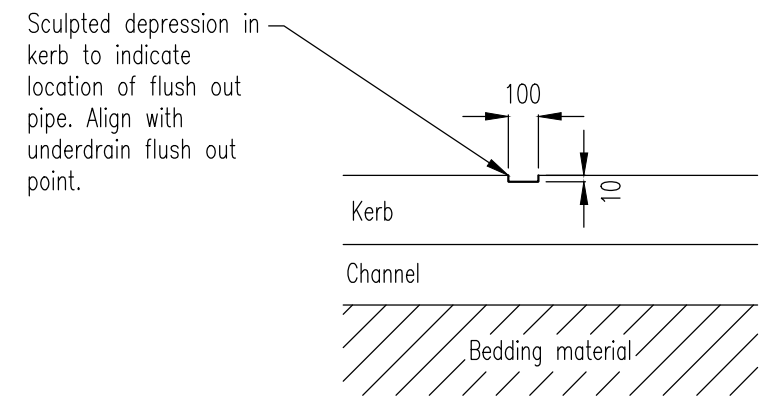
**FLUSH KERBING AND  
GRASS BUFFER STRIP**

**SW QUALITY  
Standard  
Drawing  
Q-0002**

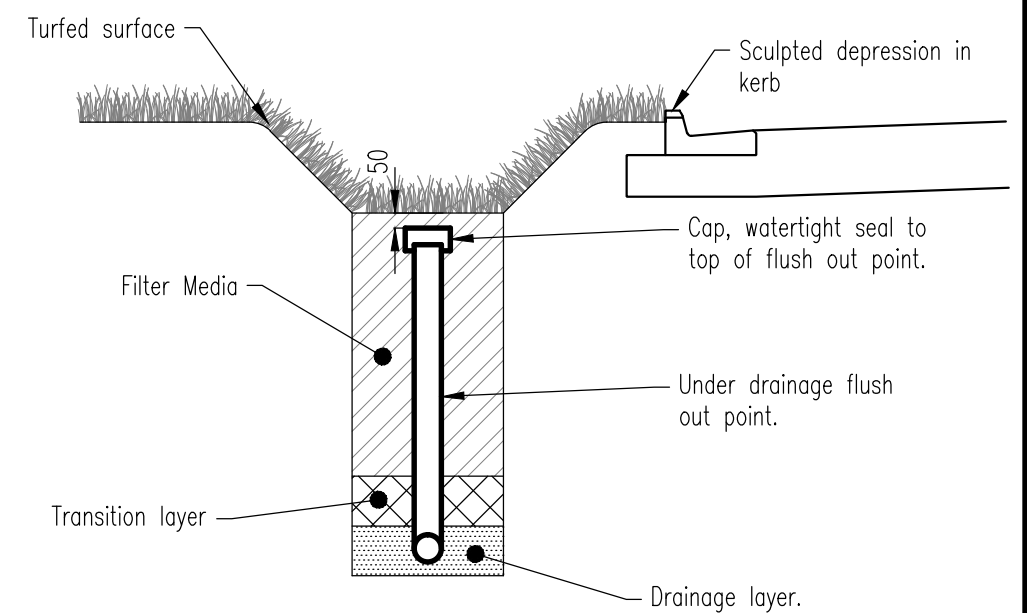
A



Plan



Section A



Section B

**NOTES:**

1. For specific bioretention details see drawings DS-070, DS-071, DS-076, DS-077 & DS-078.
2. All measurements in millimetres.

REVISIONS	DATE
A ORIGINAL ISSUE	8/6/16



Whitsunday  
Regional Council

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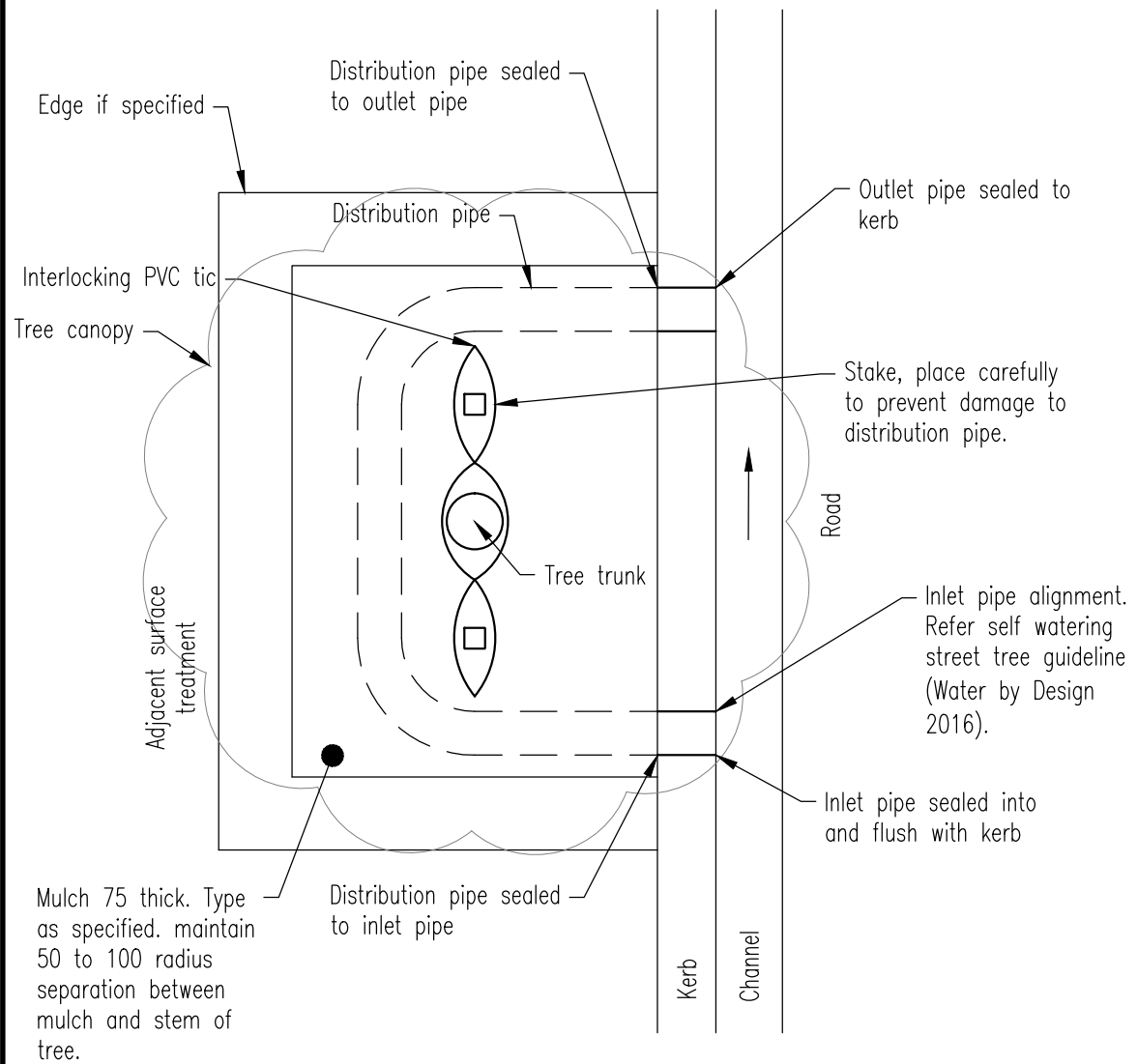
**UNDERDRAINAGE FLUSH OUT  
PIPE IN STREETSCAPE**

**SW QUALITY  
Standard  
Drawing  
Q-0003**

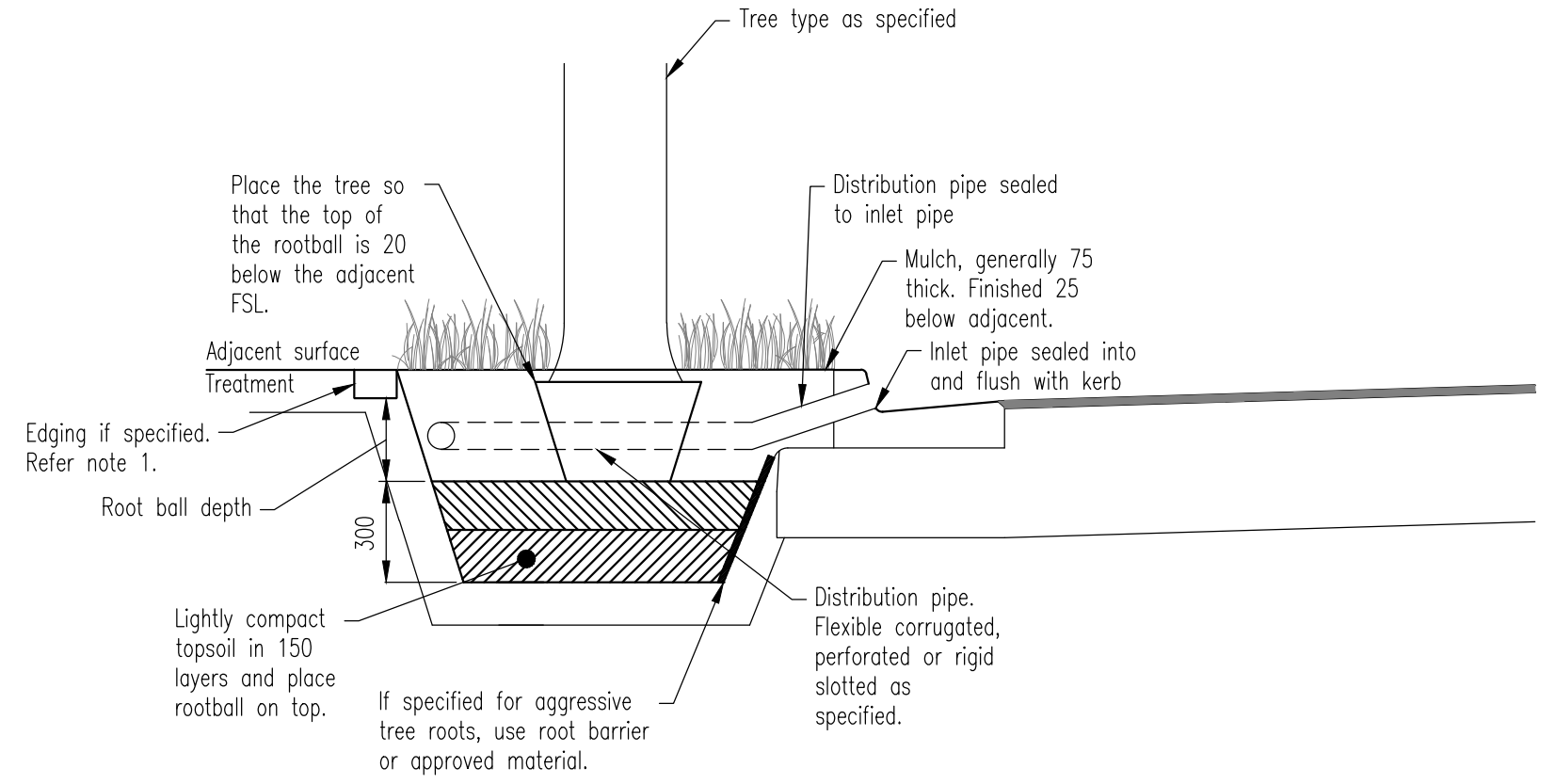
A

**NOTES:**

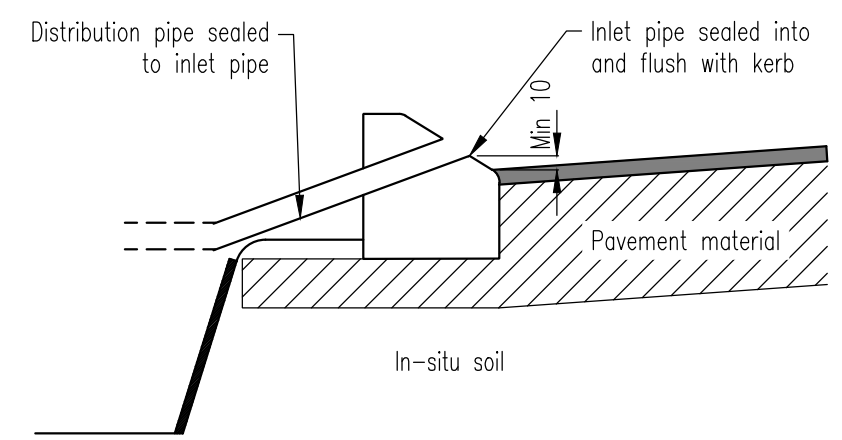
1. Use standard fittings for all connections including joining lengths of pipe.
2. All dimensions in millimetres



Plan



Inlet and kerb detail



Alternate inlet and kerb detail

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE



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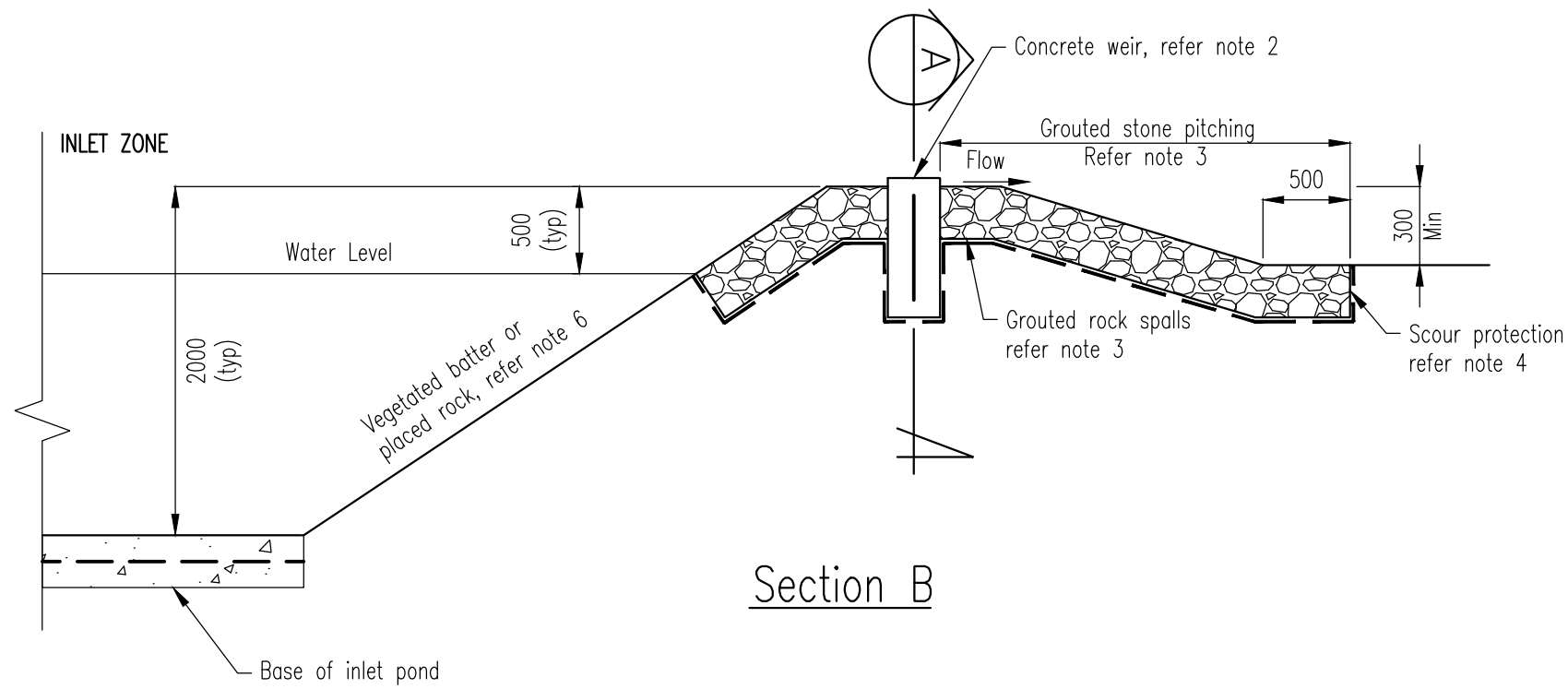
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**SELF WATERING STREET TREE**

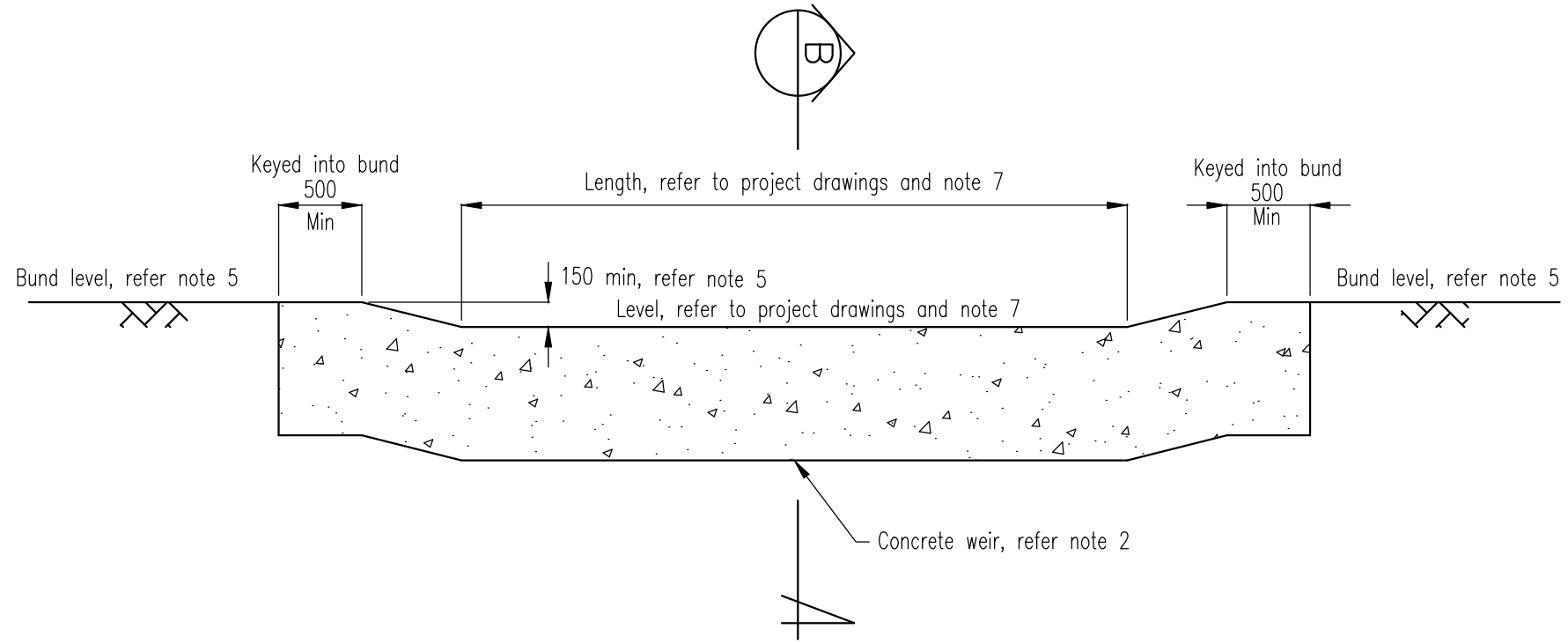
**SW QUALITY  
Standard  
Drawing  
Q-0004**

A				
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Section B

These drawings have been developed in consultation between participating councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate council.



Section A

- NOTES:**
1. In situ material to be tested and approved by geotechnical engineer prior to weir construction.
  2. Concrete weir – 300 wide x 800 high concrete (N32) with SL81 mesh placed centrally.
  3. Grouted stone pitching – stones 75–100, 300 thick on filter cloth, non-woven geotextile. Refer landscape drawings and project drawings for plant specification and details. Geotechnical engineer to confirm compaction requirements for bund subsoil. Option to drill 100 cores through to subsoil to provide voids for planting (Subject to flow velocities and local government requirements). Option to use placed rock with void plantings subject to approval by hydraulic engineer and local authority.
  4. For extent and details of scour protection refer to project drawings. Bund levels must be noted on project drawings.
  5. Bund level, refer to project drawings for minimum freeboard requirements.
  6. Refer to project drawings for vegetated batter slope. Batters must be in accordance with local authority safety requirements.
  7. Construction tolerances as documented in the "Water Sensitive Design Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands" (Water by Design) must be achieved. Construction tolerances must be noted on project plans. Invert levels of pits, pipes and base levels must be noted on project drawings.
  8. All dimensions are in millimetres unless noted otherwise.

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE

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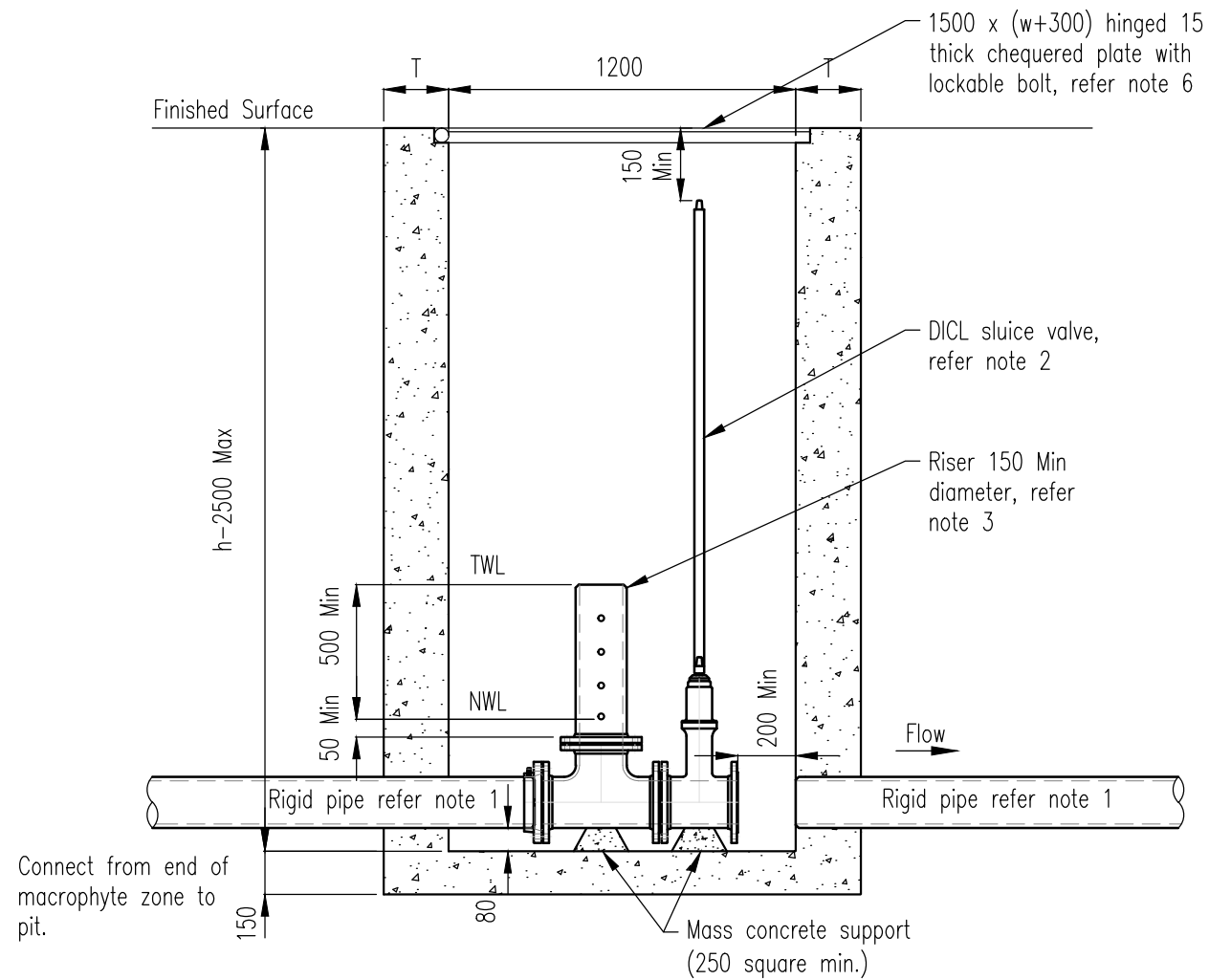
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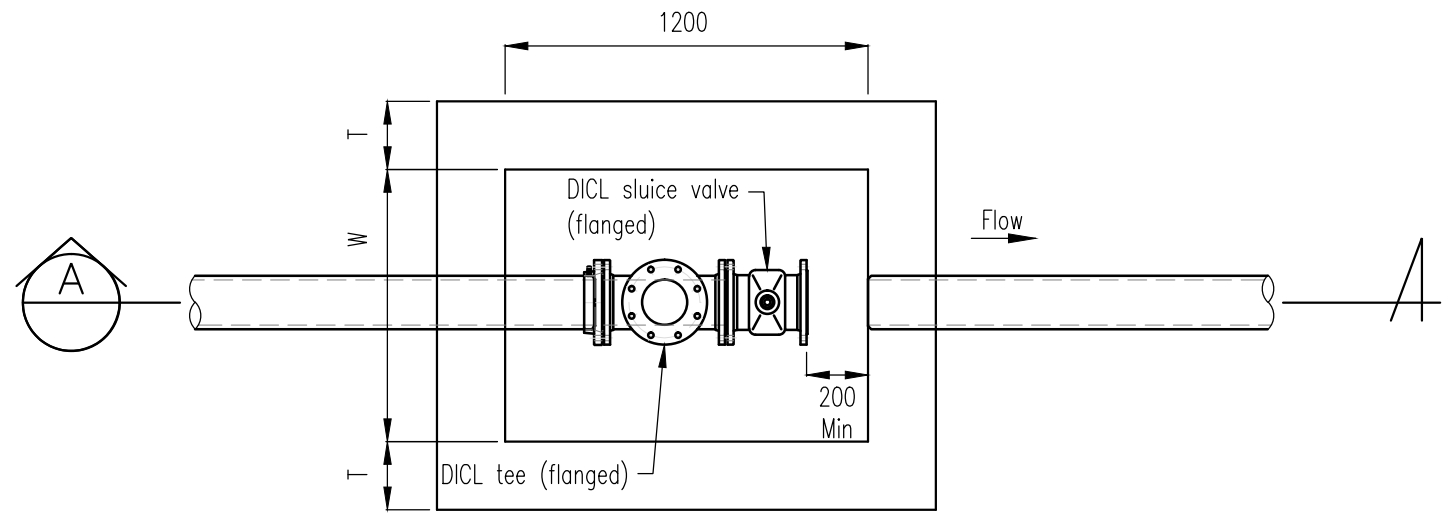
**PROSERPINE**  
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**CONSTRUCTED WETLAND  
INLET ZONE  
WEIR DETAILS**

**SW QUALITY  
Standard  
Drawing  
Q-0005**



Section A



Plan

**NOTES:**

1. Refer to project drawings for rigid pipe diameter and invert level.
2. DICL sluice valve, refer project drawings for valve size. Valve to remain in closed position for normal operation. Valve to be opened to lower the water level for maintenance of the wetland.
3. Riser rigid pipe CL16, refer to project drawings for holes sizes and locations. Hole size and number as per relevant section of "Water Sensitive Urban Design Technical Design Guidelines" (Water by Design).
4. For pits over 2500 in depth refer project drawings for pit dimensions and reinforcing details.
5. Concrete N25 in accordance with AS 1379:2007 AS 3600:2009
6. Lid and frame to be hot dip Galvanised after fabrication to AS 1650:1989.
7. Construction tolerances as documented in the "Water Sensitive Urban Design Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands" (Water by Design) must be achieved. Construction tolerances must be noted on project plans. Invert levels of pits, pipes and base levels must be noted on project drawings.
8. All dimensions in millimetres unless noted otherwise.

Pit Dimensions		
Height (h)	Width (w)	Wall thickness
0-1500	600	150
1500-2500	900	225

These drawings have been developed in consultation between participating councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate council.

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE



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**CONSTRUCTED WETLAND  
OUTLET RISER PIT**

**SW QUALITY  
Standard  
Drawing  
Q-0006**

A



Std. Dwg. No.	Descriptions
	<b>ACCESS CHAMBERS</b>
	ACCESS CHAMBER
D-0010	DETAILS DIA 1050 TO 1500
D-0011	ROOF SLABS DIA 1050 TO 1500
D-0012	ROOF SLABS DIA 1500 EXTENDED 600 AND 900
D-0013	ROOF SLAB RECTANGULAR
D-0014	CAST IRON COVER AND FRAME CI CONCRETE FILLED COVER
D-0015	CAST IRON COVER AND FRAME BOLT DOWN
	<b>BEDDING AND BACKFILLING</b>
D-0030	EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE/FIBRE REINFORCED DRAINAGE PIPES
D-0031	EXCAVATION, BEDDING AND BACKFILLING OF PRECAST BOX CULVERTS
	<b>FIELD INLET</b>
D-0050	FIELD INLET AND OVERFLOW GULLY TYPE 1 AND TYPE 2
	<b>GULLY</b>
	GULLY – ROADWAY TYPE
D-0061	PRECAST LINTEL DETAILS KERB IN LINE
D-0062	GRATE AND FRAME
D-0063	GULLY – ROADWAY TYPE CHANNEL LIP IN LINE DRAINWAY STORMWATER INLET COMPONENTS
D-0064	COMPONENTS
D-0065	CAST IRON GRATE COVER AND FRAME
D-0066	TEST LOAD PROCEDURE
D-0067	CONSTRUCTION SETTING OUT BARRIER/MOUNTABLE KERB & CHANNEL
D-0068	GULLY – ANTI-PONDING DEPRESSED 17mm
D-0069	ROCLA/BROPIT SYSTEM
	<b>INLETS AND OUTLETS</b>
D-0080	INLETS AND OUTLETS TO STORMWATER DRAINS (CONCRETE)
	<b>ROOF WATER DRAINAGE</b>
D-0110	ROOFWATER INSPECTION CHAMBER

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
C GENERAL UPDATES	27/2/12
B DWG D-0020 ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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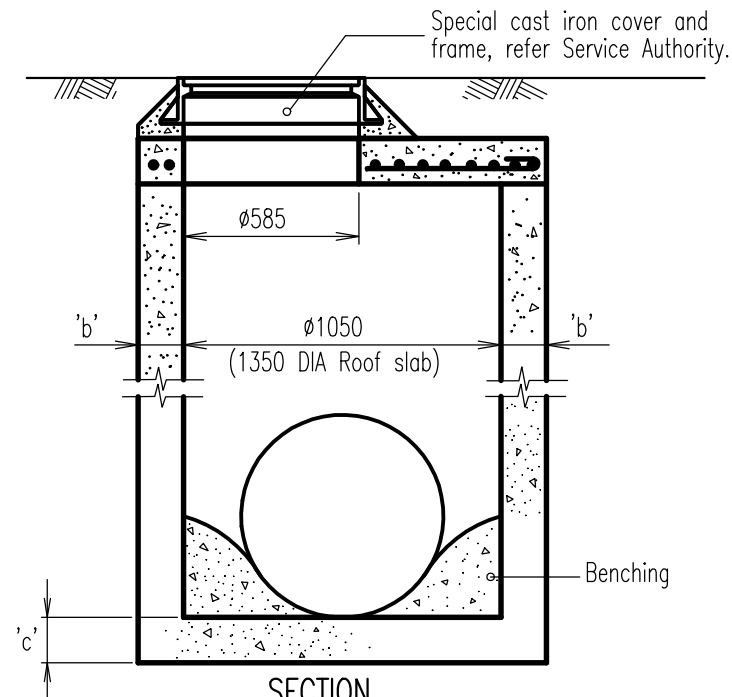
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# INDEX STANDARD DRAWINGS DRAINAGE

**DRAINAGE  
Standard  
Drawing  
D-0001**

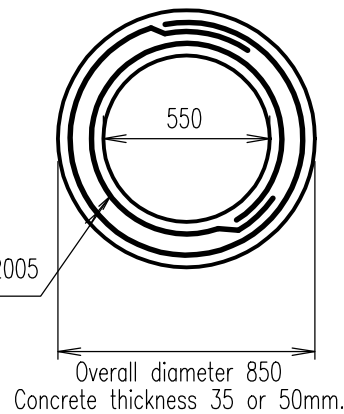
A	B	C	D
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SECTION  
ALTERNATIVE 1  
1050 DIA MH.

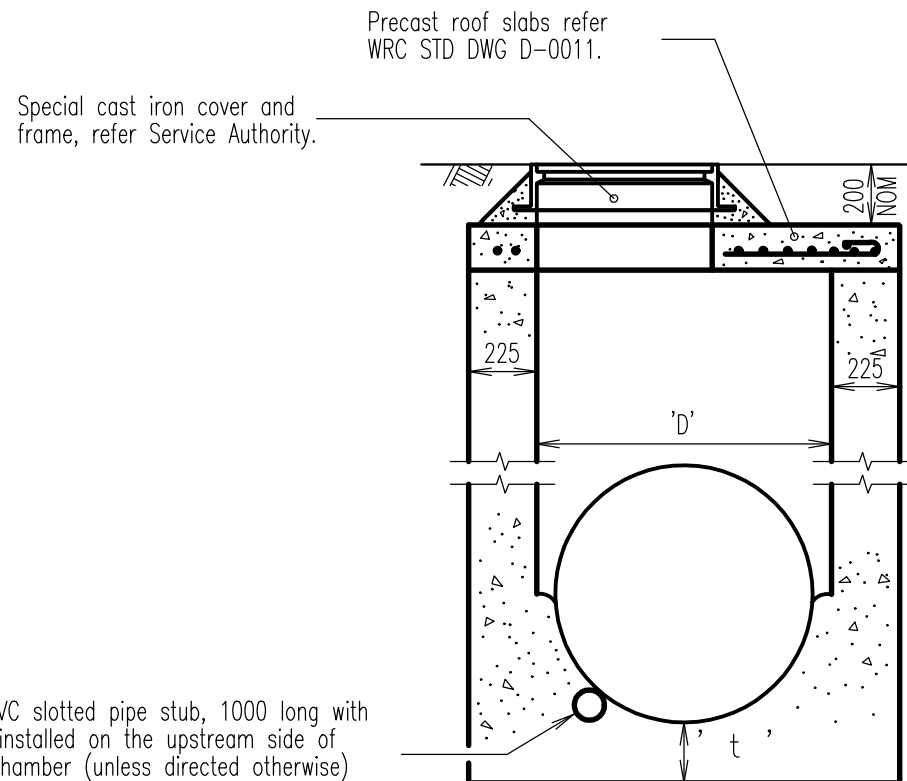
CRITICAL DIMENSIONS		
Depth to outlet invert	Thickness	
	'b'	'c'
Minimum to 3000	150	150
3000 to 6000	225	300

2-R6 bars Grade 400 to AS 1302:2005 placed centrally in ring with 40 side cover. Lap 250.



PLAN  
ROOF RING

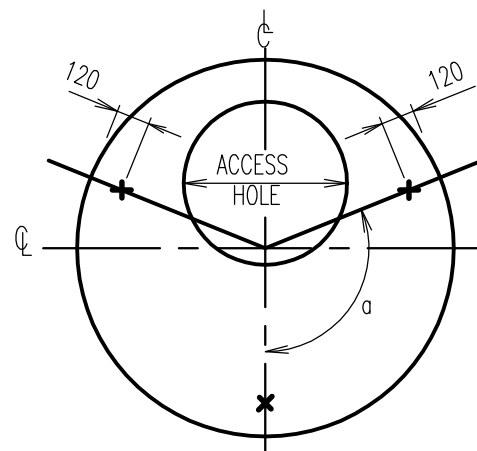
For use in raising covers and frames of existing access chambers



'D' { 1200 (1650 DIA roof slab)  
1350 (1800 DIA roof slab)  
1500 (1950 DIA roof slab)

TYPICAL SECTION  
>1050 DIA MH.

ACCESS CHAMBER DETAILS



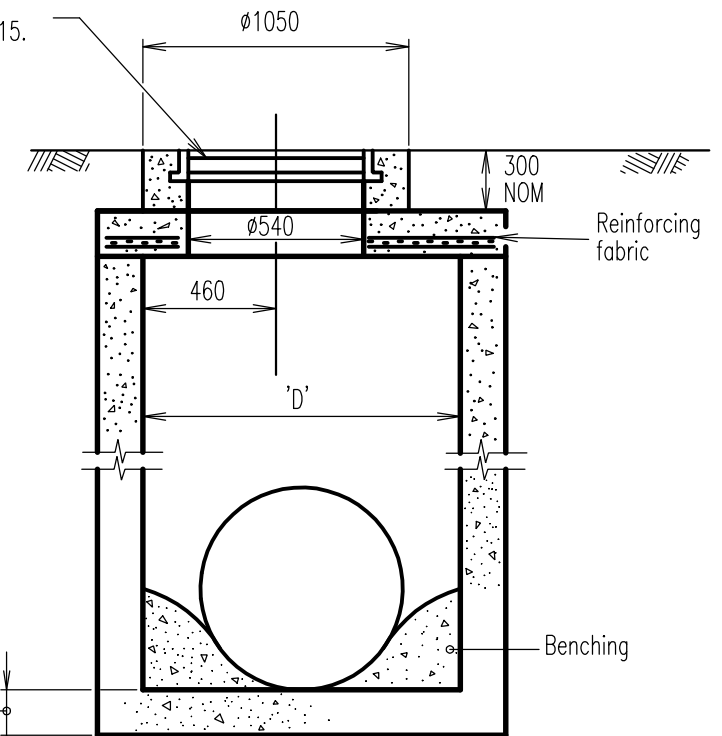
LIFTING ANCHOR LOCATIONS

(Refer Note 5)

$\alpha = 112^\circ$  For  $\phi 1350$

$\alpha = 120^\circ$  For  $\phi 1650-1950$

Cast iron cover and frame, refer WRC STD DWG D-0014 and D-0015.



1200 - 225  
1350 - 225  
1500 - 225

SECTION  
ALTERNATIVE 2  
>1050 DIA MH.

INVERT GRADE DIMENSION 't' (MIN)

Access chamber DIA	FLOOR THICKNESS 't'	
	INLET	OUTLET
1200	250	225
1350	250	225
1500	250	225

NOTES:

- Structural concrete N25, benching N10 in accordance with AS 1379:2007 and AS 3600:2009.
- Refer WRC STD DWG D-0011 and D-0012 for roof slab reinforcement details.
- Alternatives :-  
For access hole location refer Service Authority.  
For turent type refer Service Authority.
- Refer Project Drawings for size and level of culverts, and chamber cover level.
- Lifting anchors to be "swiflift" or equivalent 1.8 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturer's specifications.
- Access chambers deeper than 3.0m to have an access ladder to AS 1657:2013 in lieu of step irons.
- All dimensions in millimetres.

REVISIONS	DATE
D UPDATE TO WALL AND BASE THICKNESS FOR MANHOLE DEPTH	9/6/16
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	5/5/16
B GENERAL UPDATES	27/2/12
A ORIGINAL ISSUE	1/3/97



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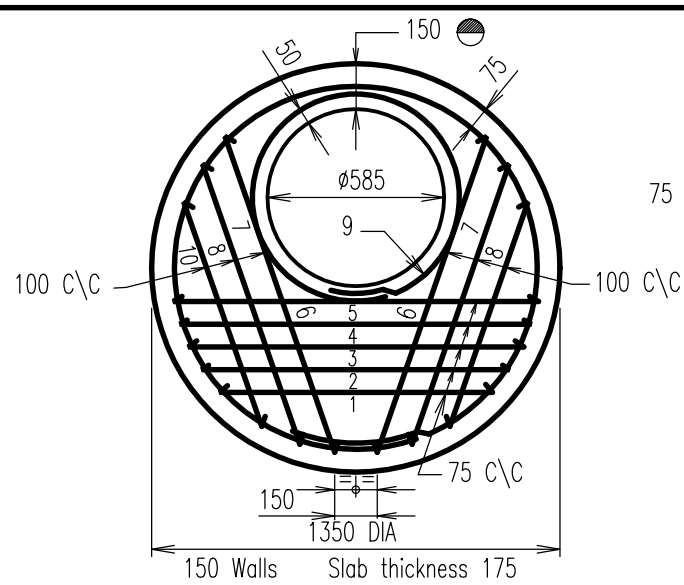
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ACCESS CHAMBER  
DETAILS  
DIA 1050 TO 1500

DRAINAGE  
Standard  
Drawing  
D-0010

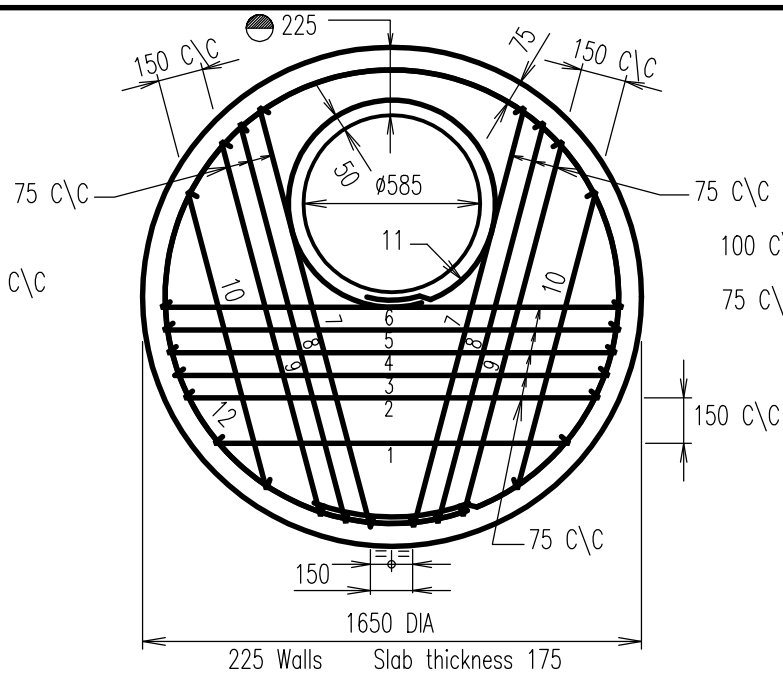
A B C D



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		937	1175	1	1175
2		1030	1255	1	1255
3		1125	1350	1	1350
4	'a'	1175	1400	1	1400
5	'a'	1225	1450	1	1450
6	'a'	1125	1350	2	2700
7	'a'	1000	1225	2	2450
8	'a'	812	1050	2	2100
9	'b'	685	2550	1	2550
10	'b'	1200	4200	1	4200
TOTAL					20630

STEEL MASS : 19kg  
 CONCRETE : 0.20m³  
 TOTAL MASS : 508kg

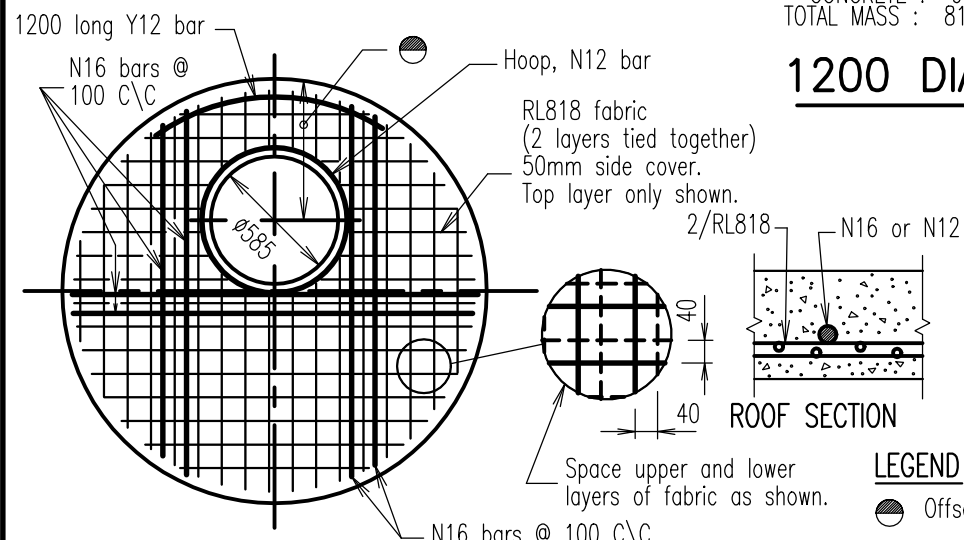
### 1050 DIA ACCESS CHAMBER



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1200	1425	1	1425
2		1400	1625	1	1625
3		1450	1675	1	1675
4	'a'	1500	1725	1	1725
5	'a'	1520	1745	1	1745
6	'a'	1537	1775	1	1775
7	'a'	1450	1675	2	3350
8	'a'	1375	1600	2	3200
9	'a'	1300	1525	2	3050
10	'a'	1050	1275	2	2550
11	'b'	685	2550	1	2550
12	'b'	1500	5150	1	5150
TOTAL					23200

STEEL MASS : 27kg  
 CONCRETE : 0.33m³  
 TOTAL MASS : 818kg

### 1200 DIA ACCESS CHAMBER



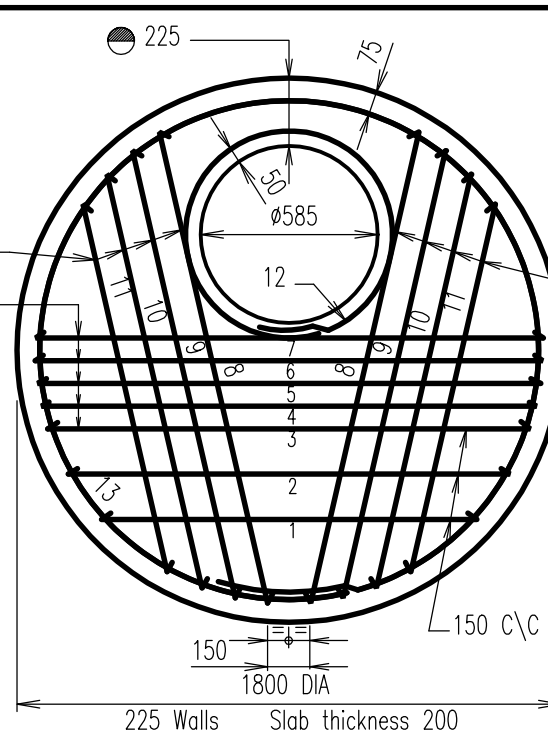
#### FABRIC REINFORCED SLAB

NOM DIA	ROOF THICKNESS
1050	175
1200	175
1350	200
1500	250

#### LEGEND

- Offset to access hole varies :-
  - Hole in line with chamber wall, or
  - Hole offset from wall 460mm (refer Alternative 2 on WRC STD DWG D-0010).

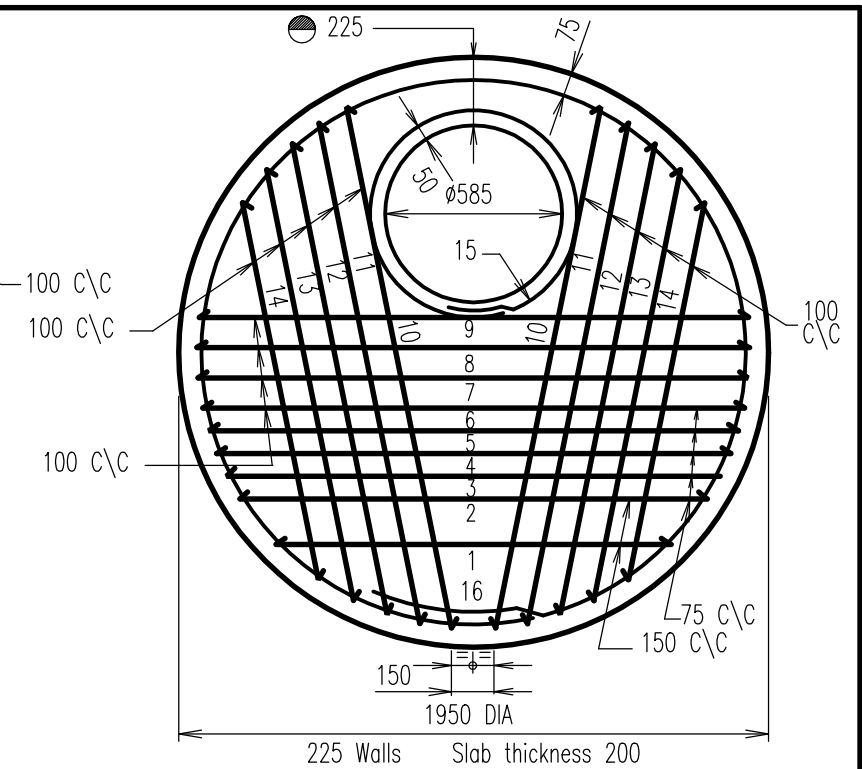
### FABRIC REINFORCEMENT ALTERNATIVE



BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1275	1500	1	1500
2		1488	1725	1	1725
3		1612	1850	1	1850
4	'a'	1645	1870	1	1870
5	'a'	1675	1900	1	1900
6	'a'	1675	1900	1	1900
7	'a'	1675	1900	1	1900
8	'a'	1600	1825	2	3650
9	'a'	1525	1750	2	3500
10	'a'	1412	1650	2	3300
11	'a'	1262	1500	2	3000
12	'b'	685	2550	1	2550
13	'b'	1650	5625	1	5625
TOTAL					34270

STEEL MASS : 31kg  
 CONCRETE : 0.45m³  
 TOTAL MASS : 1138kg

### 1350 DIA ACCESS CHAMBER



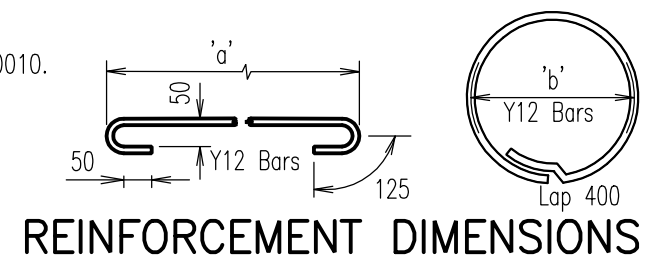
BAR No.	SHAPE	'a'/'b'	OVERALL LENGTH	No. OFF	TOTAL LENGTH
1		1337	1575	1	1575
2		1575	1800	1	1800
3		1645	1870	1	1870
4	'a'	1712	1950	1	1950
5	'a'	1756	1980	1	1980
6	'a'	1800	2025	1	2025
7	'a'	1825	2050	1	2050
8	'a'	1837	2075	1	2075
9	'a'	1825	2050	1	2050
10	'a'	1762	2000	2	4000
11	'a'	1700	1925	2	3850
12	'a'	1600	1825	2	3650
13	'a'	1462	1700	2	3400
14	'a'	1275	1500	2	3000
15	'b'	685	2550	1	2550
16	'b'	1800	6100	1	6100
TOTAL					43925

STEEL MASS : 39kg  
 CONCRETE : 0.55m³  
 TOTAL MASS : 1360kg

### 1500 DIA ACCESS CHAMBER

#### NOTES:

- Concrete N40 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement cover 30 MIN (bottom cover)
- Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001
- For lifting anchor locations and details, refer WRC STD DWG D-0010.
- Roof design based on Austroads bridge code, W7 wheel load, dynamic factor 0.4.
- All dimensions in millimetres.



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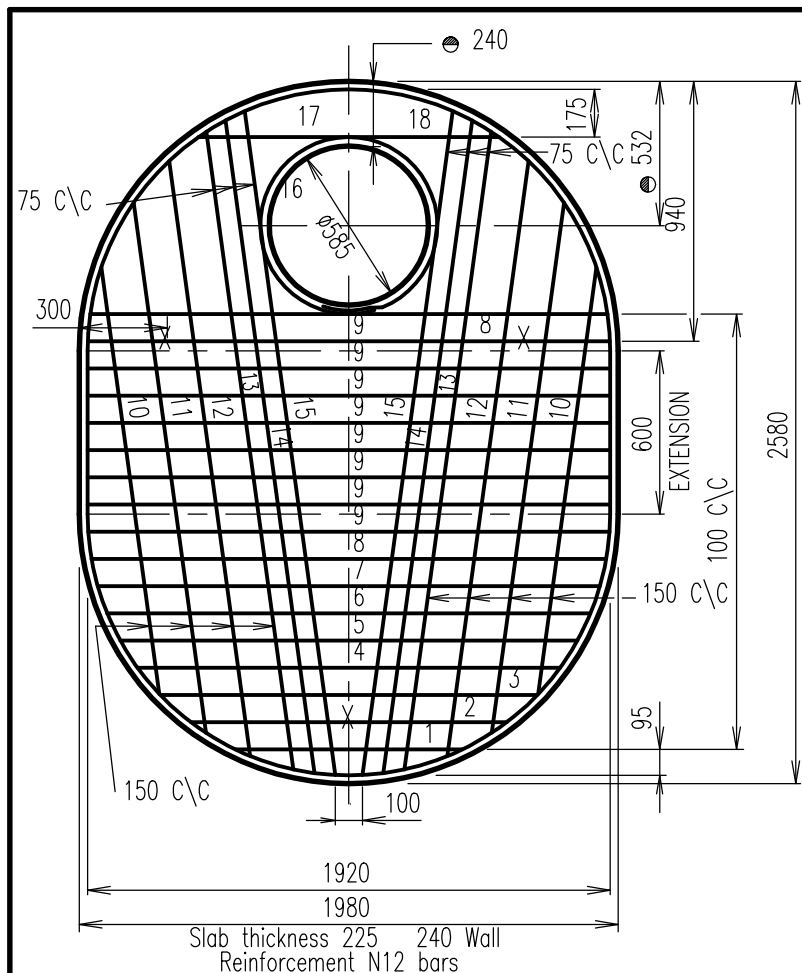
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Proserpine 4800 Q  
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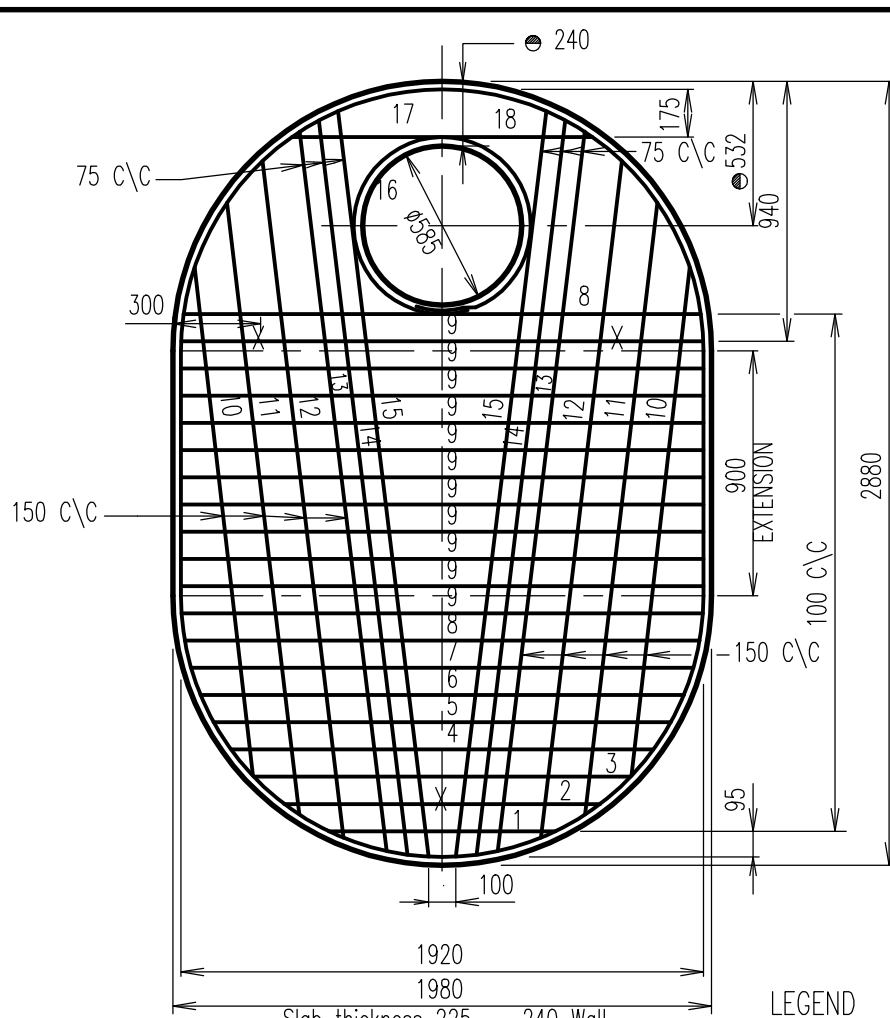
**ACCESS CHAMBER  
ROOF SLABS  
DIA 1050 - 1500**

**DRAINAGE  
Standard  
Drawing  
D-0011**

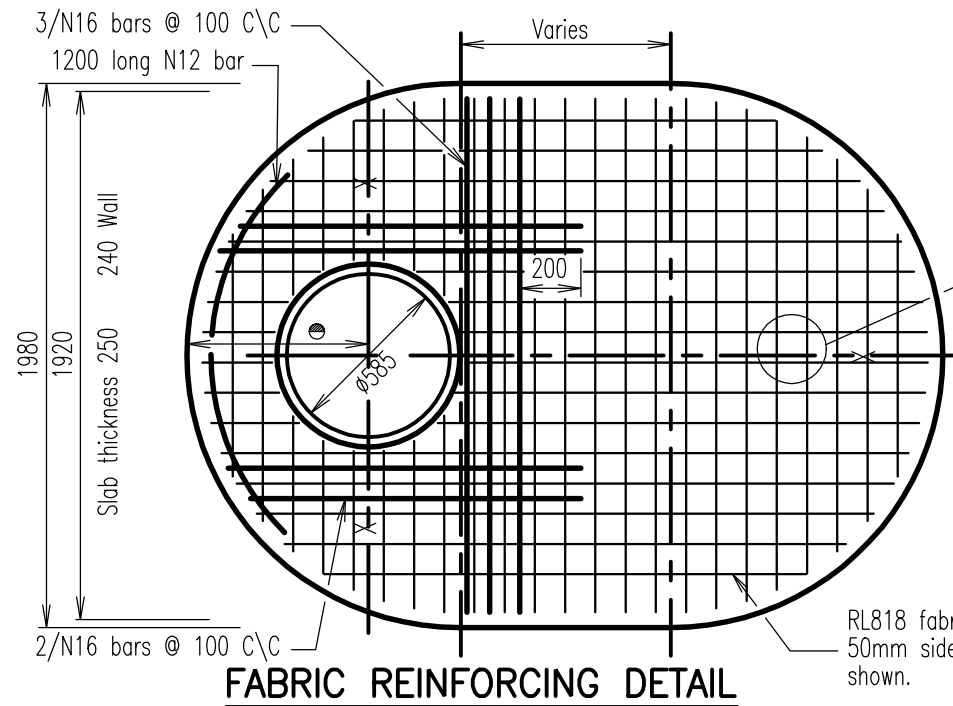
A B C



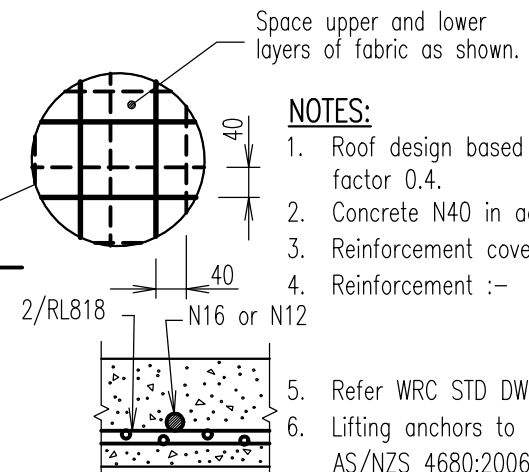
**1500 DIA ACCESS CHAMBER  
EXTENDED 600**



**1500 DIA ACCESS CHAMBER  
EXTENDED 900**



**FABRIC REINFORCING DETAIL**



**ROOF SECTION**

**LEGEND**

- Offset to access hole varies :-
  - Hole in line with chamber wall, or
  - Hole offset from wall 460mm (refer Alternative 2 on WRC STD DWG D-0010).

**NOTES:**

- Roof design based on Austroads Bridge code, W7 wheel load, dynamic factor 0.4.
- Concrete N40 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement cover 30 MIN (bottom face).
- Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001
- Refer WRC STD DWG D-0011 for 'reinforcement dimensions'.
- Lifting anchors to be "swiftlift" or equivalent. 1.8 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturer's specification at points shown 'X'.
- Lifting capacity of mechanical devices to be no less than 4 tonnes.
- All dimensions in millimetres.

**1500 DIA ACCESS CHAMBER  
EXTENDED 600**

BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1	—	835	1	835
2	—	1160	1	1160
3	—	1385	1	1385
4	—	1550	1	1550
5	—	1680	1	1680
6	—	1775	1	1775
7	—	1845	1	1845
8	—	1890	2	3780
9	—	1920	8	15360
10	—	1560	2	3120
11	—	1920	2	3840
12	—	2170	2	4340
13	—	2300	2	4600
14	—	2375	2	4750
15	—	2450	2	4900
16	○	2550	1	2550
17	—	7195	1	7195
18	—	1105	1	1105
Steel Mass	59 kg	TOTAL LENGTH		65770
Concrete Volume	0.90 m <sup>3</sup>			
Total Mass	2250 kg			

**1500 DIA ACCESS CHAMBER  
EXTENDED 900**

BAR NO.	SHAPE	LENGTH	NO. OFF	TOTAL
1	—	835	1	835
2	—	1160	1	1160
3	—	1385	1	1385
4	—	1550	1	1550
5	—	1680	1	1680
6	—	1775	1	1775
7	—	1845	1	1845
8	—	1890	2	3780
9	—	1920	11	21120
10	—	1800	2	3600
11	—	2200	2	4400
12	—	2470	2	4940
13	—	2650	2	5300
14	—	2700	2	5400
15	—	2750	2	5500
16	○	2550	1	2550
17	—	7795	1	7795
18	—	1105	1	1105
Steel Mass	67 kg	TOTAL LENGTH		75720
Concrete Volume	1.03 m <sup>3</sup>			
Total Mass	2575 kg			

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**ACCESS CHAMBER  
ROOF SLABS  
DIA. 1500 EXTENDED 600 AND 900**

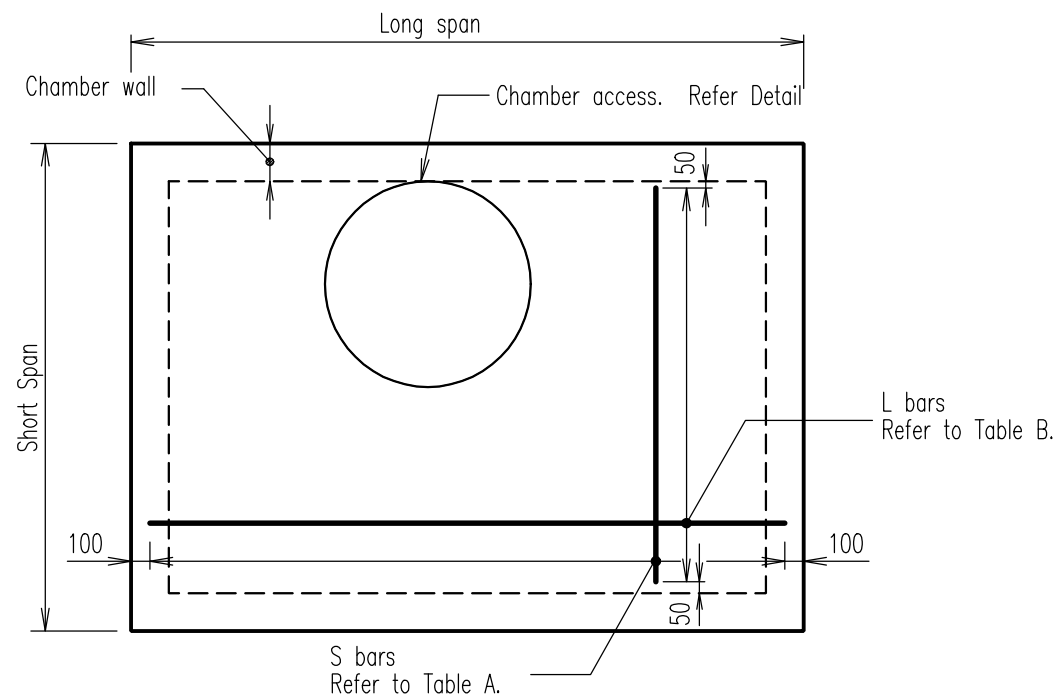
**DRAINAGE  
Standard  
Drawing  
D-0012**

SHORT SPAN	LONG SPAN										SLAB DEPTH
	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	
1200	N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	200
1400		N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	N16 AT 150	200
1600			N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 150	N16 AT 150	N16 AT 150	N16 AT 150	200
1800				N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 175	N16 AT 175	225
2000					N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	N16 AT 175	225
2200						N12 AT 150	N16 AT 200	N16 AT 200	N16 AT 175	N16 AT 175	225
2400							N16 AT 200	N16 AT 200	N16 AT 200	N16 AT 175	225
2600								N16 AT 200	N16 AT 200	N16 AT 175	250
2800									N16 AT 200	N16 AT 175	250
3000										N16 AT 175	250

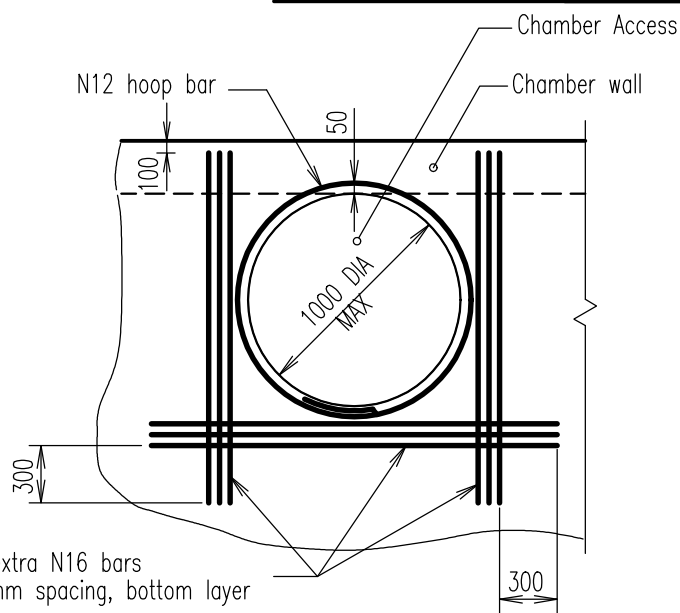
**TABLE A : S BARS**

SHORT SPAN	LONG SPAN										SLAB DEPTH
	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	
1200	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1400		N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1600			N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	200
1800				N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	225
2000					N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	N12 AT 200	225
2200						N12 AT 150	N12 AT 150	N12 AT 200	N12 AT 200	N12 AT 200	225
2400							N16 AT 200	N12 AT 150	N12 AT 150	N16 AT 150	225
2600								N16 AT 200	N16 AT 200	N16 AT 200	250
2800									N16 AT 200	N16 AT 200	250
3000										N16 AT 175	250

**TABLE B : L BARS**

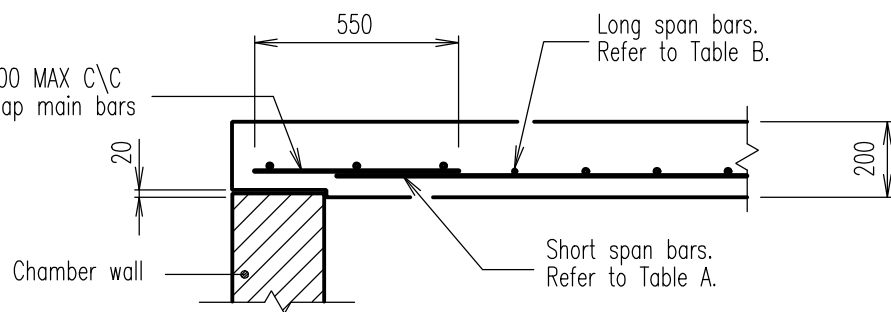


**TYPICAL SLAB REINFORCEMENT**

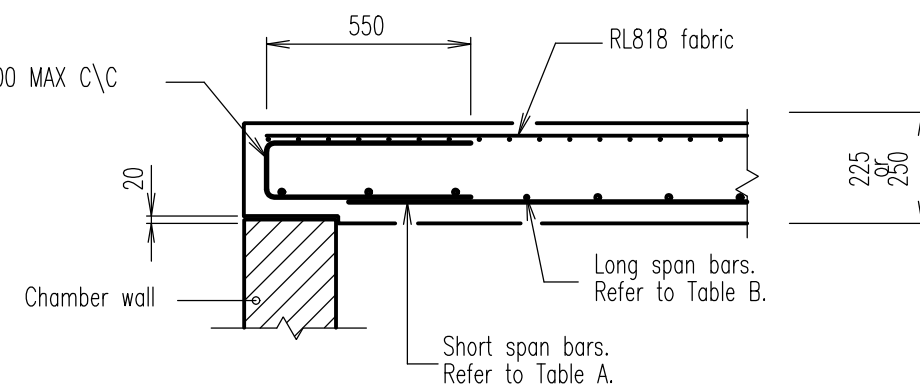


**SLAB REINFORCEMENT AROUND CHAMBER ACCESS**

N12 U-bars at 300 MAX C\C laid flat, legs to lap main bars



N12 U-bars at 300 MAX C\C



**TYPICAL SECTIONS**

**NOTES:**

- Concrete N32/20 in accordance with AS 1379:2007 and AS 3600:2009.
- Reinforcement :- RL818 Fabric to AS/NZS 4671:2001  
Bars N12 and N16, Grade 500 to AS/NZS 4671:2001.
- All laps in reinforcement shall be :-  
N12 - 300, N16 - 400
- Formwork in accordance with AS 3610:1995.
- Designed to Austroads Bridge Code, W7 wheel load, dynamic factor 0.4.
- Maximum fill over roof slab shall be 3000mm.
- Reinforcement cover 45 MIN.
- Refer Service Authority for access hole alternative to be adopted.
- Refer project drawings for details of chamber walls and floors.
- For sections at chamber access refer WRC STD DWG D-0010.
- All dimensions in millimetres.

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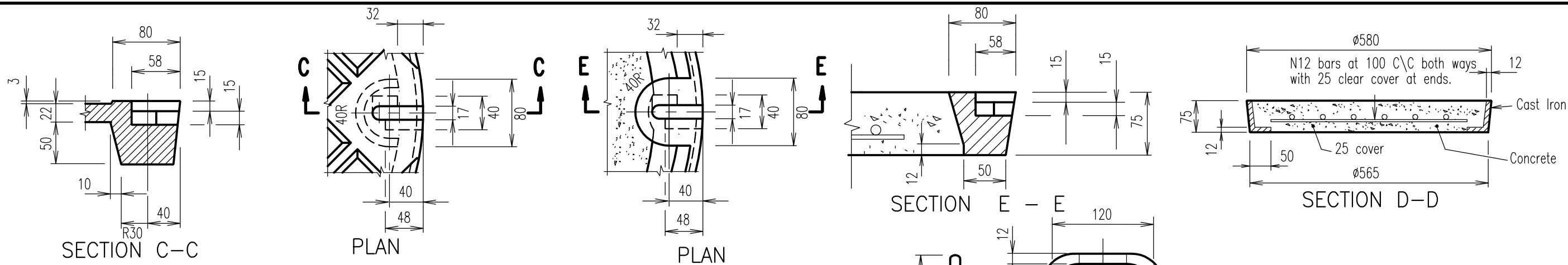
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**ACCESS CHAMBER  
ROOF SLAB  
RECTANGULAR**

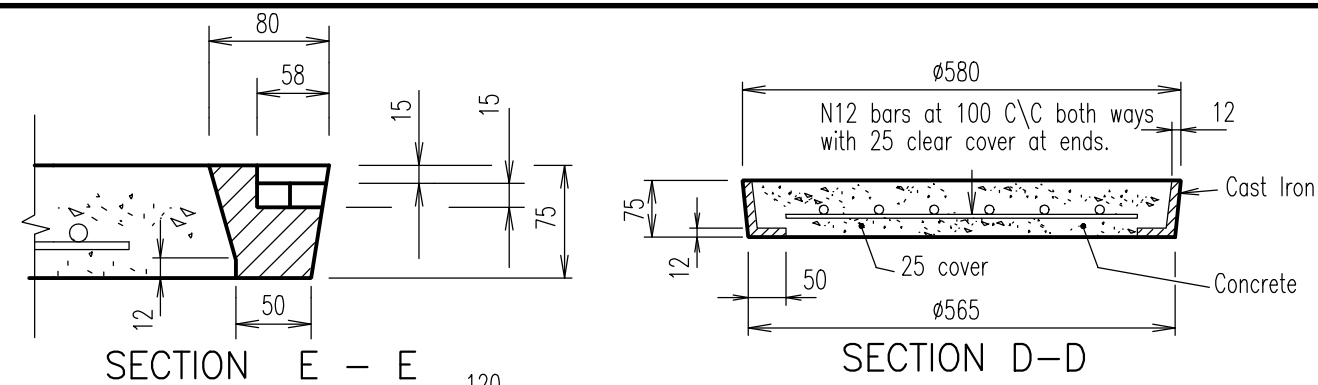
**DRAINAGE  
Standard  
Drawing  
D-0013**

A	B	C	
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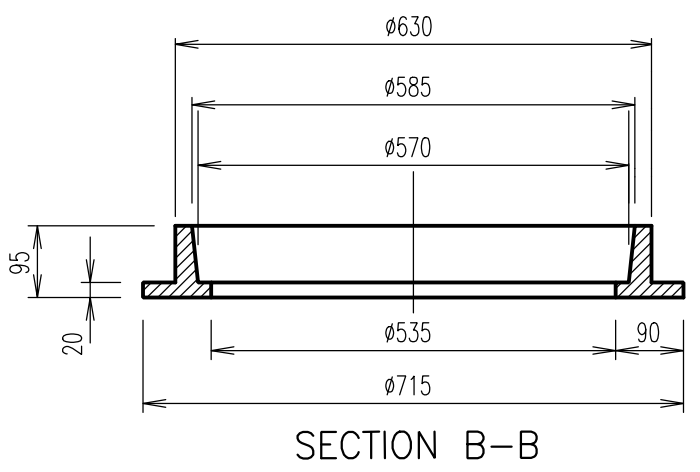
SECTION C-C  
**LIFTING SLOTS - DETAIL A**

PLAN  
**SLOTS - DETAIL B**

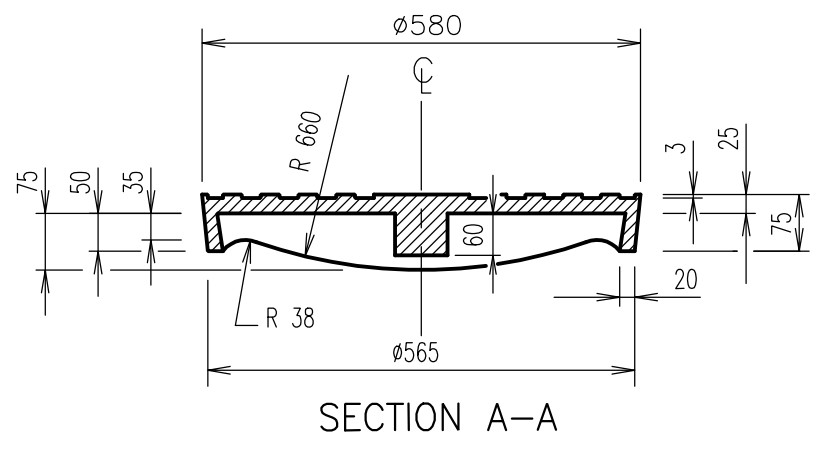


SECTION E - E

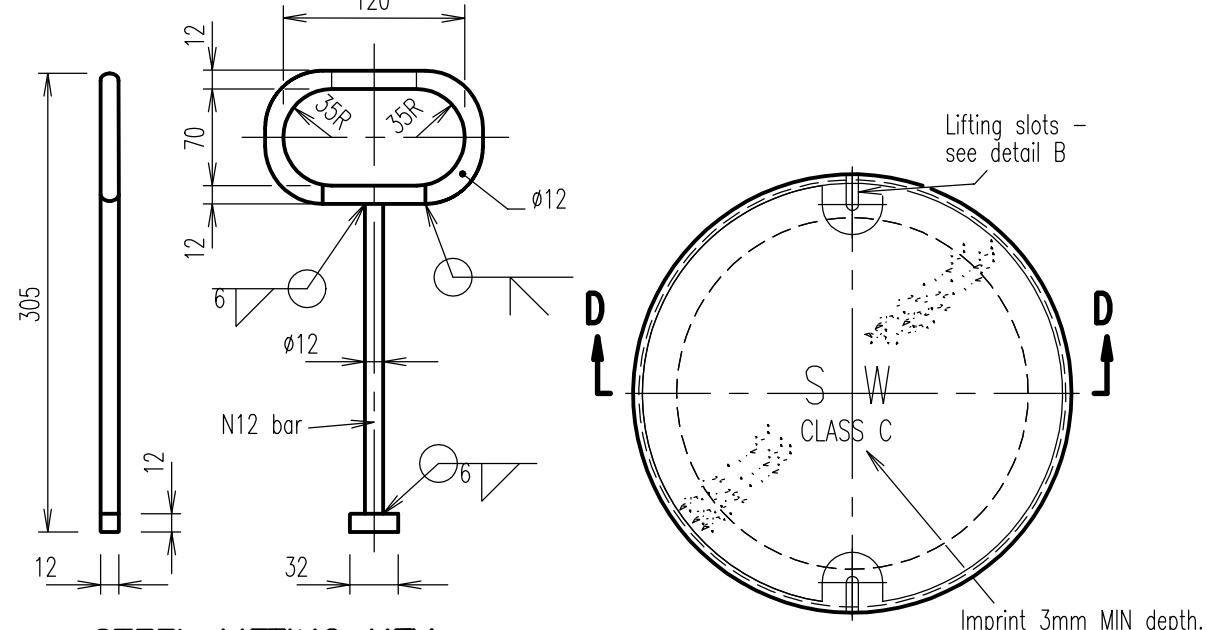
SECTION D-D



SECTION B-B



SECTION A-A



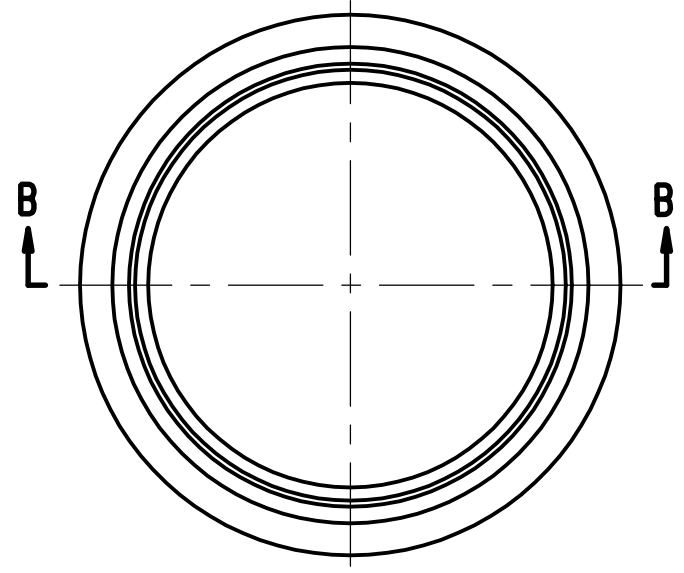
**STEEL LIFTING KEY**

Hot dip galvanized to AS/NZS 4534:2006

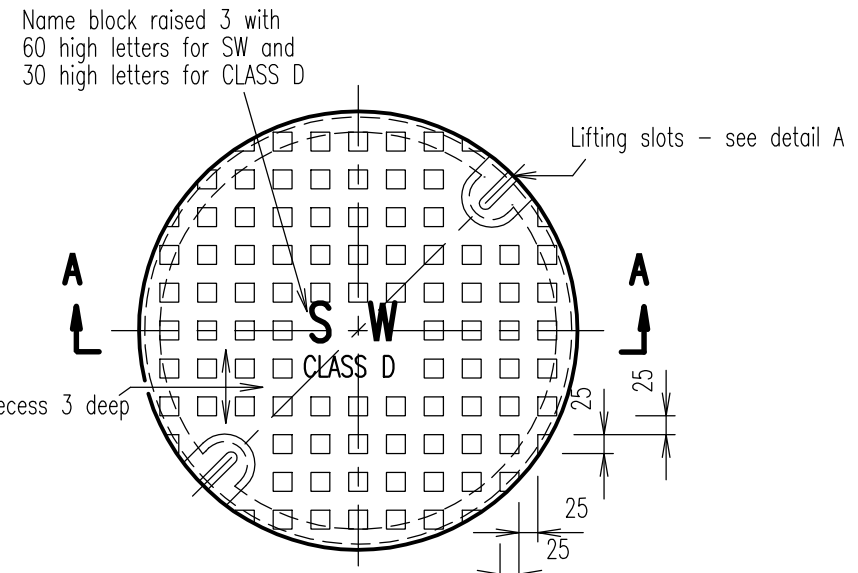
PLAN

Imprint 3mm MIN depth.  
60 high letters for SW and  
30 high letters for Class C

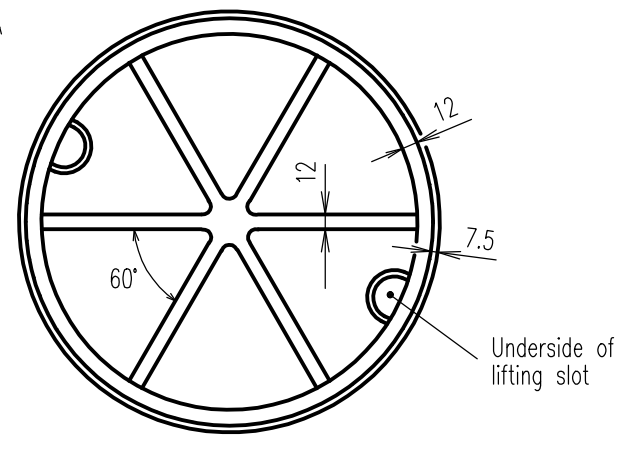
**PLAN - C.I. CONCRETE FILLED COVER**



**PLAN - FRAME**



**PLAN - C.I. COVER**



**UNDERSIDE OF C.I. COVER**

- NOTES:**
1. Mass of C.I. frames = 42 kg approx.
  2. Mass of C.I. cover = 46 kg approx.
  3. Cover and frame, grey cast iron, Grade  $\geq$  T220 to AS 1830:2007
  4. All steel Grade 500 to AS 3679.1:2016.
  5. Concrete infill N32/10 in accordance with AS 1379:2007 and AS 3600:2009.
  6. All welds to AS 1554.1:2014. Welding symbols to AS 1101.3:2005
  7. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
  8. Bitumen paint cover & frame to AS/NZS 3750.4:1994.
  9. Covers and frames to AS 3996:2006.
  10. All dimensions in millimetres.

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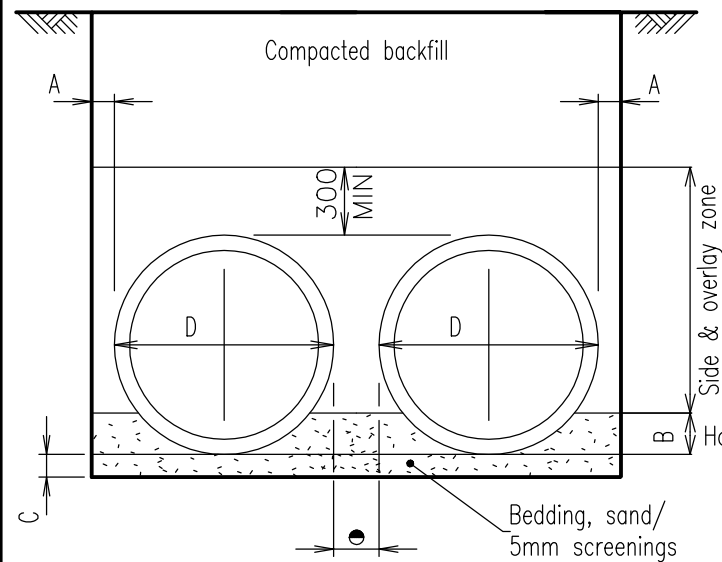
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**ACCESS CHAMBER  
CAST IRON COVER AND FRAME  
C.I. CONCRETE FILLED COVER**

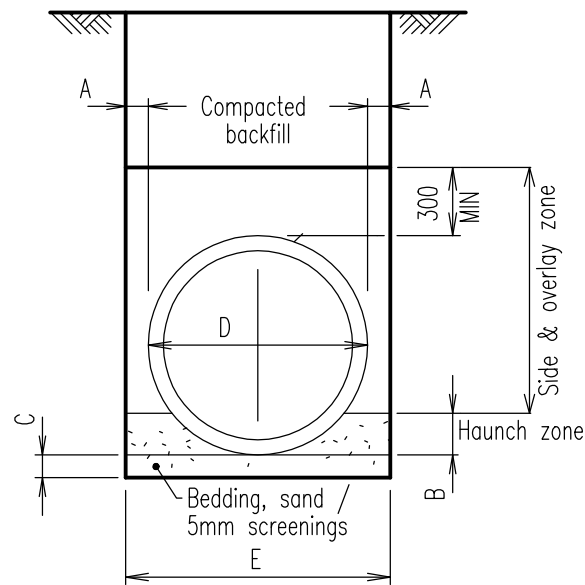
**DRAINAGE  
Standard  
Drawing  
D-0014**

A	B	C	
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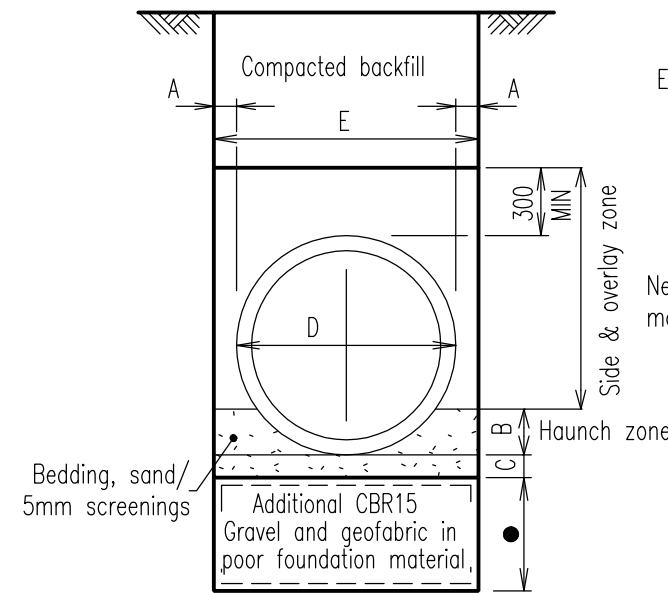




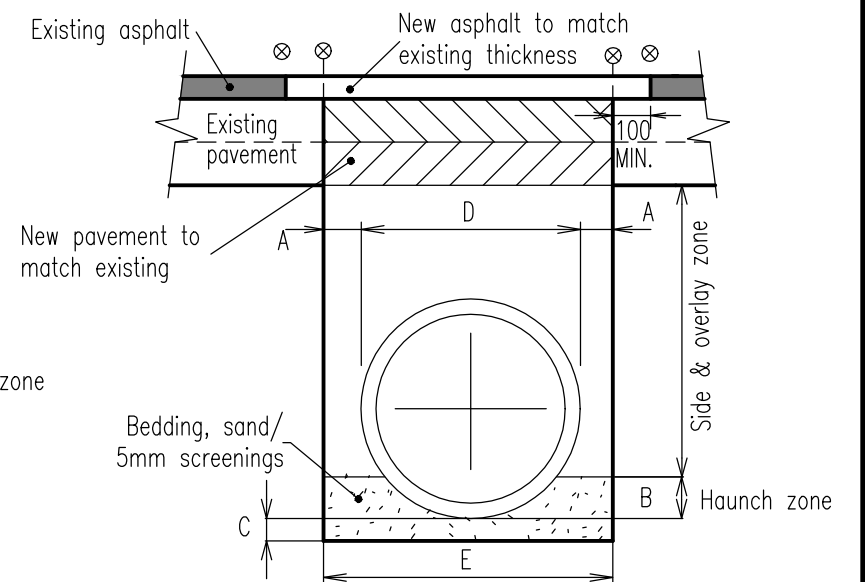
**TYPICAL BEDDING OF MULTIPLE PIPES**



**TYPICAL BEDDING**  
Conforms to Support Type H1 AS/NZS 3725:2007



**TYPICAL BEDDING IN POOR GROUND**



**TYPICAL BEDDING UNDER EXISTING PAVEMENT**

**NOTES:**

- Selected backfill in all cases shall be carried through to the wings and continued 300 thick for the length and height of wings.
- Bedding compaction (Compacted selected fill / sand bedding)  
Cohesive material – 95% standard compaction  
Non-cohesive material – density index of 70 MIN, refer AS 1289.5.5.1:1998.  
Sand – compact by flooding and use of vibrators.
- Backfill compaction  
Compacted gravel (300mm) layer under road pavement 95% standard compaction.  
Compacted ordinary fill / CBR15 Gravel 90% standard compaction – below 300mm zone.  
Compacted backfill – at footpaths / private property 90% standard compaction.  
MAX. densities determined by standard compaction tests to AS 1289.5.1.1:1998.
- Refer project drawings for types and/or alternatives to be adopted.
- Type U & Type H1 to conform to AS/NZS 3725:2007.
- All dimensions in millimetres.

**LEGEND**

- ⊗ Saw cut at existing pavement
- Pipes : 300 when NOMINAL D ≤ 600  
600 when NOMINAL D 600 – 1800  
900 when NOMINAL D ≥ 1800
- Depth to be approved by the Superintendent

**Bedding & Haunch material**  
(Gravel, loam, sand or mixture) grading

AS Sieve Size	% Passing by mass	
	Bedding & haunch zone	Side/overlay zone
19.0	100	–
2.36	40 – 100	30–100
0.425	15 – 70	15–50
0.075	3 – 30	0–25

NOMINAL ∅ culvert D(mm)	MINIMUM width A (mm)	HAUNCH depth B	Bedding depth C	Allowable width,E(m)	
				DES	MAX
300	300	36	100	1.0	1.1
375	300	45	100	1.1	1.2
450	300	53	100	1.1	1.3
525	300	61	100	1.2	1.5
600	300	69	100	1.3	1.6
750	300	85	100	1.5	1.8
900	300	103	100	1.6	1.9
1050	300	120	100	1.8	2.1
1200	300	135	100	2.0	2.2
1350	300	150	100	2.1	2.4
1500	300	169	100	2.3	2.7
1650	330	184	150	2.6	2.9
1800	360	200	150	2.8	3.1
1950	390	222	150	3.1	3.3
2100	420	239	150	3.4	3.5
2400	480	270	150	3.9	4.2
2700	540	303	150	4.3	4.6
3000	600	335	150	4.9	5.0

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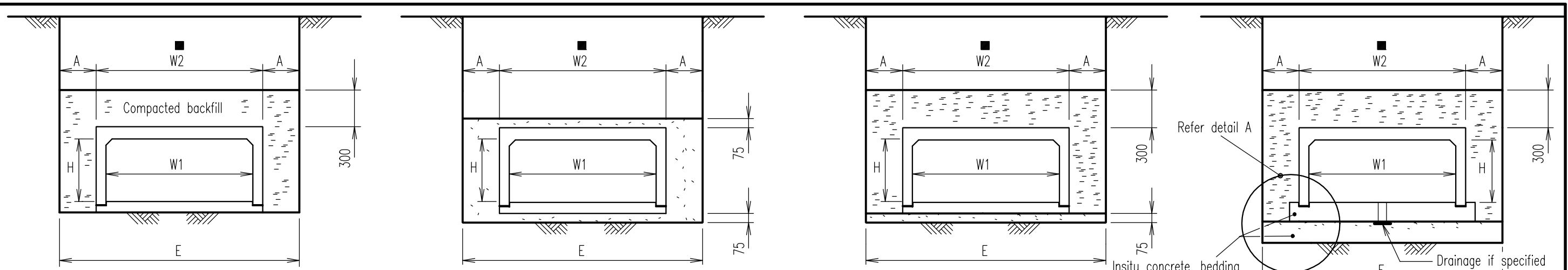
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**EXCAVATION, BEDDING AND BACKFILLING OF CONCRETE/ FIBRE REINFORCED DRAINAGE PIPES**

**DRAINAGE Standard Drawing D-0030**

A	B	C		
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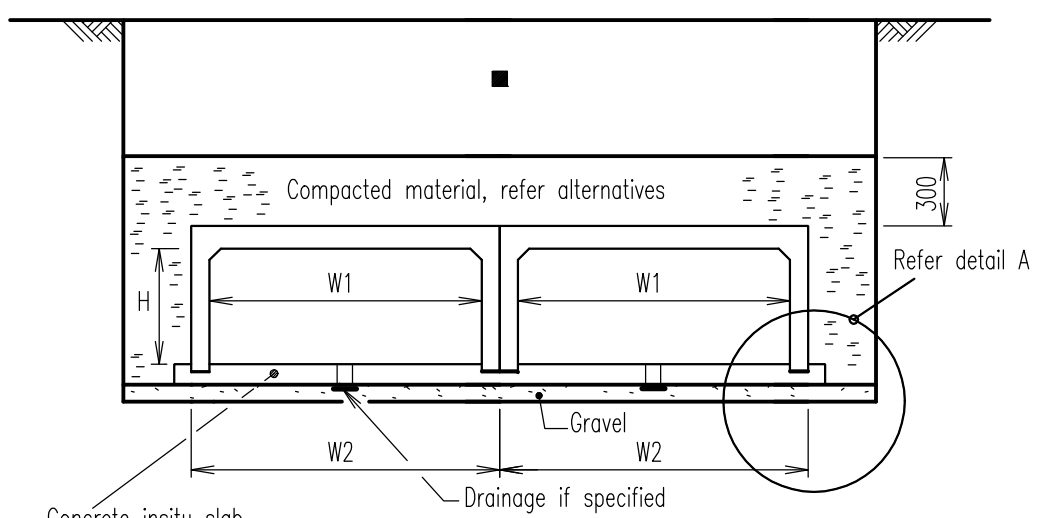


**TYPE 1  
NATURAL BEDDING**

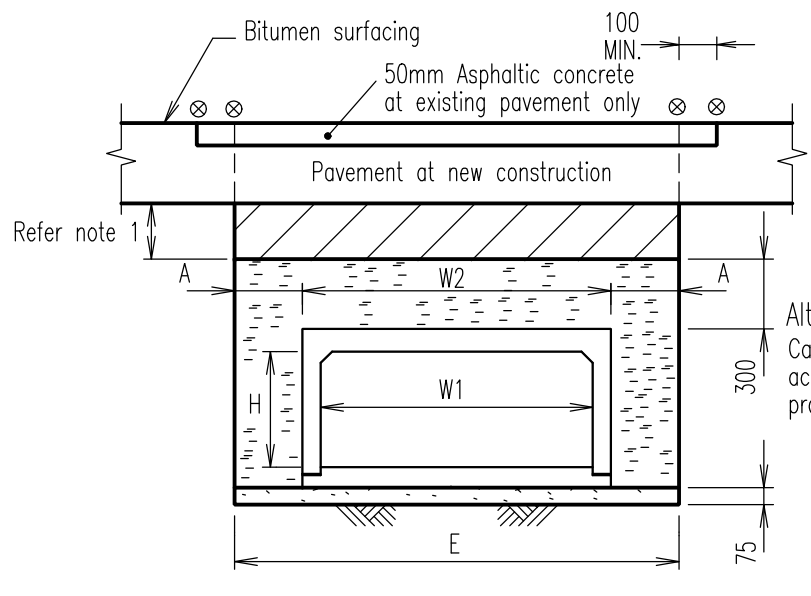
**TYPE 2  
SAND SURROUND**

**TYPE 3  
SAND BEDDING**

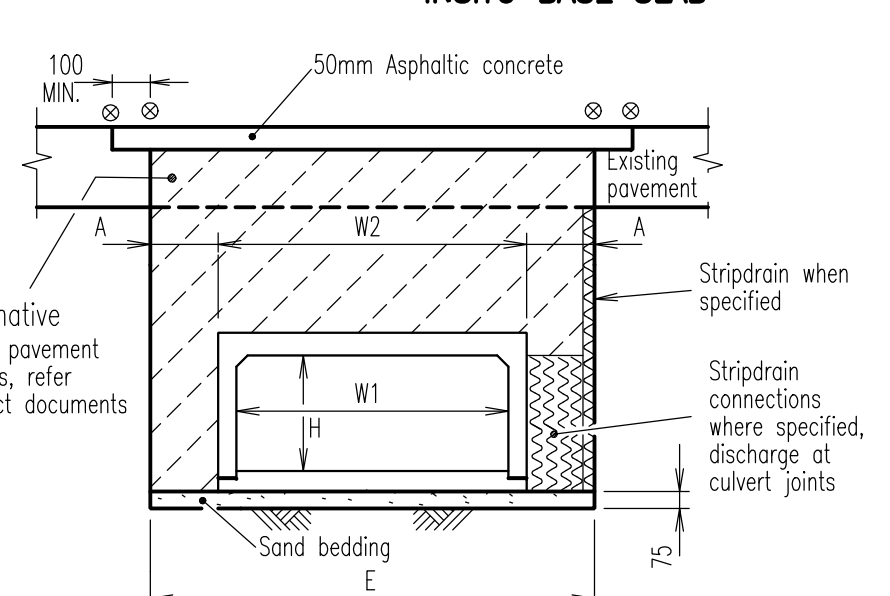
**TYPE 4  
INSITU BASE SLAB**



**MULTIPLE CULVERTS**



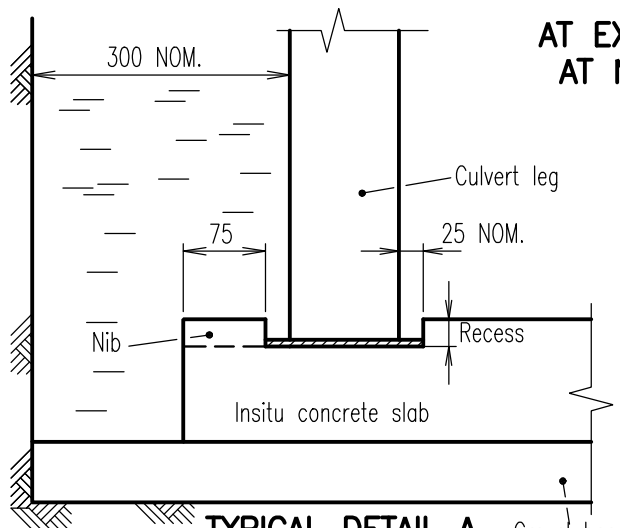
**ALTERNATIVE A  
AT EXISTING SURFACED PAVEMENTS OR  
AT NEW PAVEMENTS ON RESIDENTIAL  
STREETS & RURAL ROADS**



**ALTERNATIVE B  
AT EXISTING SURFACED PAVEMENTS  
ON INDUSTRIAL, TRUNK COLLECTOR,  
SUB-ARTERIAL & ARTERIAL STREETS / ROADS**

W1	W2	E NOM.
300	420	1000
375	500	1100
450	570	1200
600	730	1300
750	890	1500
900	1050	1700
1200	1360	2000
1520	1700	2300
1820	2010	2600
2130	2340	3000
2440	2670	3300

**EXCAVATION WIDTH**



**TYPICAL DETAIL A** Gravel base, site specific design

- LEGEND**
- A 300mm NOMINAL
  - Refer Alternative A for backfill requirements at new pavement
  - ⊗ Saw cut at existing pavement
  - ▨ Gravel (MIN CBR15) or 75mm crusher run backfill
  - ▧ Lean mix concrete backfill (1:15 mix)
  - ▬ 10mm Cement mortar bed, 1:3 mix

- NOTES:**
- Backfill compaction Approved fill / approved bedding / compacted backfill / CBR15 Gravel 90%  
Compacted gravel (300mm layer) under road pavement 95%  
Compacted fill - at footpaths / private property 90%  
MAX. densities determined by Standard compaction tests to AS 1289.5.5.1:1998
  - Tape all joints with 75mm wide Denso (600) Tape or equivalent.
  - All dimensions in millimetres.

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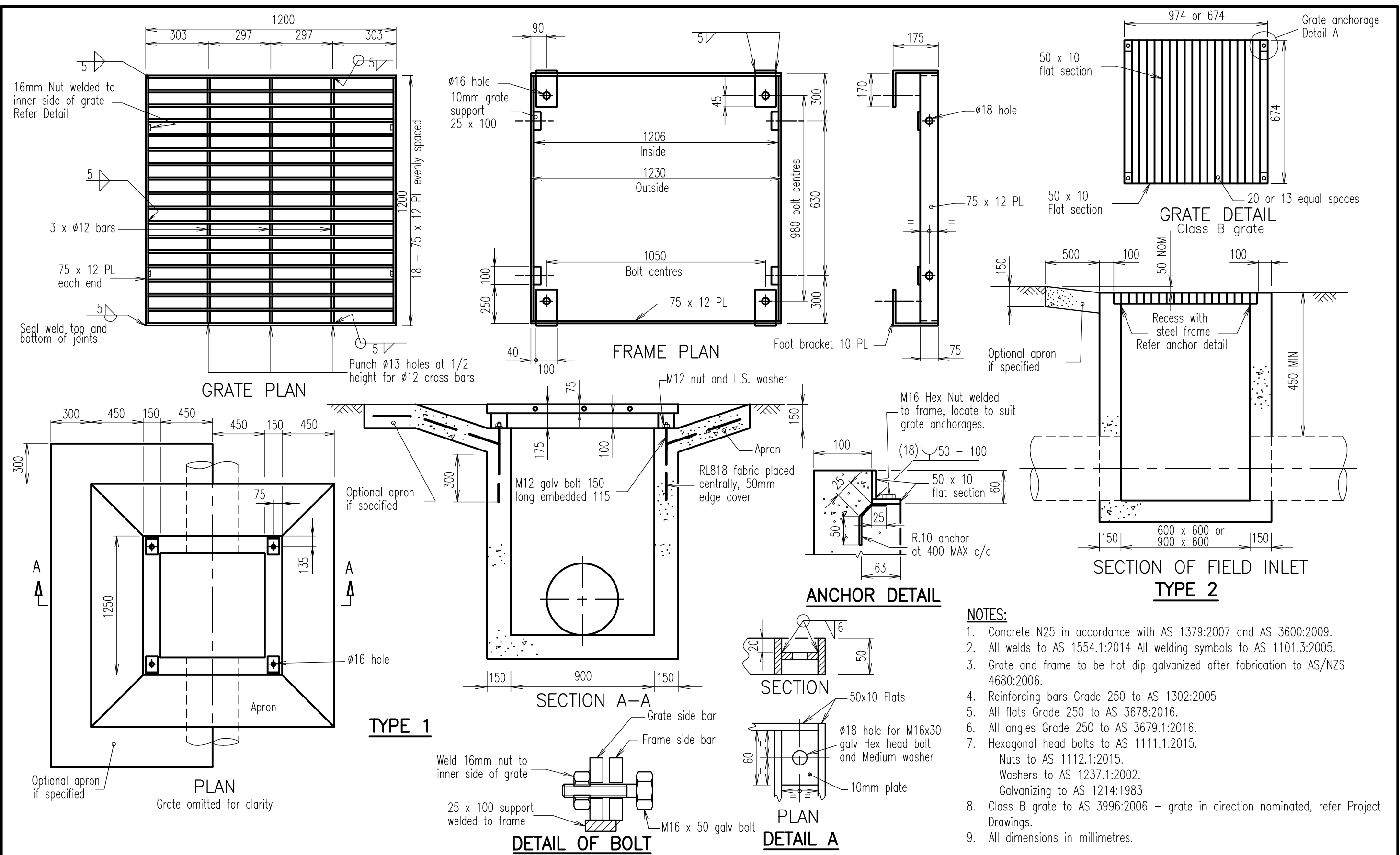
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**EXCAVATION, BEDDING  
AND BACKFILLING OF  
PRECAST BOX CULVERTS**

**DRAINAGE  
Standard  
Drawing  
D-0031**

A	B	C
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- NOTES:**
1. Concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
  2. All welds to AS 1554.1:2014 All welding symbols to AS 1101.3:2005.
  3. Grate and frame to be hot dip galvanized after fabrication to AS/NZS 4680:2006.
  4. Reinforcing bars Grade 250 to AS 1302:2005.
  5. All flats Grade 250 to AS 3678:2016.
  6. All angles Grade 250 to AS 3679.1:2016.
  7. Hexagonal head bolts to AS 1111.1:2015.  
Nuts to AS 1112.1:2015.  
Washers to AS 1237.1:2002.  
Galvanizing to AS 1214:1983
  8. Class B grate to AS 3996:2006 – grate in direction nominated, refer Project Drawings.
  9. All dimensions in millimetres.

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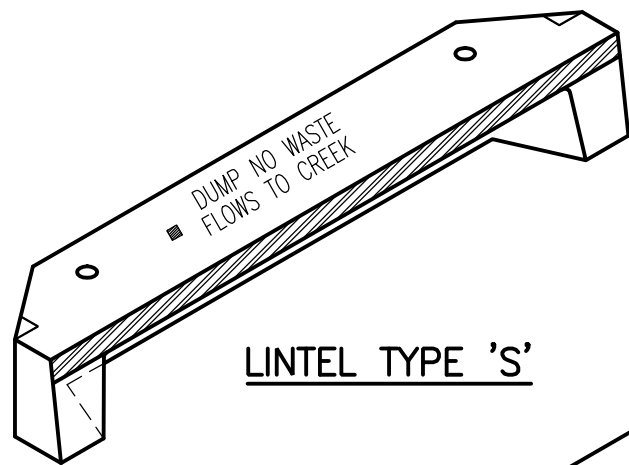
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Proserpine 4800 Q  
Ph 07 4945 0200

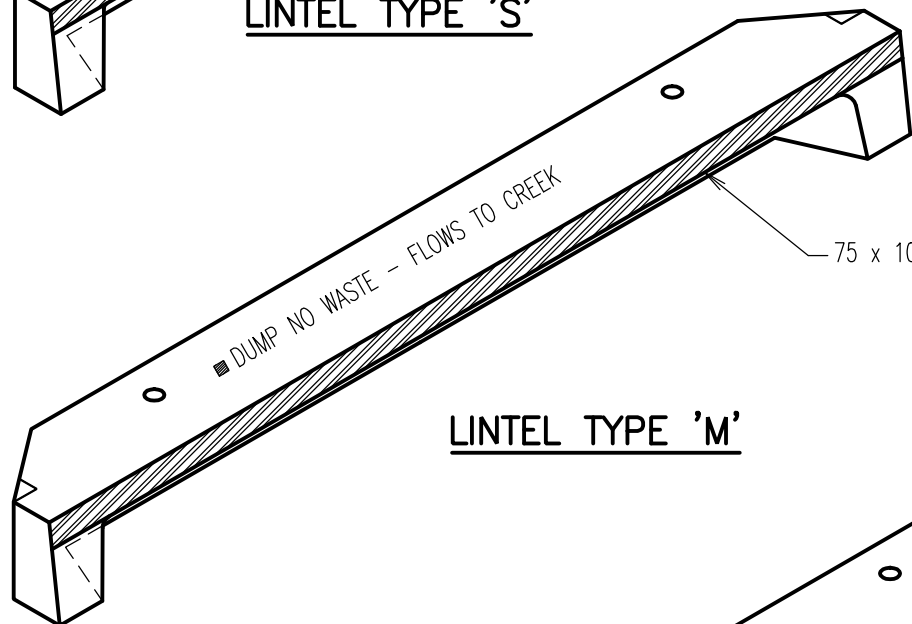
**FIELD INLET AND OVERFLOW GULLY  
TYPE 1 AND TYPE 2**

**DRAINAGE  
Standard  
Drawing  
D-0050**

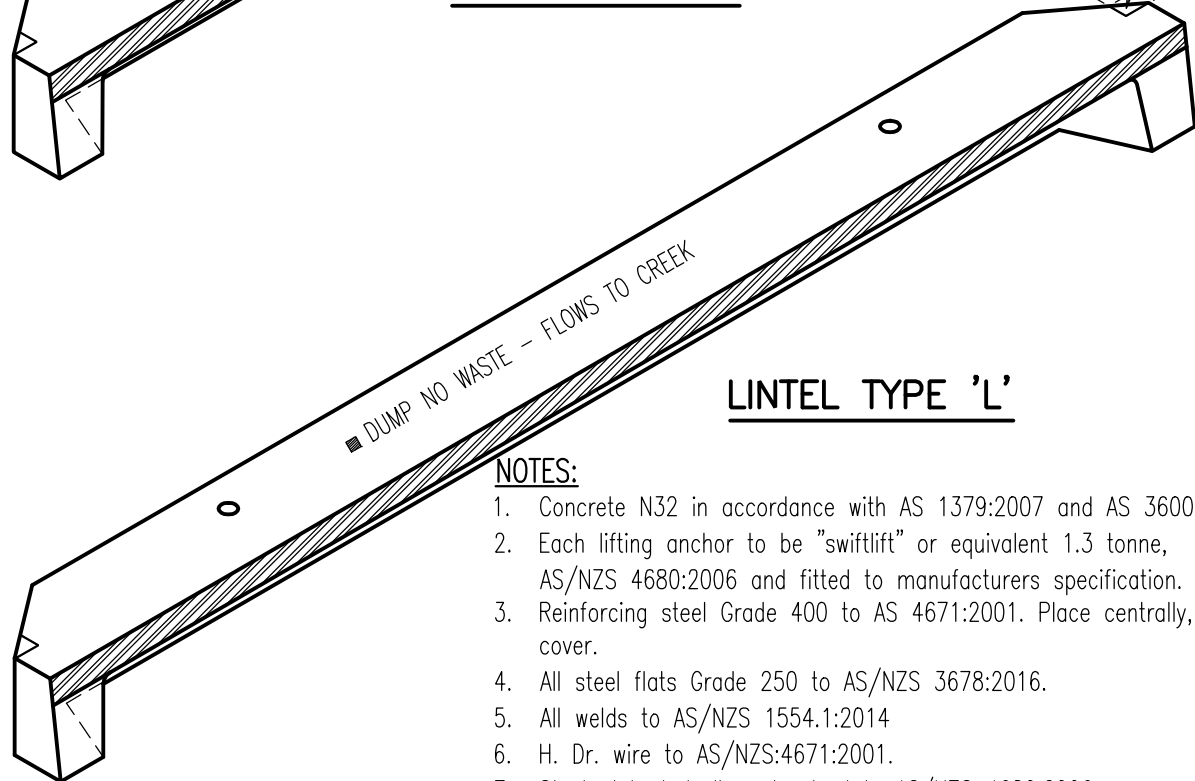
A	B	C
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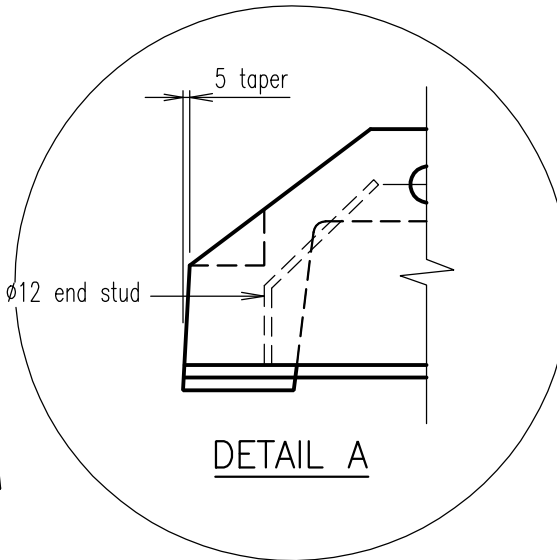
**LINTEL TYPE 'S'**



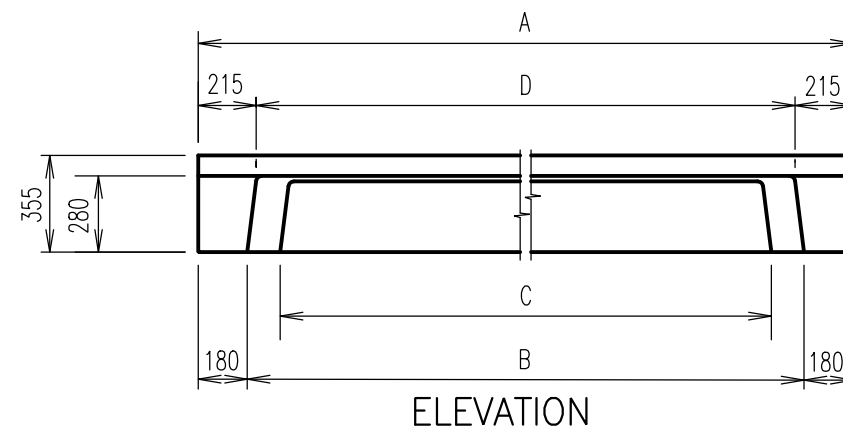
**LINTEL TYPE 'M'**



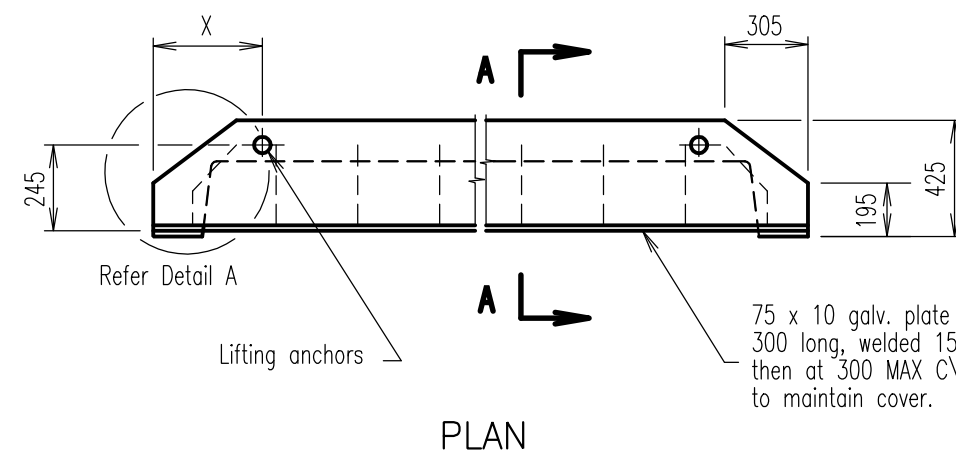
**LINTEL TYPE 'L'**



**DETAIL A**

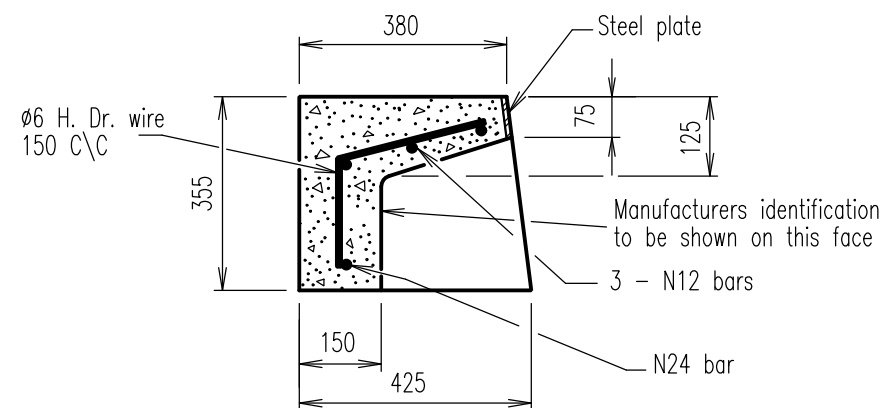


**ELEVATION**



**PLAN**

75 x 10 galv. plate with Ø12 studs, 300 long, welded 150 from the end, then at 300 MAX C\C, bend end studs to maintain cover.



**SECTION A-A**

**NOTES:**

1. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
2. Each lifting anchor to be "swiftlift" or equivalent 1.3 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturers specification.
3. Reinforcing steel Grade 400 to AS 4671:2001. Place centrally, 40 MIN end cover.
4. All steel flats Grade 250 to AS/NZS 3678:2016.
5. All welds to AS/NZS 1554.1:2014
6. H. Dr. wire to AS/NZS:4671:2001.
7. Steel plate hot dip galvanized to AS/NZS 4680:2006.
8. All dimensions in millimeters.

**LEGEND**

■ Text 40mm high letters imprinted 5mm into concrete.

LINTEL	A	B	C	D	X	MASS (kg)
S	2400	2040	1800	1970	400	445
M	3600	3240	3000	3170	690	550
L	4800	4440	4200	4370	1000	725

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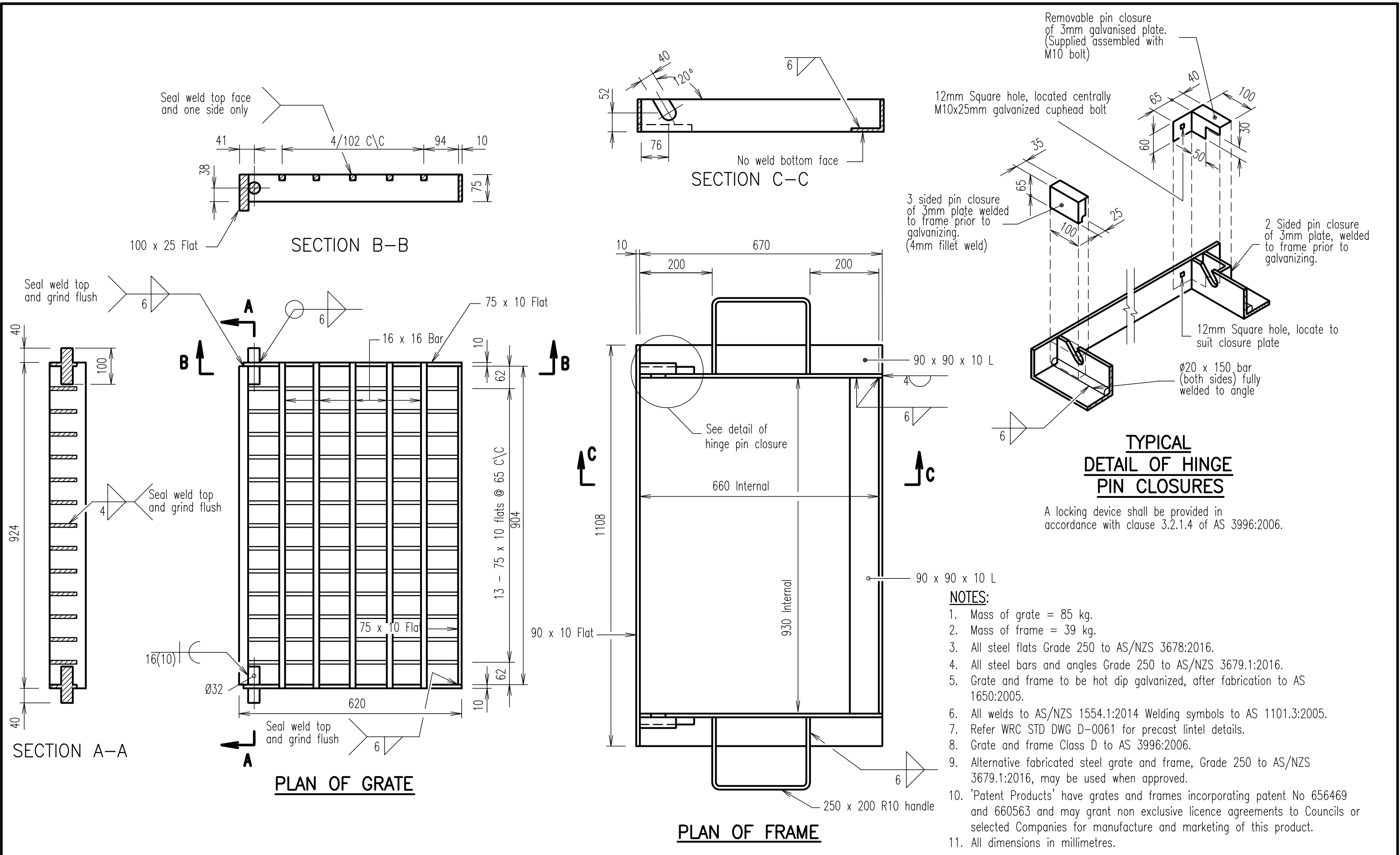
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Proserpine 4800 Q  
Ph 07 4945 0200

**GULLY – ROADWAY TYPE  
PRECAST LINTEL DETAILS  
KERB IN LINE**

**DRAINAGE  
Standard  
Drawing  
D-0061**

A	B	C	
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REVISIONS	DATE
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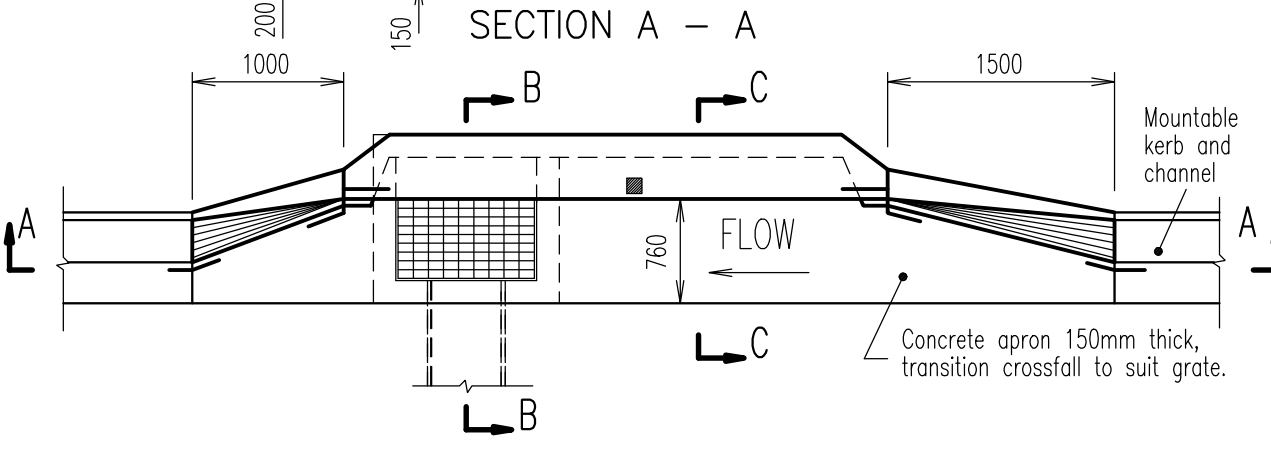
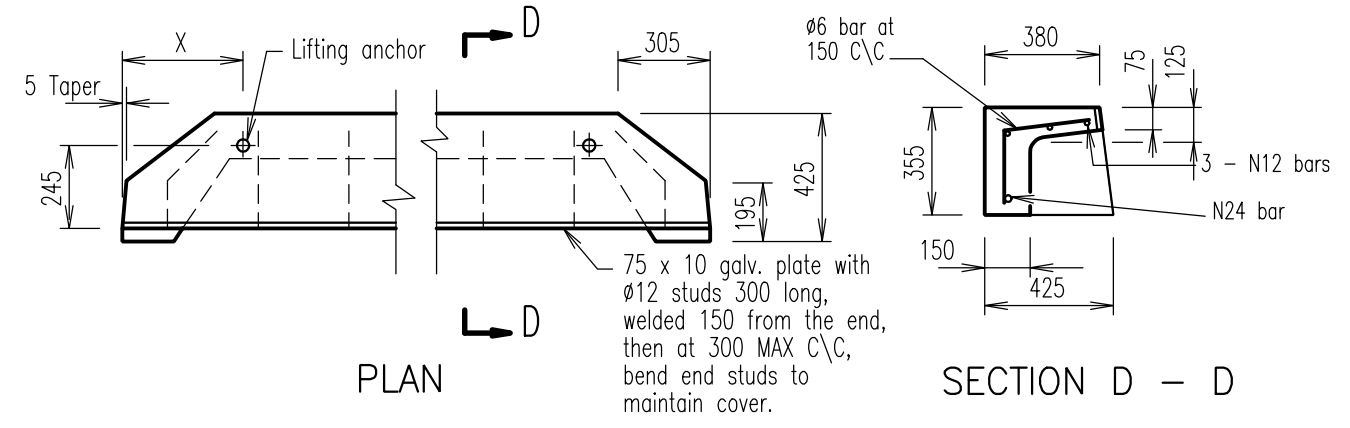
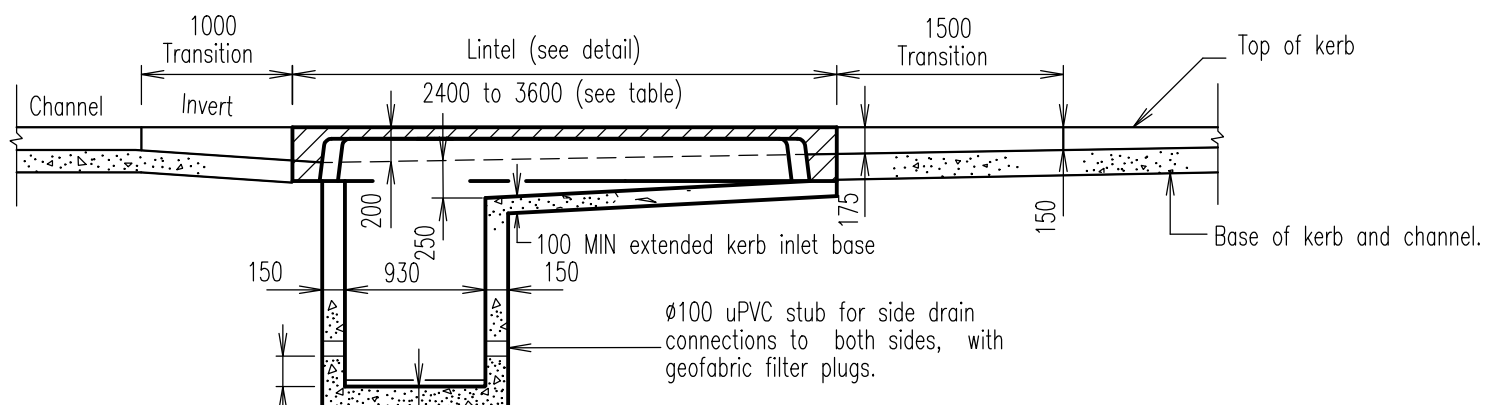
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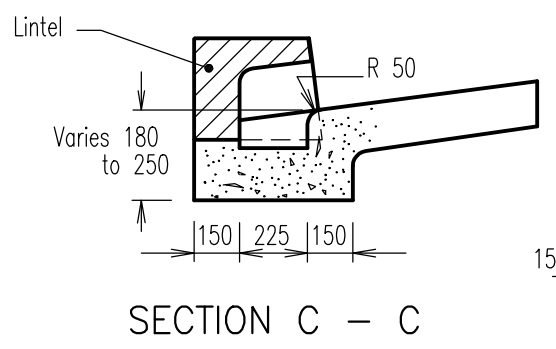
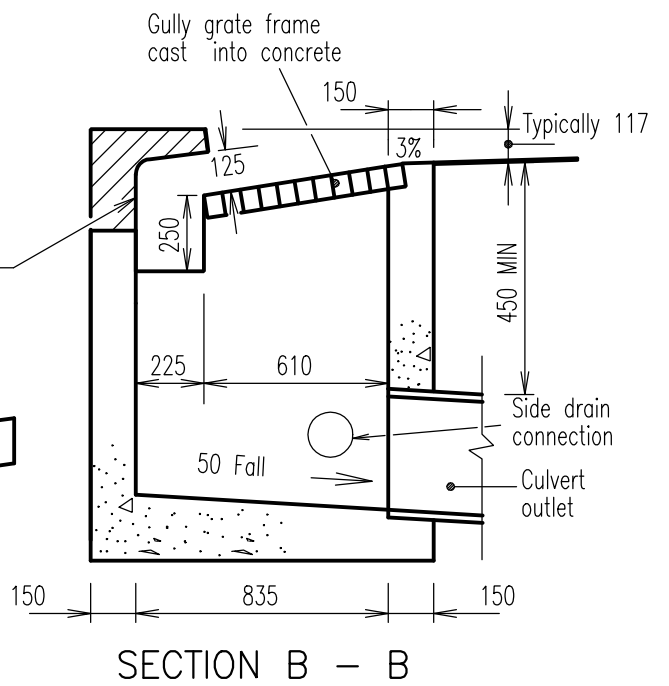
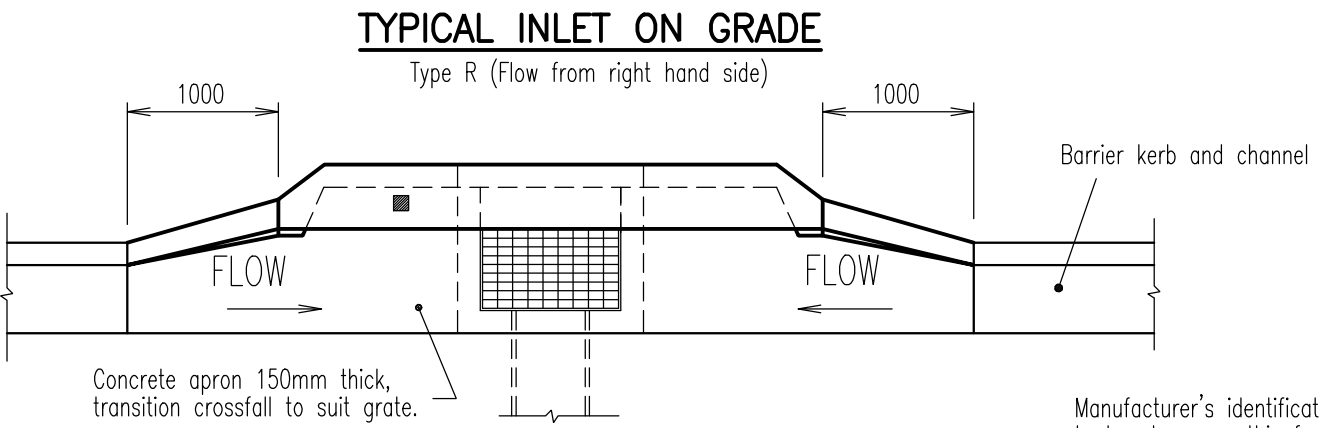
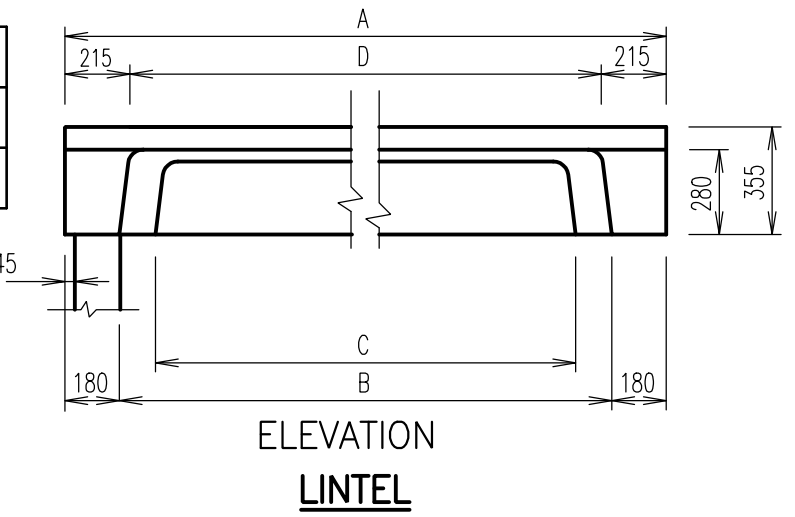
**GULLY - ROADWAY TYPE  
GRATE AND FRAME**

**DRAINAGE  
Standard  
Drawing  
D-0062**

A B C



TYPE	A	B	C	D	X	MASS(kg)
S	2400	2040	1800	1970	400	445
M	3600	3240	3000	3170	690	550



- NOTES:**
1. The catchpit may be cast-in-situ or precast. This drawing indicates a cast-in-situ catchpit with a precast lintel.
  2. Precast concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  3. Cast in-situ concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
  4. Each lifting anchor to be "Swiftlift" or equivalent 1.3 tonne, galvanized to AS/NZS 4680:2006 and fitted to manufacturer's specification.
  5. Reinforcing bars Grade 400 to AS ISO 1302:2005, place centrally, 40 MIN end cover.
  6. Refer WRC STD DWG D-0062 for grate and frame details.
  7. Grate and frame Class D to AS 3996:2006. Patent Products have grades and frames incorporating Patent No 656469 and 660563 and may grant non exclusive licence agreements to Councils or selected Companies for manufacture and marketing of this product.
  8. Steel plate hot dip galvanized to AS/NZS 4680:2006.
  9. All dimensions in millimetres.

**LEGEND**

■ Text 'DUMP NO WASTE - FLOWS TO CREEK' (40 high letters, imprinted 5 mm into concrete)

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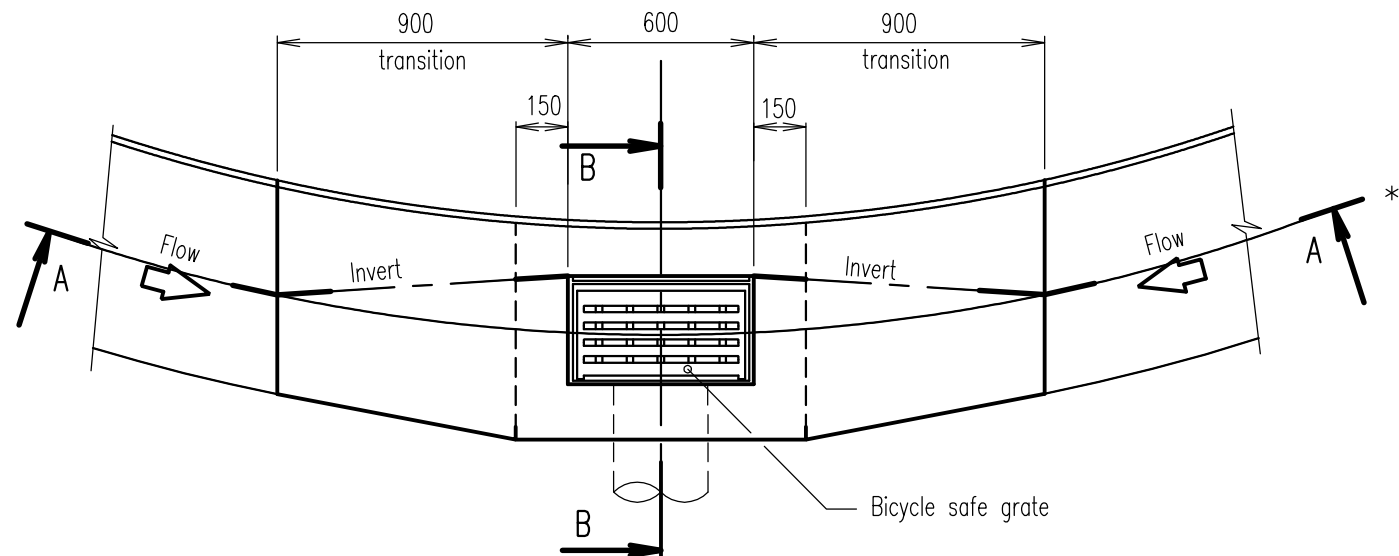
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Proserpine 4800 Q  
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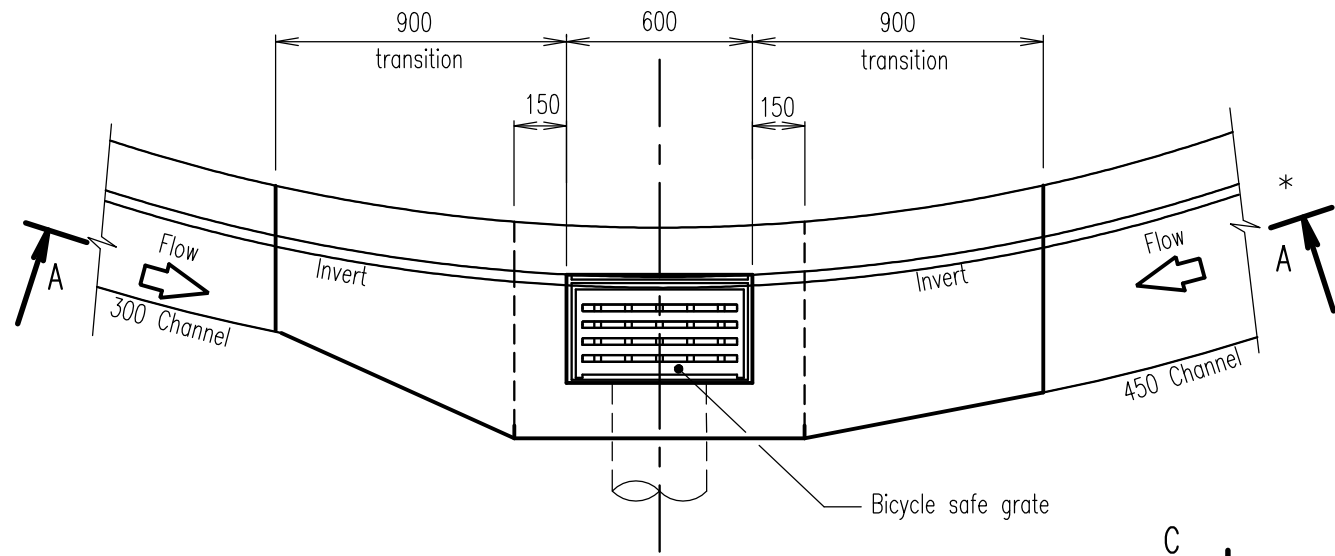
**GULLY - ROADWAY TYPE  
CHANNEL LIP IN LINE**

**DRAINAGE  
Standard  
Drawing  
D-0063**

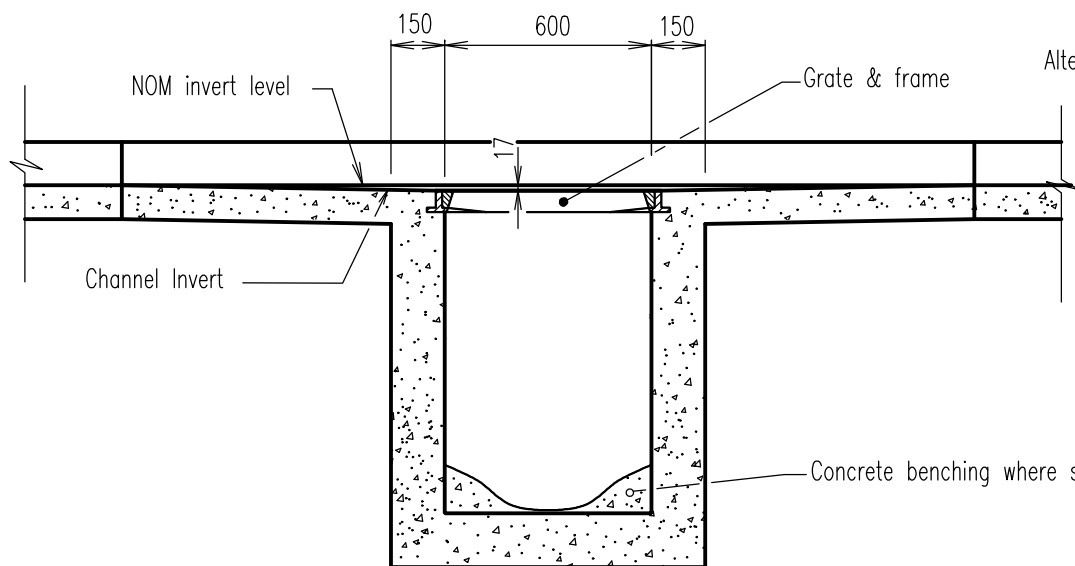
A	B	C		
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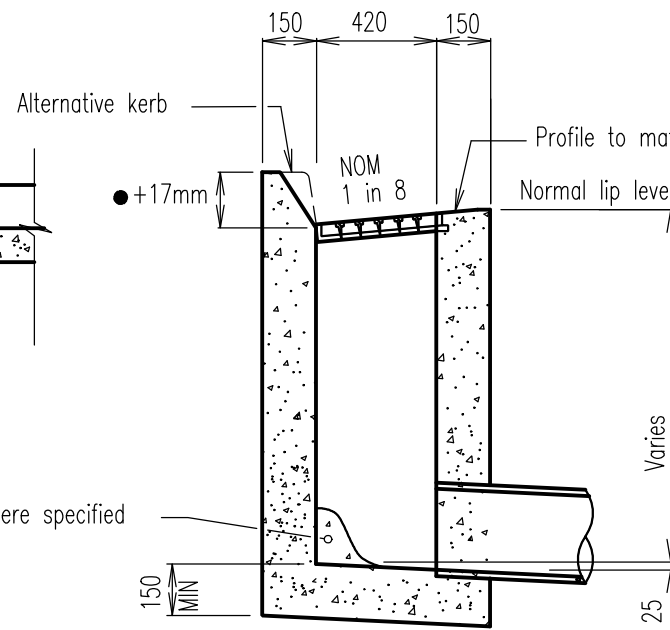
MOUNTABLE KERB AND CHANNEL  
**PLAN**



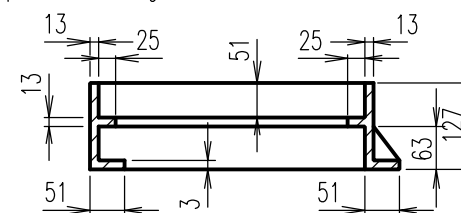
BARRIER KERB AND CHANNEL  
**PLAN**



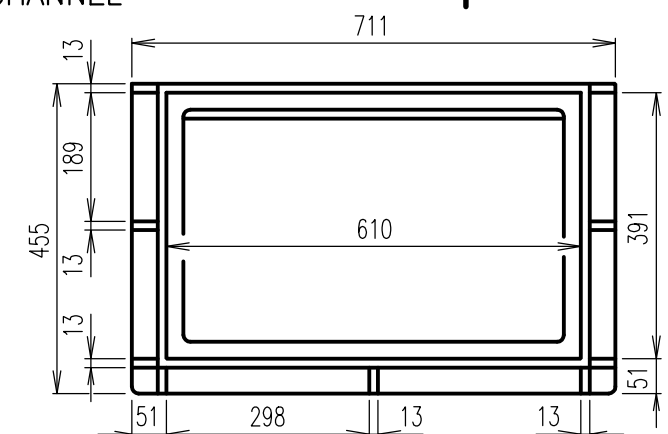
SECTION A - A



SECTION B - B



SECTION C-C



PLAN  
**C.I. FRAME OR  
FABRICATED GALV. STEEL**

**NOTES:**

1. Dimensions of grate and frame may be varied subject to approval.
2. Design load for grate and frame shall be in accordance with AUSTRROADS Bridge Design Specification, W7 wheel load.
3. All grates bicycle safe to AS 3996:2006.
4. Grate and frame, grey cast iron Grade  $\geq$  T220 to AS 1830:2007 or alternatively fabricated steel Grade 250 to AS/NZS 3678:2016 & AS/NZS 3679.1:2016 and hot dip galvanized to AS/NZS 4680:2006 may be used when approved.
5. Concrete : Benching N10, Structural N20 in accordance with AS 1379 and AS 3600.
6. Examples indicates M1 and B1 Kerb and channel types. Refer Standard Drawing R-0080, adjust for other alternatives.
7. Bitumen paint C.I. cover and frame to AS/NZS 3750.4:1994.
8. Grate hinges and locking device must conform to AS 3996:2006. 'Patent Products' have grates and frames incorporating patent No 656469 and 660563 and may grant non exclusive licence agreements to Councils or selected Companies for manufacture and marketing of this product.
9. All dimensions in millimetres.

**ANTI-PONDING GULLY**

**LEGEND**

- \* NOM kerb line
- NOMINAL kerb height, see note 6.

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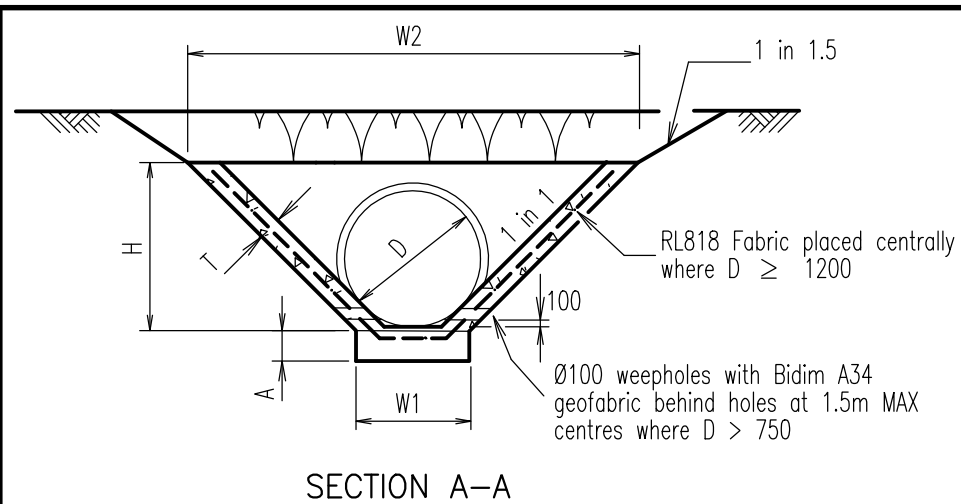
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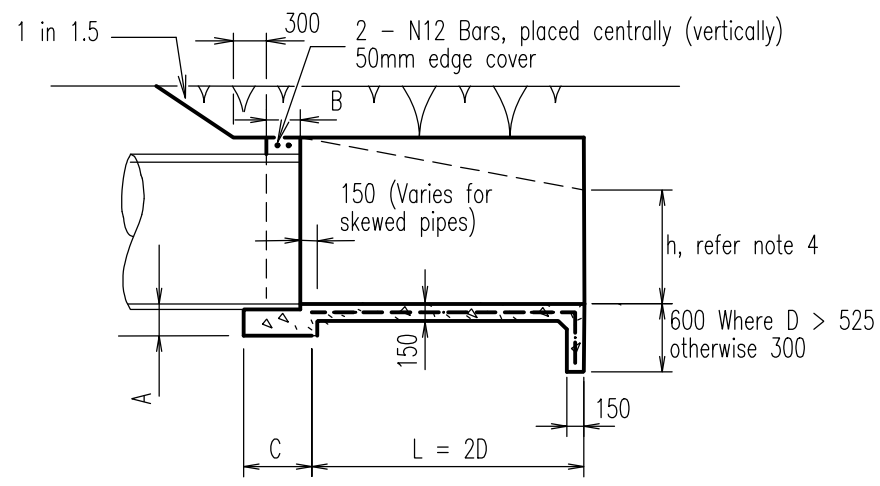
**GULLY - ANTI-PONDING  
DEPRESSED 17mm**

**DRAINAGE  
Standard  
Drawing  
D-0068**

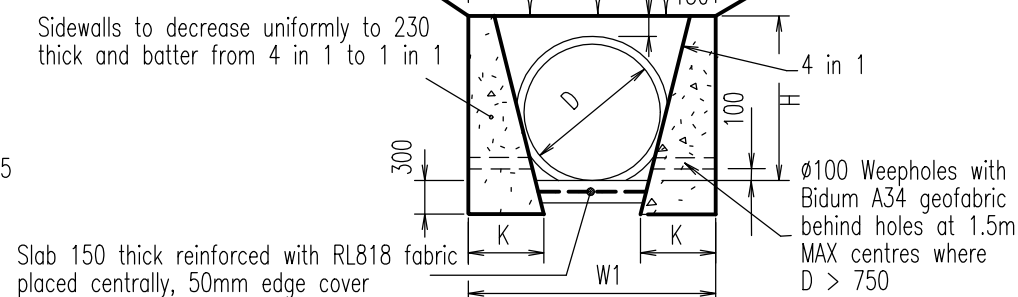
A B C



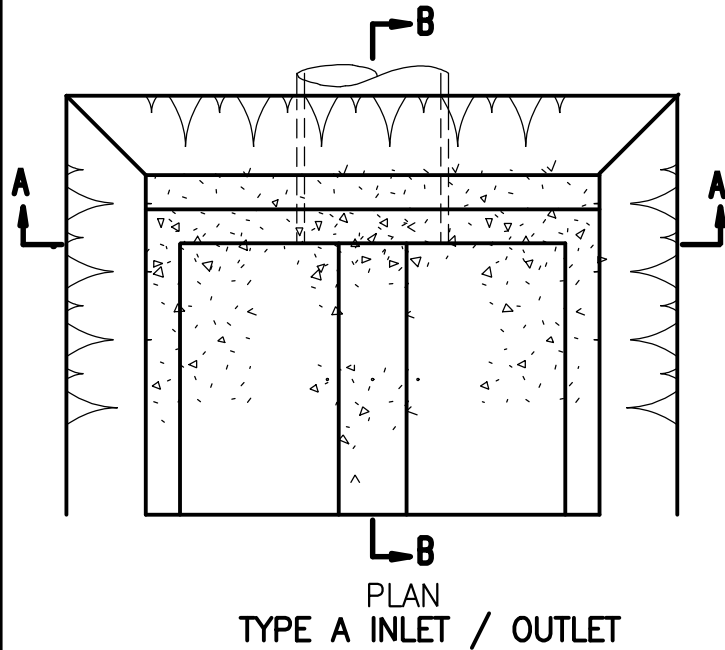
SECTION A-A



SECTION B-B



SECTION C-C



PLAN TYPE A INLET / OUTLET

Pipe skew	5° - 15°	16° - 25°	26° - 35°	36° - 45°
Skew factor	1.02	1.07	1.16	1.32

For multiple pipes - increase W1 and W2 for each additional pipe by the external diameter + : 300 when NOMINAL D < 600  
600 when NOMINAL D 600 - 1800  
900 when NOMINAL D > 1800

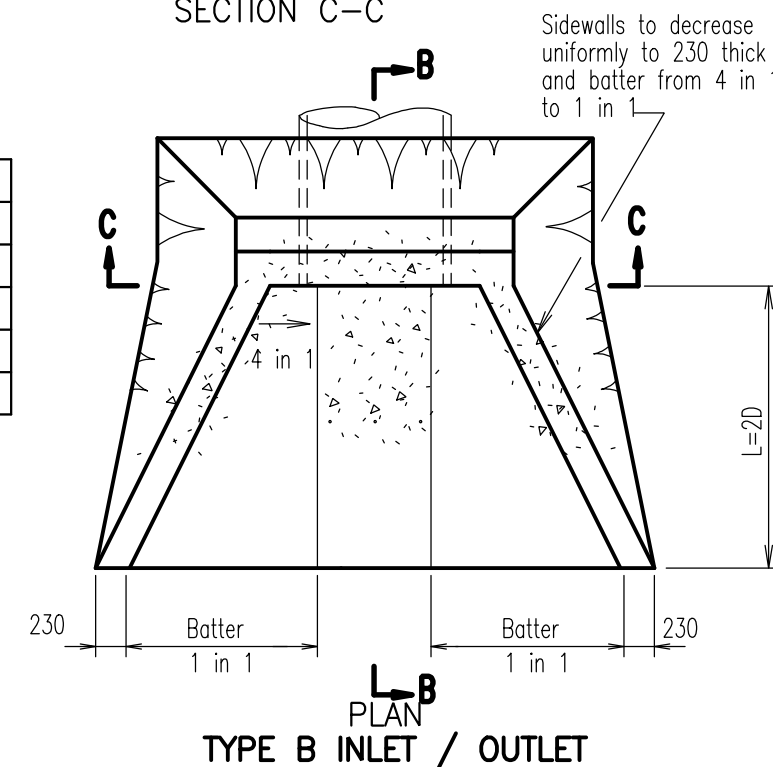
For skewed pipes - multiply W1 and W2 by skew factor

**MULTIPLE / SKEW PIPES**

DIMENSION	PIPE DIAMETER D				
	1350	1500	1650	1800	1950
K	800	840	875	920	960
H	2000	2160	2300	2460	2640
W1	2060	2250	2440	2630	2840
W2	2060	2250	2440	2630	2840

**DIMENSIONS TYPE B INLET AND OUTLET**

DIA. = 1350 to 1950



PLAN TYPE B INLET / OUTLET

DIMENSION	PIPE DIAMETER D															
	300	375	450	525	600	675	750	825	900	1050	1200	1350	1500	1650	1800	1950
A	150	150	150	200	200	200	250	250	250	250	250	300	300	300	300	300
B	225	225	225	300	300	300	300	300	300	300	300	300	300	300	300	300
C	450	450	450	450	450	450	600	600	600	600	600	600	600	600	600	600
H	580	670	750	830	900	980	1060	1140	1220	1370	1530	1690	1840	2000	2160	2340
T	150	150	150	200	200	200	200	200	200	200	200	200	200	200	200	200
W1	700	730	760	790	820	850	880	920	950	1010	1070	1140	1200	1260	1320	1380
W2	1860	2070	2260	2450	2620	2810	3000	3200	3390	3750	4130	4520	4880	5260	5640	6060

**DIMENSIONS**

TYPE A INLET DIA. = 300 to 1200  
TYPE A OUTLET DIA. = 300 to 1950

**NOTES:**

- Design bearing pressure 75 KPa. Where this bearing pressure cannot be obtained, the Superintendent may direct that a wider footing be used.
- Concrete N20 or Grade S32/10 shotcrete may be used in accordance with AS 1379:2007 and AS 3600:2009.
- In tidal areas where fabric reinforcement is specified, concrete is to be sulphate resistant Grade S40 to AS 1379:2007 and AS 3600:2009.
- In embankment situations, the height of the wingwall at the toe should be reduced to "h" so that the slope of the top of the wingwall equals the adjacent embankment batter. Refer project drawings.
- See project drawings for the following : No. and diameter of pipes; Skew angles of pipes if applicable; Invert levels of pipes; Height of wingwall "h" at toe if applicable.
- If directed (by the Superintendent), the apron slab to a Type A outlet may be lowered by the pipe wall thickness to allow for future pipe extension.
- At inlets or outlets, transition uniformly from concrete to open channel over 5m to 10m.
- Refer project drawings for protection proposed between end of outlet structure and open drain / creek.
- Reinforcement : Bars Grade 400 to AS ISO 1302:2005. Fabric to AS/NZS 4671:2001.
- All dimensions in millimetres, unless shown otherwise.

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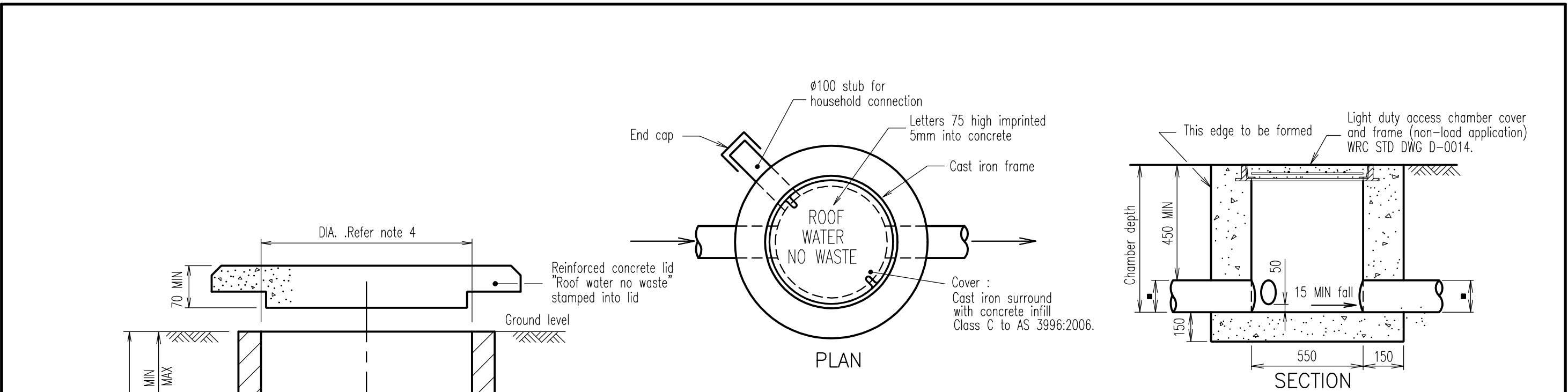
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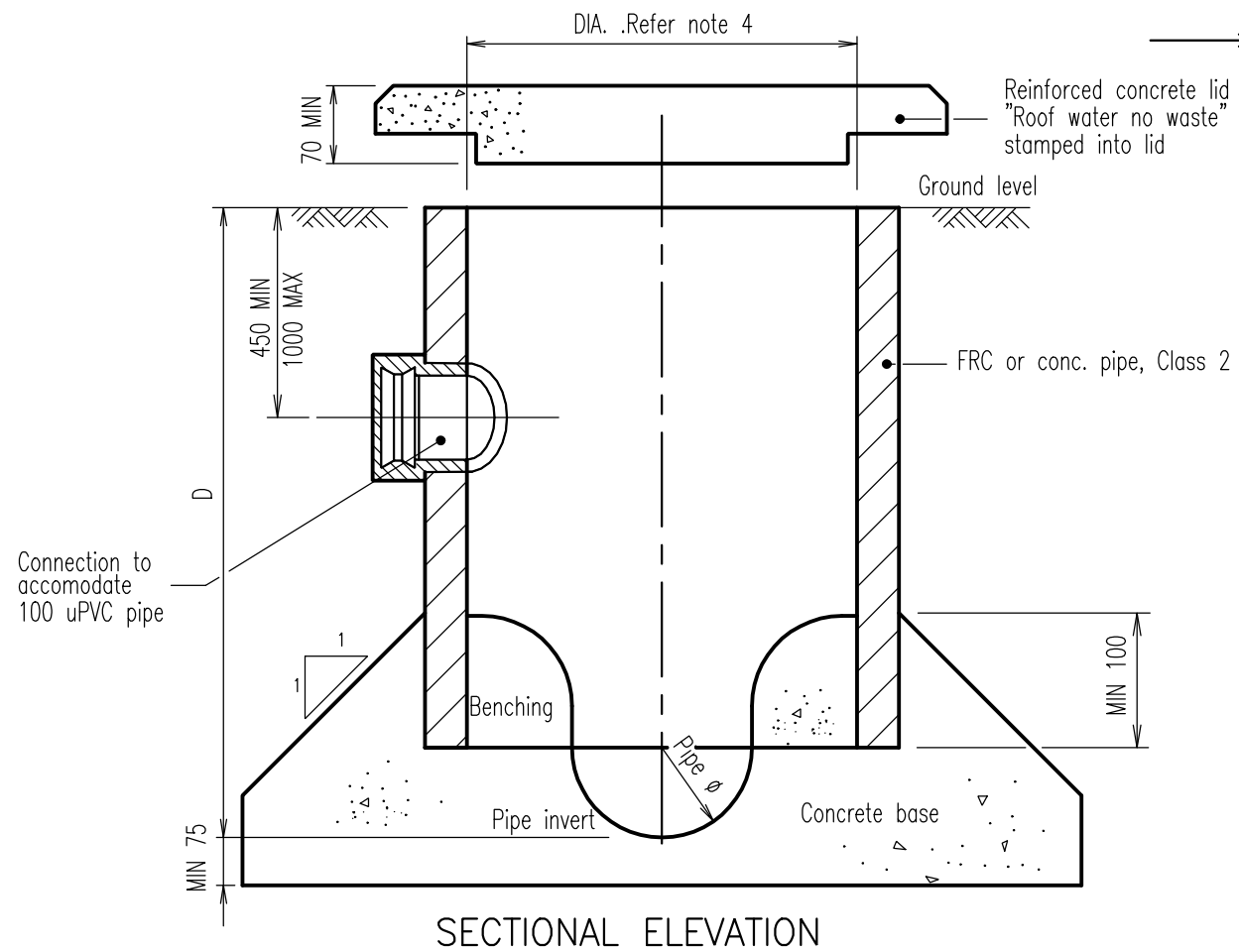
**INLETS AND OUTLETS  
TO STORMWATER DRAINS  
(CONCRETE)**

**DRAINAGE  
Standard  
Drawing  
D-0080**

A B C



**TYPE 1  
CAST INSITU**



**SECTIONAL ELEVATION  
TYPE 2  
PRECAST / INSITU**

**NOTES:**

1. Roofwater systems are to be connected to stormwater gullies or access chambers. Where the system is to be connected to kerb and channel one property can be connected via a 100 Class SH uPVC pipe or a 100 x 75 galvanized R.H.S. to a kerb adaptor. A maximum of two properties can be connected via a 200 x 75 galvanized R.H.S.
2. The pipe materials and joint types shall be as follows:

Material	Aust. Std	Joint Type	Restrictions
Fibre reinforced, Class 2	AS 4139:2003	Rubber ring	N/A
Concrete, Class 2	AS/NZS 4058:2007	Rubber ring	N/A
uPVC, sewer Class SH	AS/NZS 1260:2009	Solvent welded	Not to be used in easements
3. Minimum cover to roofwater pipes to be 450mm except where less cover is necessary to discharge to kerb and channel.
4. The access chamber depths and minimum diameters shall be as follows :  
Depth < 600 – MIN  $\phi$ 300, Depth 600 – 750 – MIN  $\phi$ 550, Depth > 750 – MIN  $\phi$ 900 ●
5. Alternative designs, materials and methods of construction will be considered for approval including precast roofwater chambers available from various manufacturers. Alternative precast units will require to be bedded and encased in 150 thick concrete (Grade N25) up to 150 above crown of the inlet pipe with all subsequent backfill compacted to 95% MDD (modified compaction to AS 1289:2014) to ensure stability and robustness.
6. Alternative covers and frames proposed for approval must be circular, and be designed as Class C to AS 3996:2006.
7. Concrete, base N25, cover infill N32 in accordance with AS 1379:2007 and AS 3600:2009.
8. The roofwater drainage system shall be shown on the stormwater drainage plans for the development.
9. The following 'as constructed' information shall be submitted to Superintendent, refer Sewerage Sample as constructed plan WRC STD DWG S-0010.
  - Offsets of the main line to property boundary
  - The locations of access chambers and Y junctions measured from the property boundary.
10. Where individual lots can directly discharge to the kerb and channel, kerb adaptors shall be used. Refer WRC STD DWG R-0081.
11. All dimensions in millimetres.

**LEGEND**

- Refer project drawings for pipe diameter and type
- At  $\phi$ 900 chambers adopt roof design off WRC STD DWG D-0011.

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**ROOFWATER  
INSPECTION CHAMBER**

**DRAINAGE  
Standard  
Drawing  
D-0110**

A	B	C
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Std. Dwg. No.	Descriptions	Std. Dwg. No.	Descriptions
	<b>CROSS SECTIONS</b>		<b>KERB AND CHANNEL</b>
R-0031	TYPE CROSS SECTIONS BI-LEVEL STREET AND VERGE PROFILE FOR ACCESS PLACE, ACCESS STREET AND COLLECTOR STREETS	R-0080	KERBS AND CHANNELS, PROFILES AND DIMENSIONS, INCL EDGE RESTRAINTS, MEDIAN AND INVERT
R-0032	COMMERCIAL / INDUSTRIAL, URBAN RESIDENTIAL AND LOW DENSITY RESIDENTIAL < 1.0 HA STREETS	R-0081	KERB AND CHANNEL, DRAINAGE CONNECTIONS
R-0033	RURAL ROADS AND LOW DENSITY RESIDENTIAL > 1.0 HA ROADS	R-0084	KERB RAMP
	<b>CULVERTS</b>		<b>PUBLIC UTILITIES</b>
QT 1303	RC BOX CULVERTS AND SLAB LINK BOX CULVERTS	R-0100	PUBLIC UTILITIES IN SUBDIVISIONS, TYPICAL SERVICE CORRIDOR AND SECTIONS
QT 1316	CONSTRUCTION OF RC WINGWALLS AND HEADWALLS		<b>RELIEVING SLAB</b>
QT 1317	INSTALLATION OF PRECAST UNITS	QT 1505	BRIDGE APPROACHES - RELIEVING SLAB 3 METRE SPAN
QT 1318	CONSTRUCTION OF BASES WITH NIBS AND APRONS	QT 1506	BRIDGE APPROACHES - RELIEVING SLAB 6 METRE SPAN
			<b>ROAD EDGE GUIDE POSTS</b>
QT 1320	CROWN UNIT HOLDING DOWN ANCHORS	QT 1356	ROAD EDGE GUIDE POSTS TIMBER AND TUBULAR STEEL POST AND INSTALLATION DETAILS
QT 1304	RC PIPE CULVERTS - CONSTRUCTION OF RC WINGWALLS & APRONS FOR PIPE DIA 750 TO 2400		<b>SIGNS</b>
QT 1305	PIPE CULVERTS - HEADWALLS AND APRONS FOR PIPE DIA 375 TO 675	R-0130	STREET NAME SIGN
QT 1359	CULVERTS - INSTALLATION, BEDDING AND FILLING / BACKFILLING AGAINST / OVER CULVERTS	R-0131	TRAFFIC CONTROL DEVICES
	<b>DRIVEWAYS</b>		<b>SUBSURFACE DRAINAGE</b>
R-0050	RESIDENTIAL DRIVEWAY - SLAB AND TRACKS	R-0140	SUBSURFACE DRAINAGE
R-0051	COMMERCIAL DRIVEWAY SLAB - TYPE A - TWO WAY ACCESS	R-0141	SUBSOIL DRAINAGE DETAILS AT MEDIANS / ISLANDS
R-0052	COMMERCIAL DRIVEWAY SLAB - TYPE B - TWO LANES ACCESS	QT 1116	SUBSOIL DRAINS - OUTLETS AND CLEANOUTS
R-0053	TYPICAL MINOR ACCESS DETAILS FOR COUNCIL RURAL ROADS		<b>WATER SERVICE CONDUITS</b>
	<b>FLOODWAYS</b>		
QT 1170	FLOOD DEPTH INDICATORS	R-0160	WATER SERVICE CONDUITS
	<b>FOOTPATHS</b>		
R-0065	CONCRETE STRIP FOOTPATHS		
	<b>GATES AND GRIDS</b>		
QT 1601	RURAL FENCE AND GATES - CHS POSTS AND STAYS		
QT 1561	MOTOR GRID - GENERAL ARRANGEMENT		
	<b>GUARD RAILS AND BARRIERS</b>		
QT 1474	STEEL BEAM GUARD RAILS		
QT 1475	INSTALLATION AND SETOUT		
QT 1476	INSTALLATION OF BRIDGE AND BARRIER APPROACHES		
QT 1341	TERMINAL AND COMPONENTS		
QT 1479	INSTALLATION OF BACK TO BACK GUARDRAIL		
QT 1480	BOLTS, NUTS, SCREWS AND WASHERS CABLE ASSEMBLY WITH FASTENERS		
QT 1481	DETAILS FOR W BEAM RAILS AND RAIL COMPONENTS		
QT 1482	DETAILS FOR THRIE BEAM RAILS AND RAIL COMPONENTS		
QT 1483	W BEAM AND THRIE BEAM ASSEMBLIES		
QT 1484	DETAILS FOR ANCHOR CABLE ASSEMBLY AND SUPPORTING PLATES		
QT 1485	DETAILS FOR GUARDRAIL DELINEATOR BRACKET		
	CONCRETE BARRIERS, EXTRUDED AND PRECAST BARRIERS		

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
C Dwg R-066 DELETED	10/3/98
B Dwgs. R-002, R0032, R0037, R0035, R0050	10/3/98
A ORIGINAL ISSUE	1/3/97



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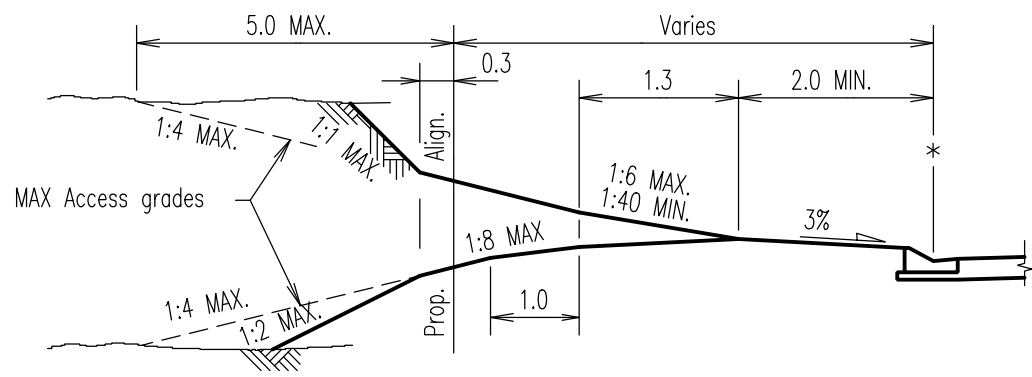
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Ph 07 4761 3600

**COLLINSVILLE**  
Cnr Stanley & Conway Sts  
Collinsville 4804 Q  
Ph 07 4785 5366

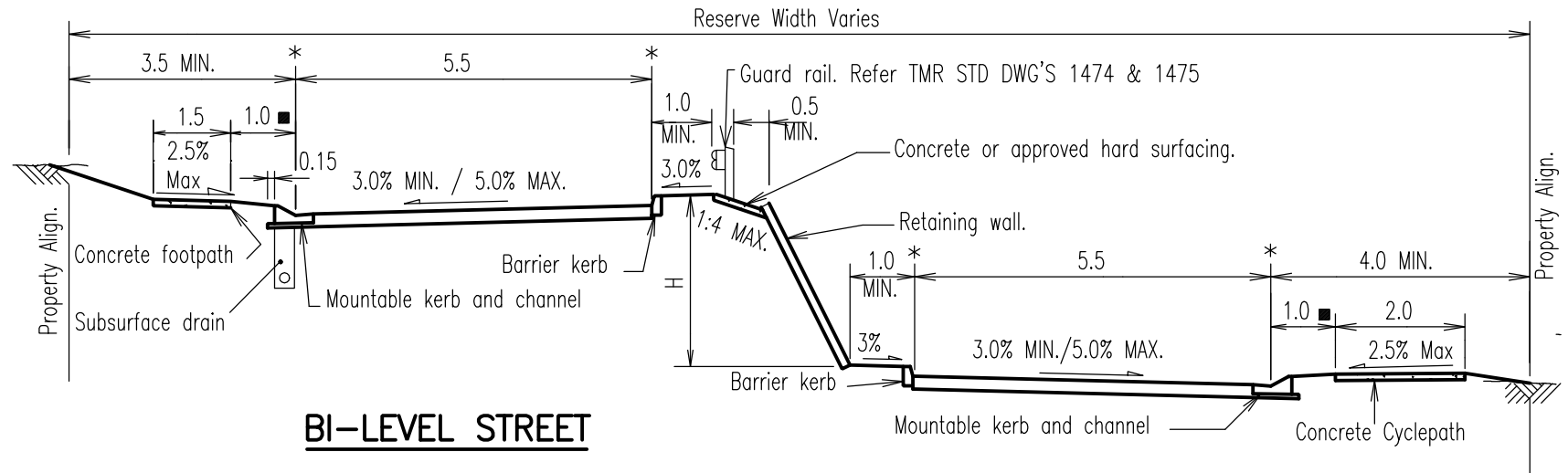
**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
Ph 07 4945 0200

<b>INDEX</b>
<b>STANDARD DRAWINGS</b>
<b>ROAD / STREET</b>

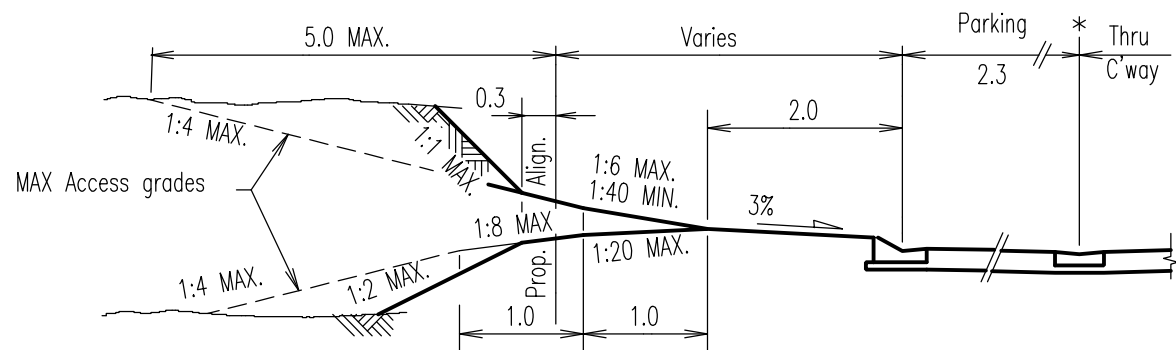
ROAD/STREET Standard Drawing <b>R-0001</b>
A   B   C   D



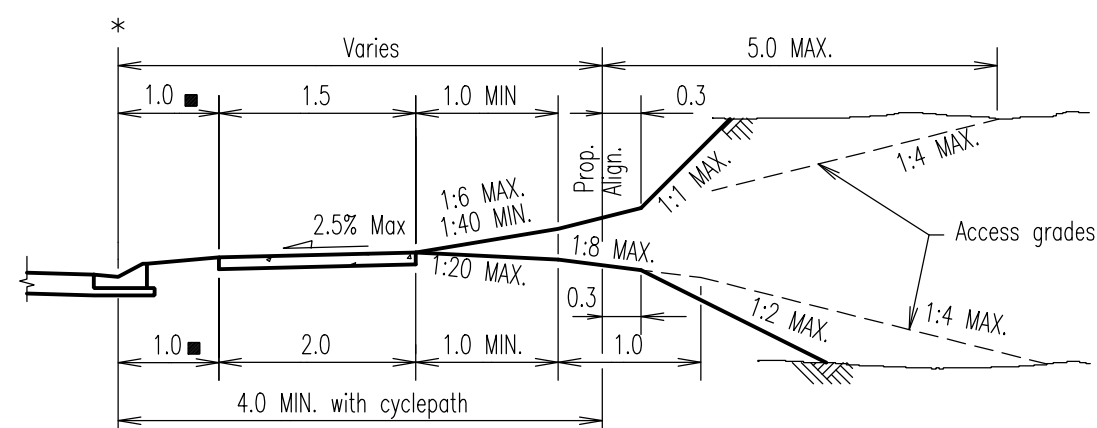
**VERGE WITHOUT PATHWAYS**



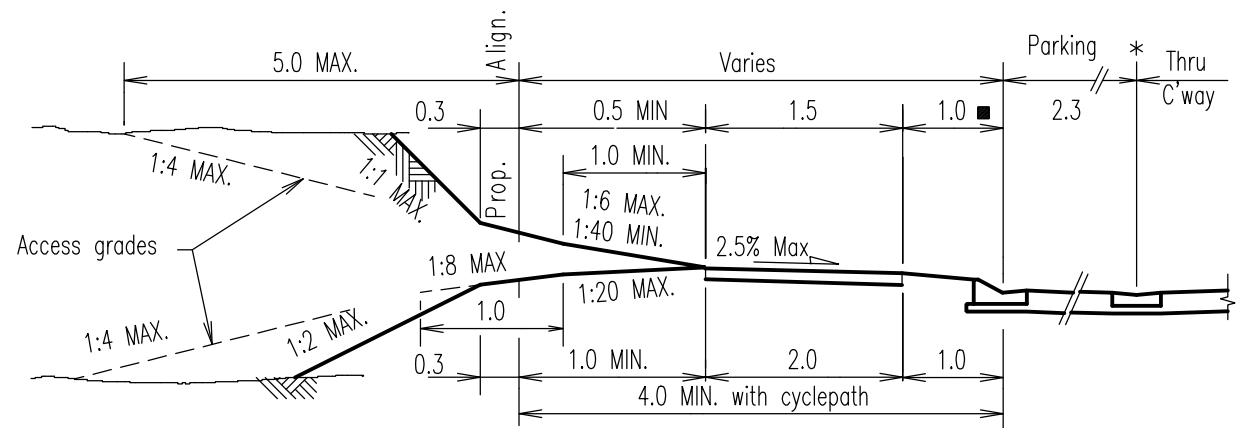
**BI-LEVEL STREET**



**VERGE AT PARKING BAYS WITHOUT PATHWAYS**



**VERGE WITH PATHWAYS**



**VERGE WITH PARKING BAYS AND PATHWAYS**

**LEGEND**

- Road reserve may be 20 metres if all services can be accommodated.
- \* NOM. Kerb line
- Unless otherwise specified

- NOTES:**
1. A concrete footpath or cyclepath may be provided on one side only depending on allotment catchment. It shall be constructed parallel to the kerb and channel, and transition smoothly around any parking bays.
  2. Retaining wall to be designed specifically to suit site conditions. The retaining wall face should be of a type which will compliment the amenity of the area. Rock faced walls are acceptable, however each wall should be considered individually.
  3. An approved guardrail shall be installed when height 'H' (top of kerb to top of kerb) exceeds 1.5m, refer TMR STD DWG 1474.
  4. Landscaping may be possible in the area between the guardrail and top of wall when this dimension exceeds 1.5m, where guardrail is not required or when the width of centre median exceeds 1.5m. Landscaping will not be permitted in the 1.0m strip behind the barrier kerbs to allow for manoeuvring of vehicles.
  5. The minimum reserve widths indicated on the standard road cross sections may need to be increased in certain circumstances in order to comply with this drawing.
  6. For pavement design requirements refer Development design manual.
  7. All dimensions in metres.

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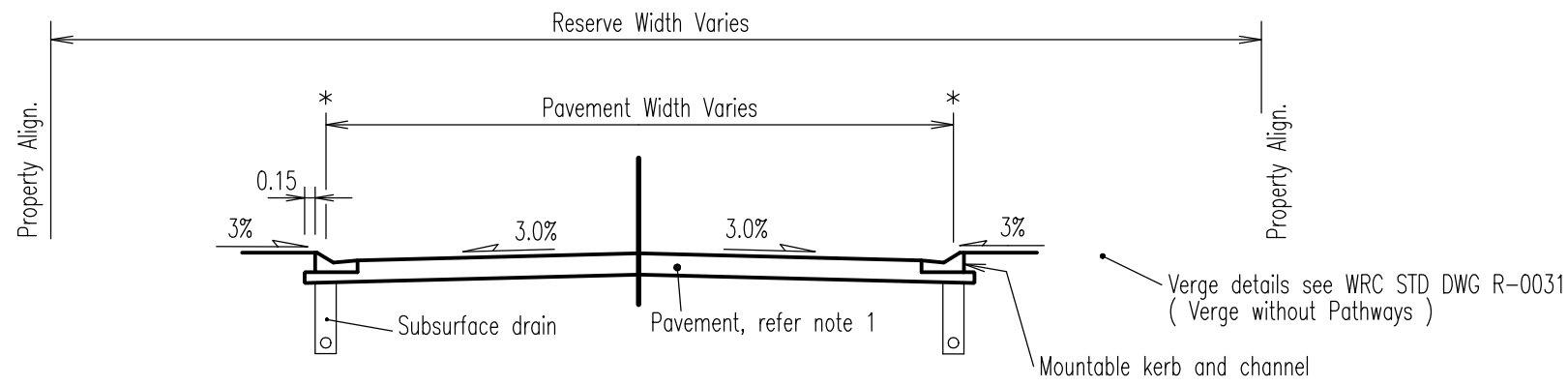
**TYPE CROSS SECTIONS**

**BI-LEVEL STREET & VERGE PROFILES FOR**

**ACCESS PL, ACCESS STS. & COLLECTOR STS.**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0031**

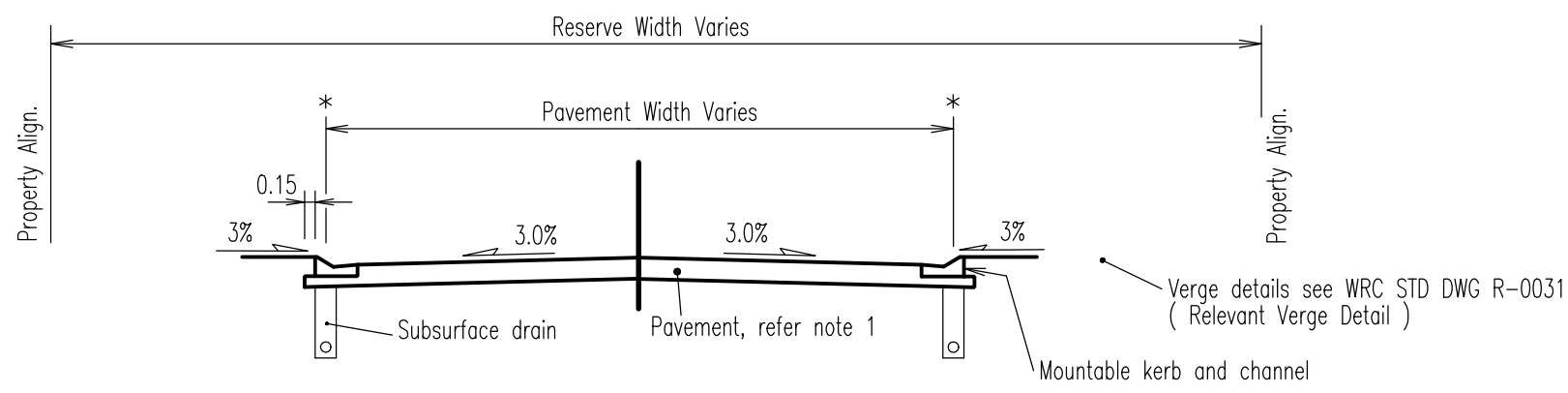
A B C



**LOW DENSITY RESIDENTIAL < 1.0 HA**

LOW DENSITY RESIDENTIAL < 1.5 HA SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

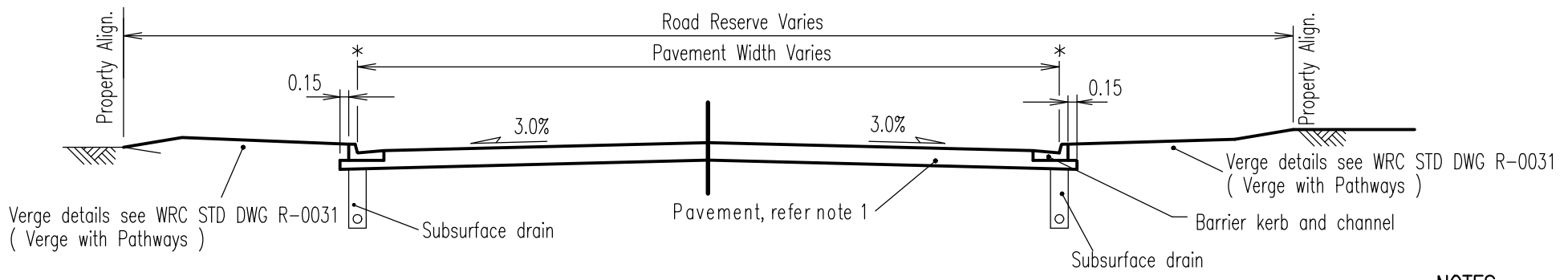
	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS STREET	16.0	6.0	5.0
COLLECTOR	20.0	7.5	5.0



**URBAN RESIDENTIAL**

URBAN RESIDENTIAL SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS PLACE	15.0	3.5	3.0
ACCESS STREET	15.0	5.5	3.0
COLLECTOR	17.0	7.5	3.5
TRUNK COLLECT.	21.0	9.0	4.5
SUB ARTERIAL	25.0	11.0	5.5



**COMMERCIAL / INDUSTRIAL**

COMMERCIAL / INDUSTRIAL SPECIFICATIONS  
(Refer Table 1.4-1 for total requirements)

	RESERVE WIDTH	PAVEMENT WIDTH	MIN VERGE WIDTH
ACCESS STREET	21.0	12.0	4.5
COLLECTOR	23.0	14.0	4.5

**NOTES:**

1. For pavement design requirements refer Development manual.
2. All dimensions in metres.

**LEGEND**

\* NOMINAL kerb line

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C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B AREA SPECIFICATIONS TABLE AMENDED	10/3/98
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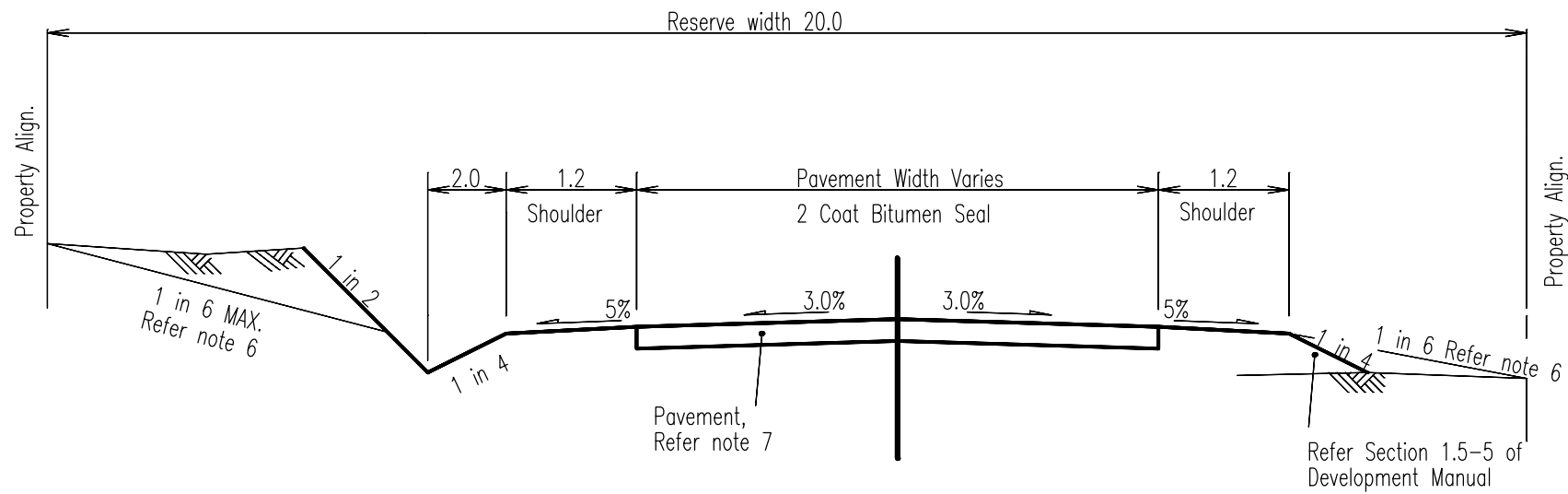
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**TYPE CROSS SECTIONS**  
**COMMERCIAL / INDUSTRIAL STREETS**  
**URBAN RESIDENTIAL AND**  
**LOW DENSITY RESIDENTIAL < 1.0 HA**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0032**

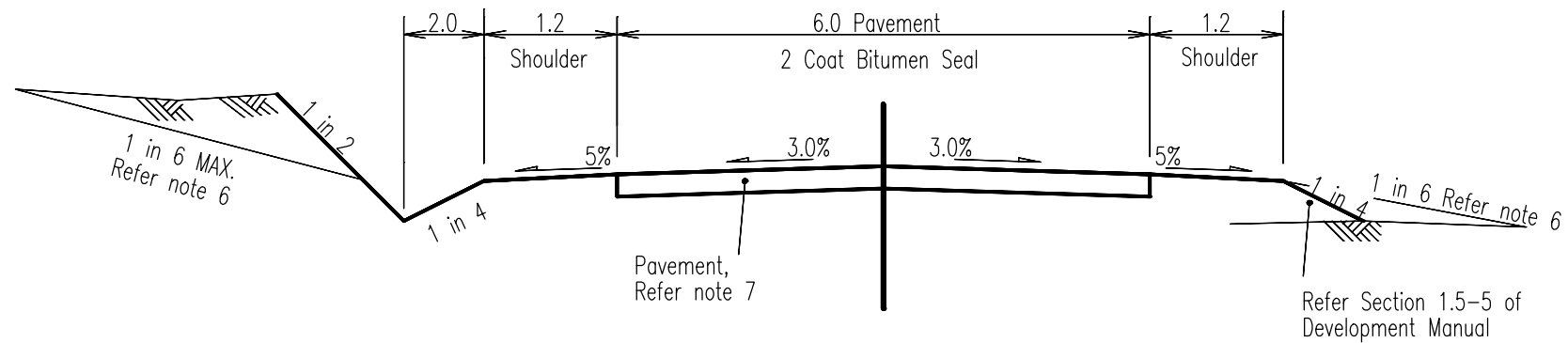
A | B | C



**LOW DENSITY RESIDENTIAL > 1.0 HA**

LOW DENSITY RESIDENTIAL > 1.5 HA  
(Refer Table 1.4-1 for total requirements)

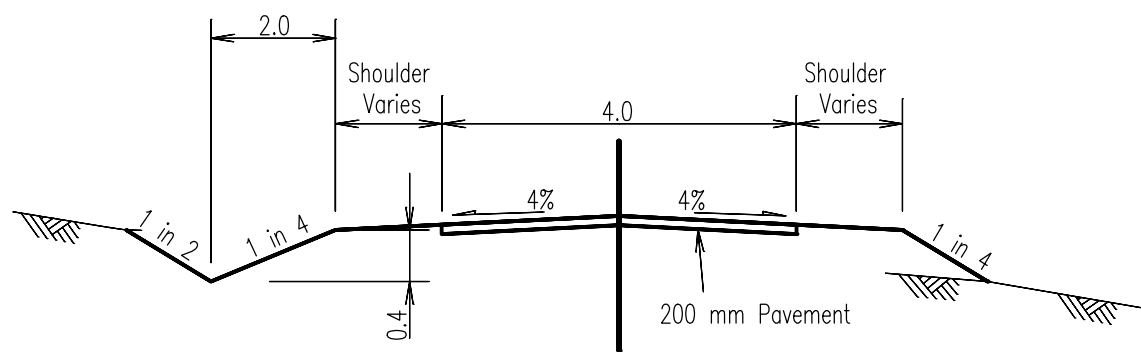
	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH	MIN VERGE WIDTH
ACCESS STREET	20.0	6.0	1.2	5.0
COLLECTOR	20.0	7.5	1.2	5.0



**RURAL ROAD - SEALED**

RURAL ROAD - SEALED  
(Refer Table 1.4-1 for total requirements)

No. LOTS	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH
31-100	20.0	6.0	1.2



**RURAL ROAD - UNSEALED**

RURAL ROAD - UNSEALED  
(Refer Table 1.4-1 for total requirements)

No. LOTS	RESERVE WIDTH	PAVEMENT WIDTH	SHOULDER WIDTH
1-15	20.0	4.0	1.2
16-30	20.0	4.0	2.4

**LEGEND**

- Refer development permit for type of construction to be adopted.
- 150mm MIN. pavement overlap

**NOTES:**

- Table Drains steeper than 5% should have erosion protection measures installed.
- Cut batter slopes may be varied on site to ensure long term stability of batters.
- Minimum slope of table drain inverts shall be 0.5% (1 in 200).
- Floodways shall be constructed with cross road drainage nominated in development permit.
- Unsealed roads shall be designed using parameters set out in AUSTRROADS "Unsealed Roads Manual" unless noted otherwise in the project drawings.
- One access point to be constructed to each lot at a maximum slope of 1 in 6. The access point is to have a pipe crossing where a table drain is provided.
- For pavement design requirements refer Development manual.
- All dimensions in metres unless shown otherwise.

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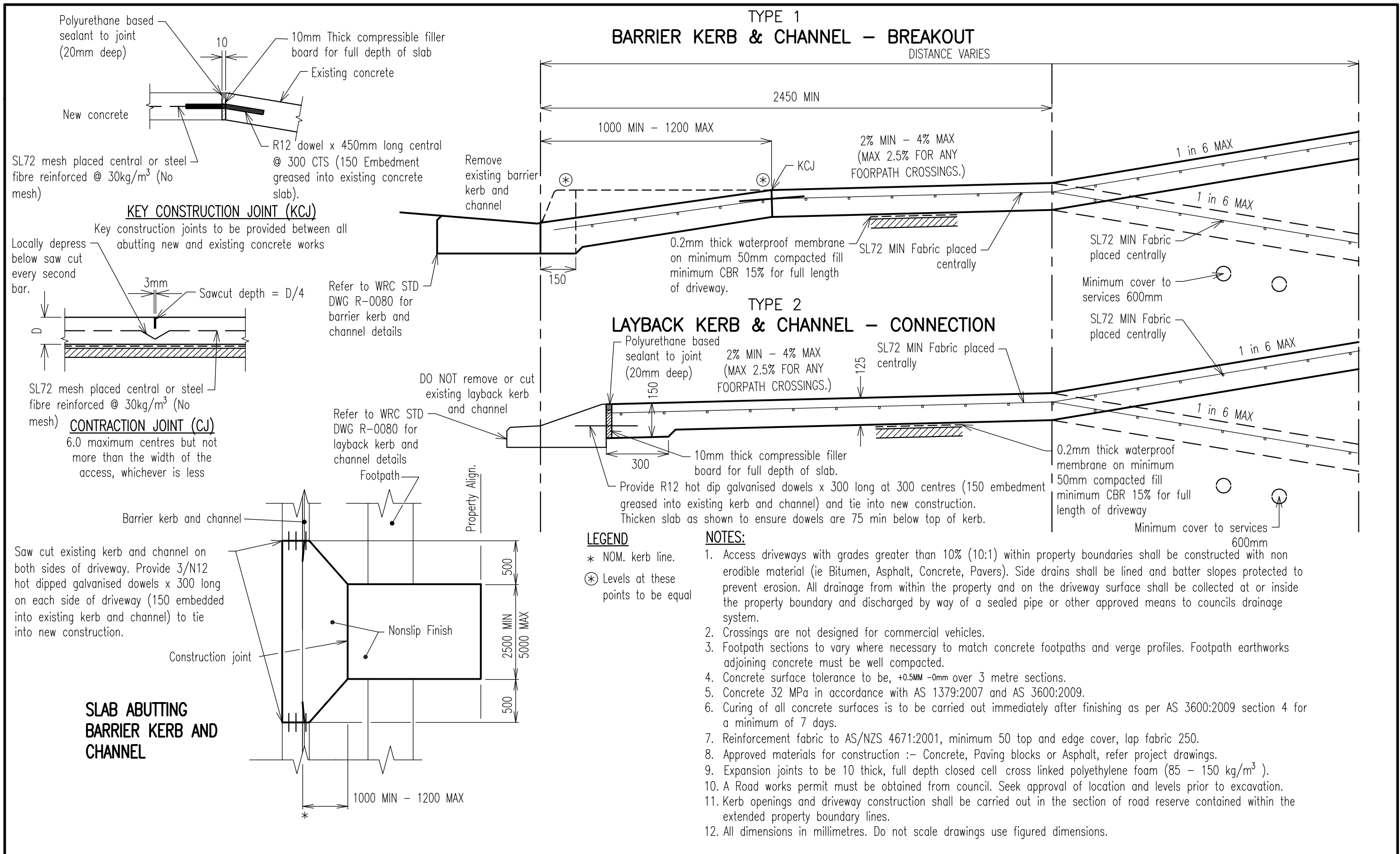
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**TYPE CROSS SECTIONS**  
**RURAL ROADS**

**ROAD/STREET**  
Standard  
Drawing  
**R-0033**

A	B	C		
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REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
D GENERAL UPDATES	15/2/12
C DRIVEWAY WIDTH CHANGED	10/03/08
B MAJOR REVISION	10/3/98
A ORIGINAL ISSUE	1/3/97


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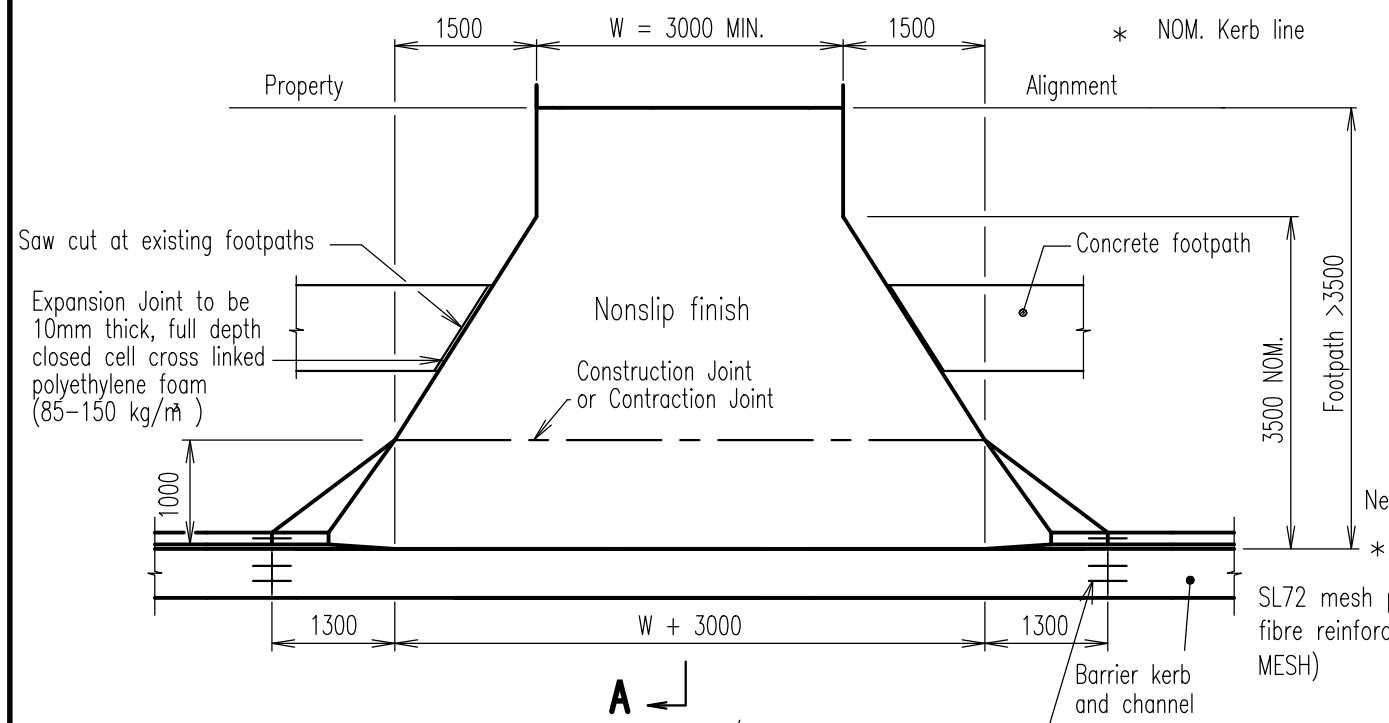
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**RESIDENTIAL DRIVEWAY**  
**SLAB AND TRACKS**

**ROAD/STREET**  
**Standard**  
**Drawing**  
**R-0050**

A | B | C | D | E

**PLAN – WIDE FOOTPATHS**



Saw cut at existing footpaths

Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85-150 kg/m<sup>3</sup>)

Nonslip finish

Construction Joint or Contraction Joint

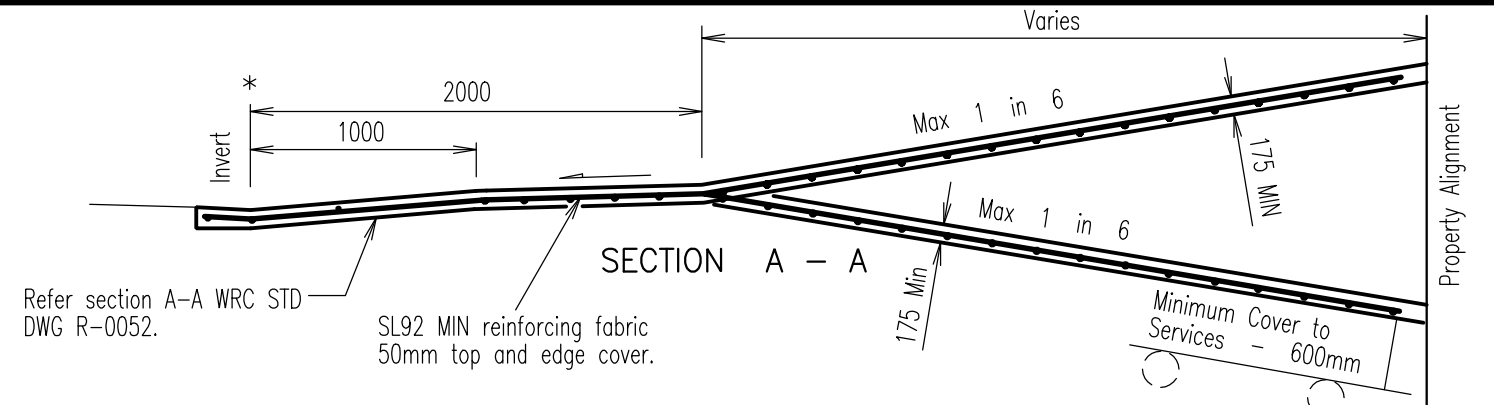
Concrete footpath  
Footpath > 3500  
3500 NOM.  
\*  
SL72 mesh placed central or steel fibre reinforced @ 30kg/m<sup>3</sup> (NO MESH)

Barrier kerb and channel

Provide 3/N16 hot dipped galvanised dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

**LEGEND**

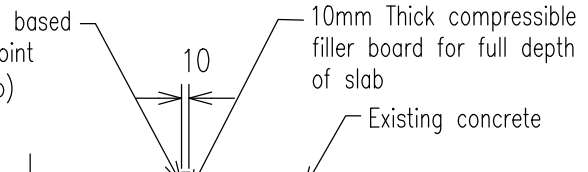
\* NOM. Kerb line



Refer section A-A WRC STD DWG R-0052.

SL92 MIN reinforcing fabric 50mm top and edge cover.

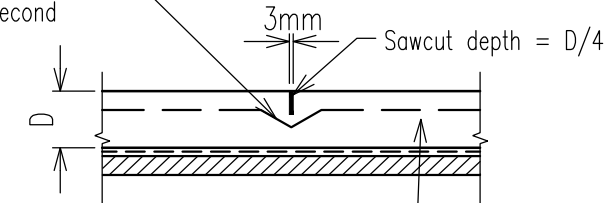
Polyurethane based sealant to joint (20mm deep)



**KEY CONSTRUCTION JOINT (KCJ)**

Key construction joints to be provided between all abutting new and existing concrete works

Locally depress below saw cut every second bar.



SL92 mesh, 50 top cover or steel fibre reinforced @ 30kg/m<sup>3</sup> (No mesh)

**CONTRACTION JOINT (CJ)**

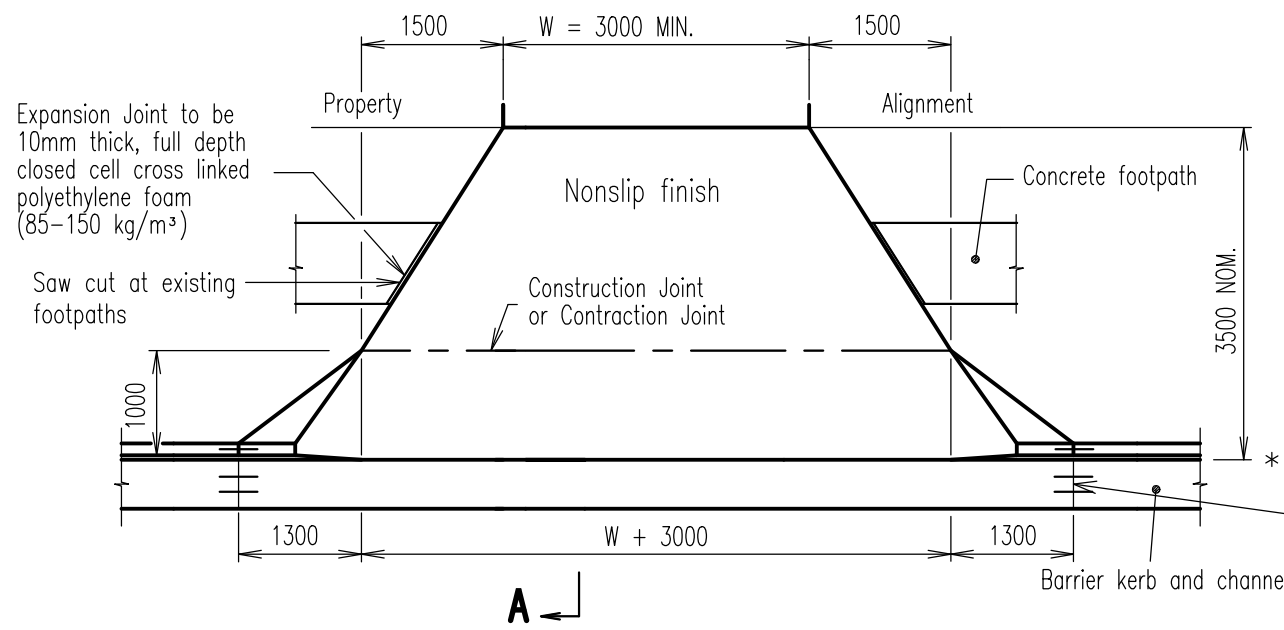
6.0 maximum centres but not more than the width of the access, whichever is less

Provide 3/N16 hot dipped galvanised - dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

**NOTES:**

1. Access driveways with grades greater than 10% (10:1) within property boundaries shall be constructed with non erodible material (ie Bitumen, Asphalt, Concrete, Pavers). Side drains shall be lined and batter slopes protected to prevent erosion. All drainage from within the property and on the driveway surface shall be collected at or inside the property boundary and discharged by way of a sealed pipe or other approved means to councils drainage system.
2. Footpath sections to vary where necessary to match concrete footpaths and verge profiles. Footpath earthworks adjoining concrete must be well compacted.
3. Depths of concrete and reinforcing steel shown are the minimum requirements for good foundation conditions, and average traffic loading. Where this does not apply, depths of concrete and reinforcing shall be increased to suit specific conditions.
4. Concrete surface tolerance to be, +0.5MM -0mm over 3 metre sections.
5. Concrete 32 MPa in accordance with AS 1379:2007 and AS 3600:2009.
6. Curing of all concrete surfaces is to be carried out immediately after finishing as per AS 3600:2009 section 4 for a minimum of 7 days.
7. Reinforcement fabric to AS/NZS 4671:2001, minimum 50 top and edge cover, lap fabric 250.
8. Approved materials for construction :- Concrete, Paving blocks or Asphalt, refer project drawings.
9. Expansion joints to be 10 thick, full depth closed cell cross linked polyethylene foam (85 - 150 kg/m<sup>3</sup>).
10. Design of crossings may vary, refer project drawings.
11. Dimension W, 3.0m one-way or 5.5m two-way.
12. Reprofile adjacent footpath to match driveway. Footpath earthworks adjoining concrete must be well compacted.
13. Existing footpath profile to be maintained where possible.
14. Compaction for subgrade 95% Standard to AS 1289.5.1.1:2003.
15. Where subgrade is less than CBR 5 excavate and provide imported material to satisfaction of the Superintendent.
16. A Road works permit must be obtained from council. Seek approval of location and levels prior to excavation.
17. Kerb openings and driveway construction shall be carried out in the section of road reserve contained within the extended property boundary lines.
18. All dimensions in millimetres. Do not scale drawings use figured dimensions.

**PLAN – 3.5m FOOTPATH**



Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85-150 kg/m<sup>3</sup>)

Saw cut at existing footpaths

Nonslip finish

Construction Joint or Contraction Joint

Concrete footpath  
3500 NOM.  
\*  
SL72 mesh placed central or steel fibre reinforced @ 30kg/m<sup>3</sup> (NO MESH)

Barrier kerb and channel

Provide 3/N16 hot dipped galvanised - dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.

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**COMMERCIAL DRIVEWAY SLAB  
TYPE A-TWO WAY ACCESS**

**ROAD/STREET  
Standard  
Drawing  
R-0051**

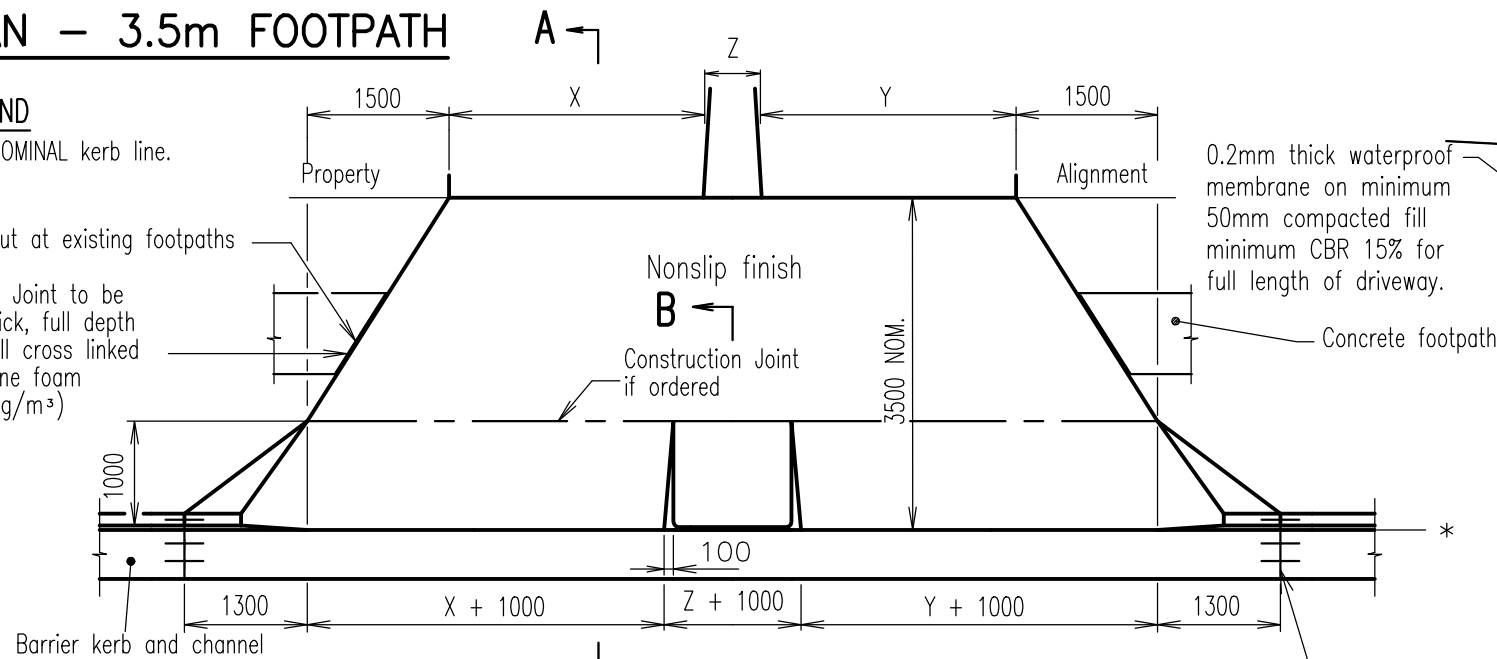
A B C

# PLAN – 3.5m FOOTPATH

## LEGEND

\* NOMINAL kerb line.

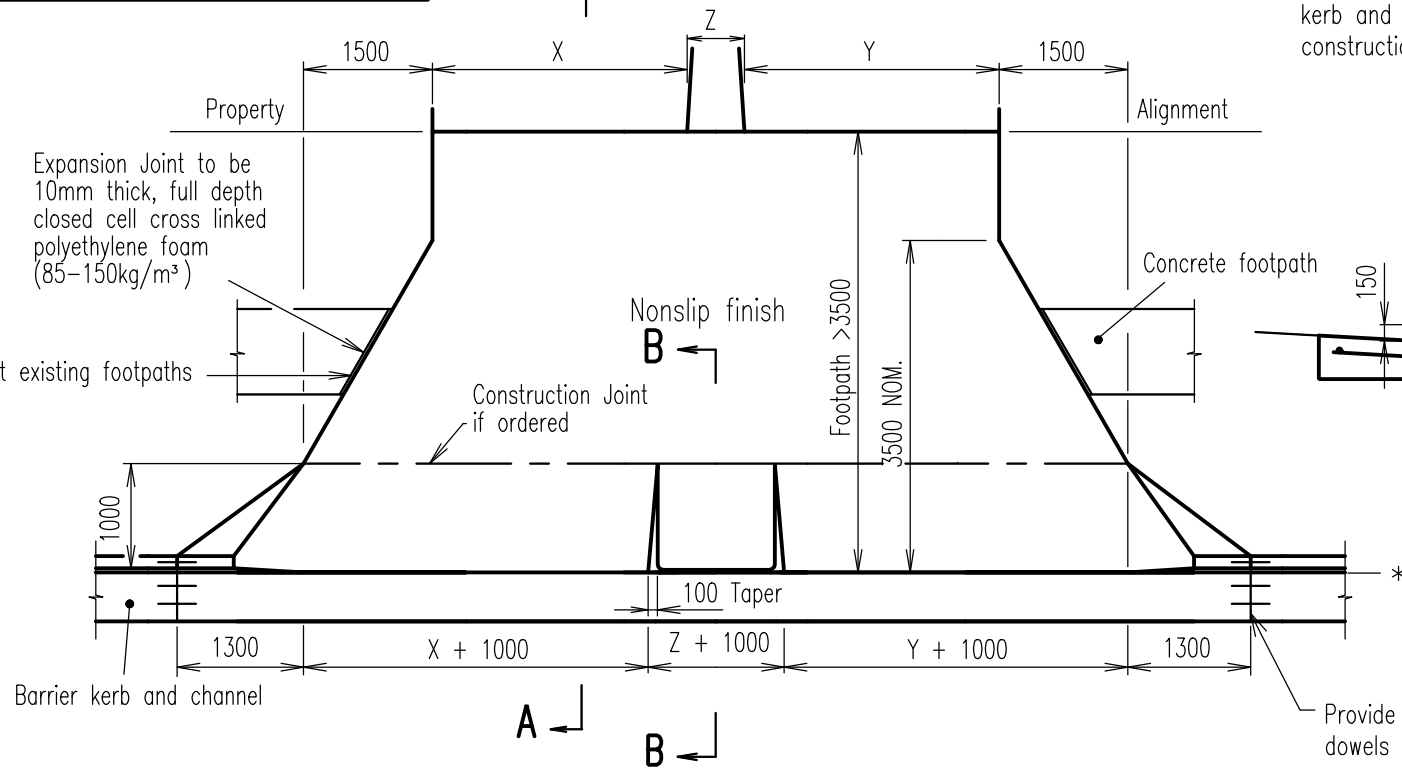
Saw cut at existing footpaths  
Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85–150kg/m<sup>3</sup>)



# PLAN – WIDE FOOTPATHS

Expansion Joint to be 10mm thick, full depth closed cell cross linked polyethylene foam (85–150kg/m<sup>3</sup>)

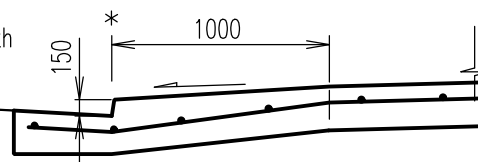
Saw cut at existing footpaths



0.2mm thick waterproof membrane on minimum 50mm compacted fill minimum CBR 15% for full length of driveway.

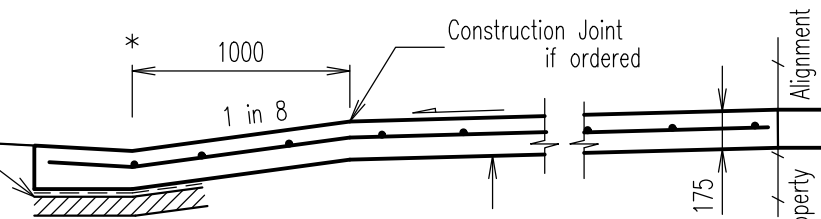
Concrete footprint

Provide 3/N16 hot dipped galvanised dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.



SECTION B – B

Provide 3/N16 hot dipped galvanised dowels x 450 long on each side of driveway (150 embedded into existing kerb and channel) to tie into new construction.



SL92 MIN reinforcing fabric 50mm top and edge cover. Refer section A-A on Standard Drawing. R-0051 for alternative footpath profile.

SECTION A – A

## NOTES:

- Access driveways with grades greater than 10% (10:1) within property boundaries shall be constructed with non erodible material (ie Bitumen, Asphalt, Concrete, Pavers). Side drains shall be lined and batter slopes protected to prevent erosion. All drainage from within the property and on the driveway surface shall be collected at or inside the property boundary and discharged by way of a sealed pipe or other approved means to councils drainage system.
- Depths of concrete and reinforcing steel shown are the minimum requirements for good foundation conditions, and average traffic loading. Where this does not apply, depths of concrete and reinforcing shall be determined by engineer.
- Design of crossings may vary, refer project drawings.
- Dimensions X, Y, & Z, refer specification or project drawings.
- Reprofile adjacent footpath to match driveway. Footpath earthworks adjoining concrete must be well compacted.
- Existing footpath profile to be maintained where possible.
- Footpath sections to vary where necessary to match concrete footpaths and verge profiles. Footpath earthworks adjoining concrete must be well compacted.
- Concrete surface tolerance to be, +0.5MM –0mm over 3 metre sections.
- Concrete 32 MPa in accordance with AS 1379:2007 and AS 3600:2009.
- Curing of all concrete surfaces is to be carried out immediately after finishing as per AS 3600:2009 section 4 for a minimum of 7 days.
- Reinforcement fabric to AS/NZS 4671:2001, 50 top and edge cover, lap fabric 250.
- Approved materials for construction :- Concrete, Paving blocks or Asphalt, refer project drawings.
- Expansion joints to be 10 thick, full depth closed cell cross linked polyethylene foam (85 – 150 kg/m<sup>3</sup>).
- Compaction for subgrade 95% Standard to AS 1289.5.1.1:2003.
- Where subgrade is less than CBR 5 excavate and provide imported material to satisfaction of the Superintendent.
- A Road works permit must be obtained from council. Seek approval of location and levels prior to excavation.
- Kerb openings and driveway construction shall be carried out in the section of road reserve contained within the extended property boundary lines.
- All dimensions in millimetres. Do not scale drawings use figured dimensions.

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**COMMERCIAL DRIVEWAY SLAB  
TYPE B – TWO LANES ACCESS**

**ROAD/STREET  
Standard  
Drawing  
R-0052**

A B C

Design Speed (km/hr)	Z (m)
60	27
80	36
100	45

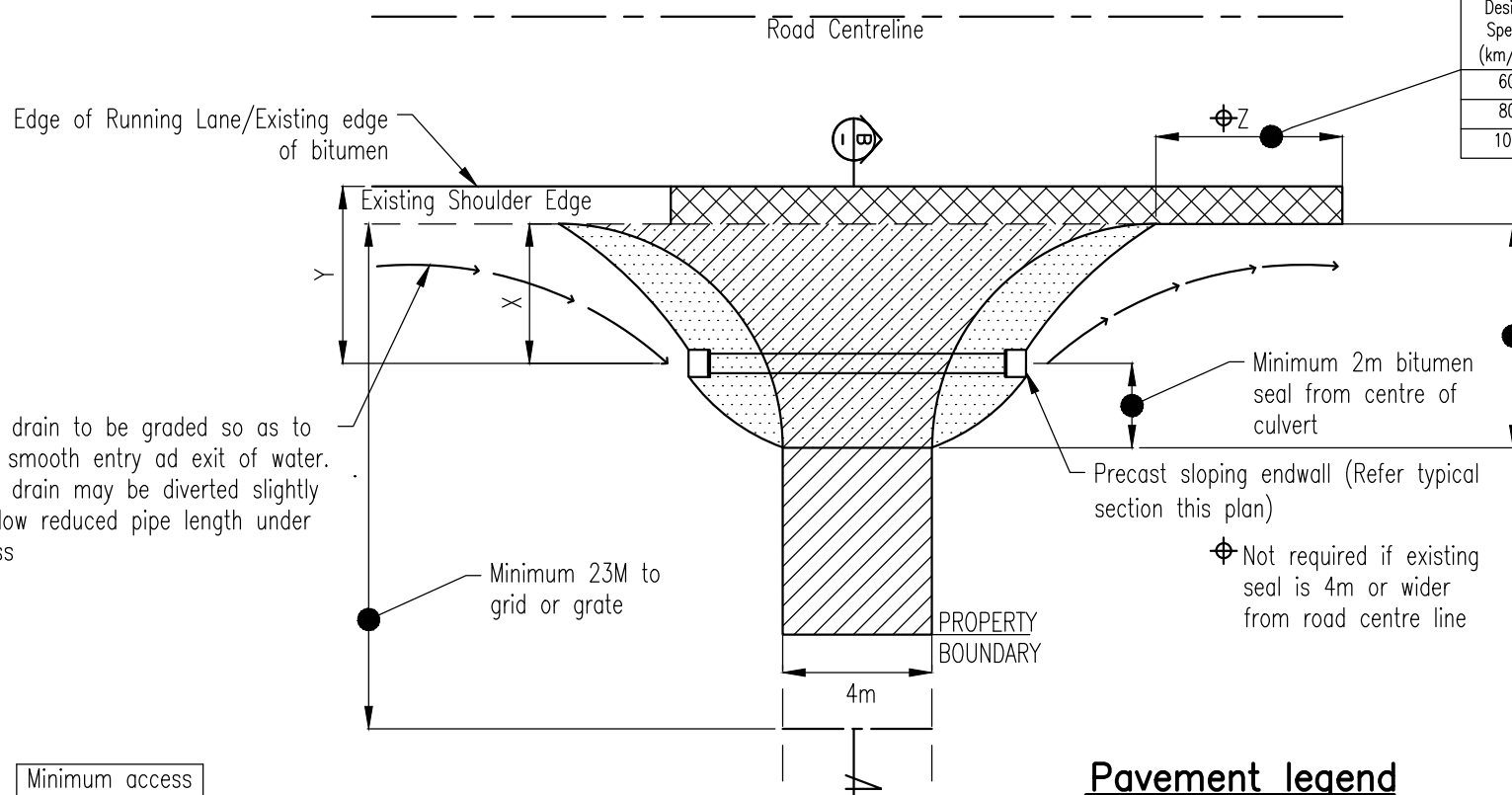
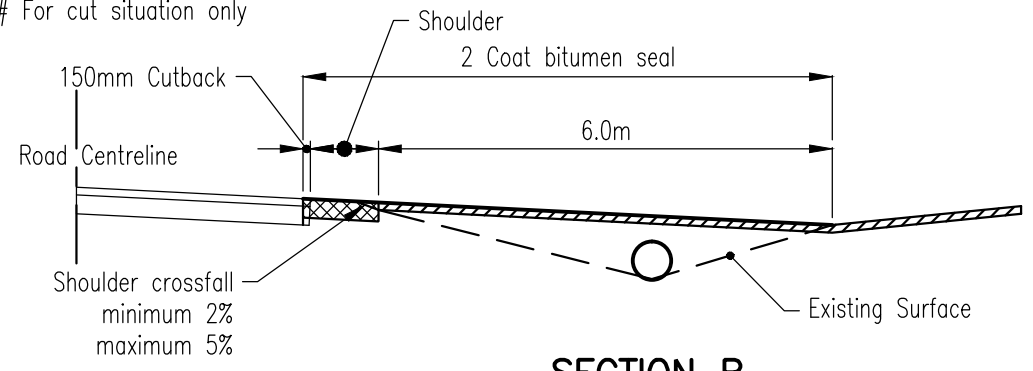


Table drain to be graded so as to allow smooth entry and exit of water. Table drain may be diverted slightly to allow reduced pipe length under access

Distance 'X' (m)	Length (m)
1#	8.54
2#	6.10
3	4.88

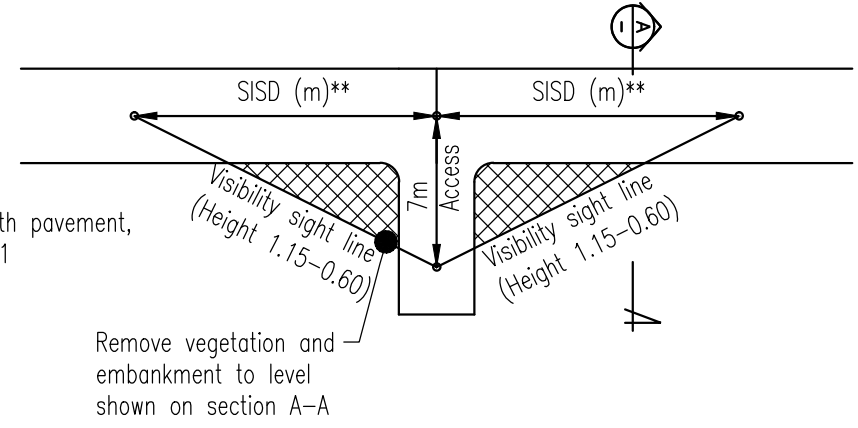
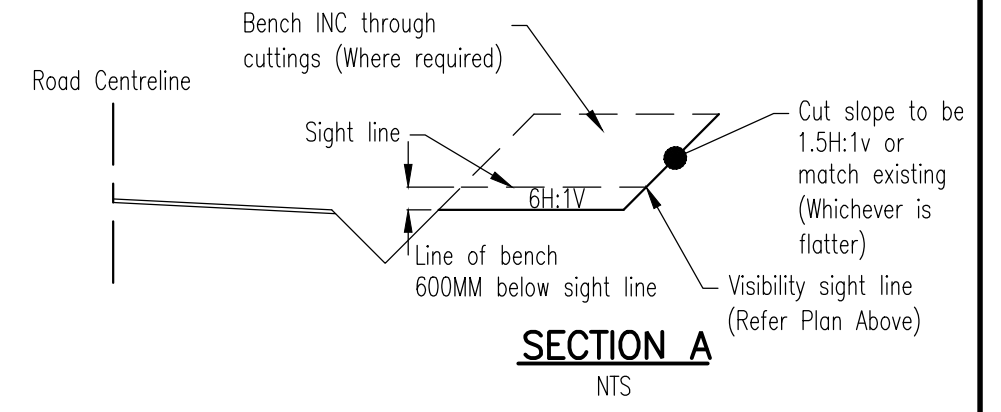
# For cut situation only



**SECTION B**  
NTS

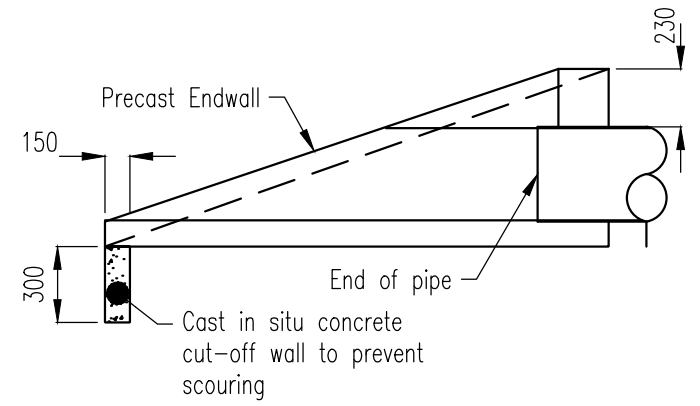
**Pavement legend**

- Existing shoulder to be full depth pavement, minimum 200mm Base, type 2.1
- 100mm Base, type 2.5
- 2 coat bitumen seal (for new driveways only)



Design speed km/hr	SISD (m)
60	115
80	175
100	250

**VISIBILITY TRIANGLE**



**SLOPING ENDWALL TYPICAL SECTION**

**NOTES:**

- Sloping endwall is only required where dimension 'Y' is less than 9m. When dimension 'Y' is over 9m, a square endwall is acceptable, although each case to be considered individually.
- The fall through the culvert is not to be less than 50mm
- Guide posts of an approved type are to be placed on each side of the access (Rural area only).
- Details on project drawings take precedence over any notes or calculations shown on standard drawing.

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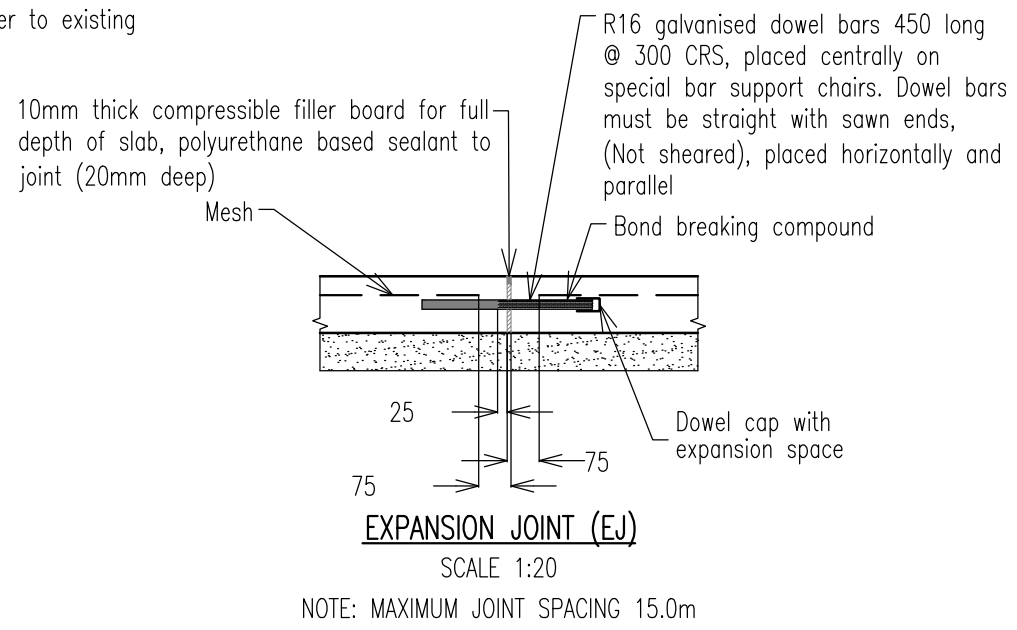
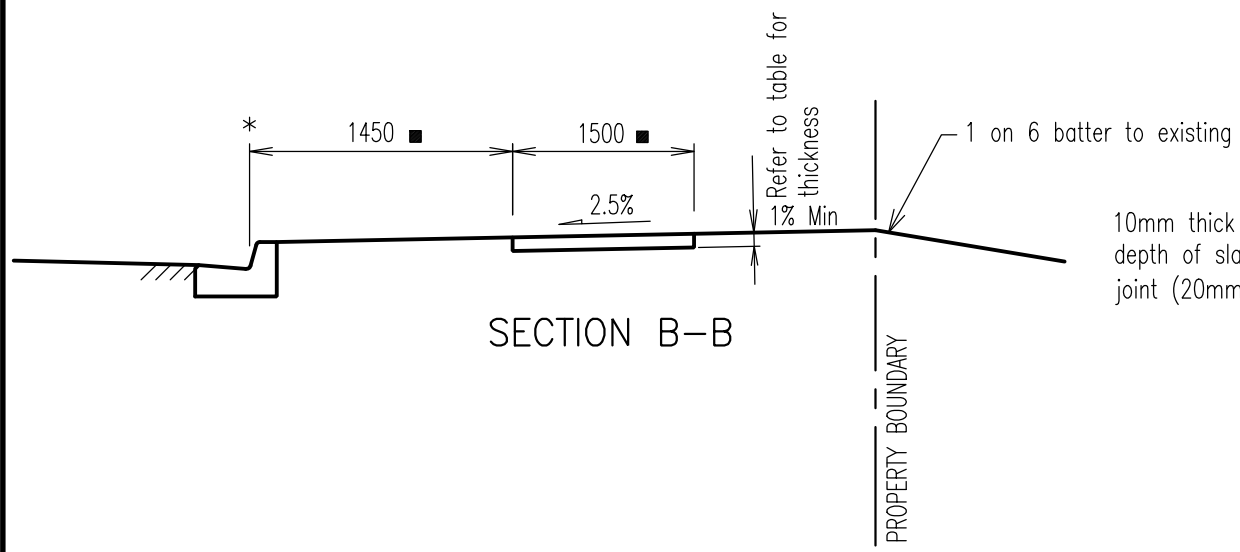
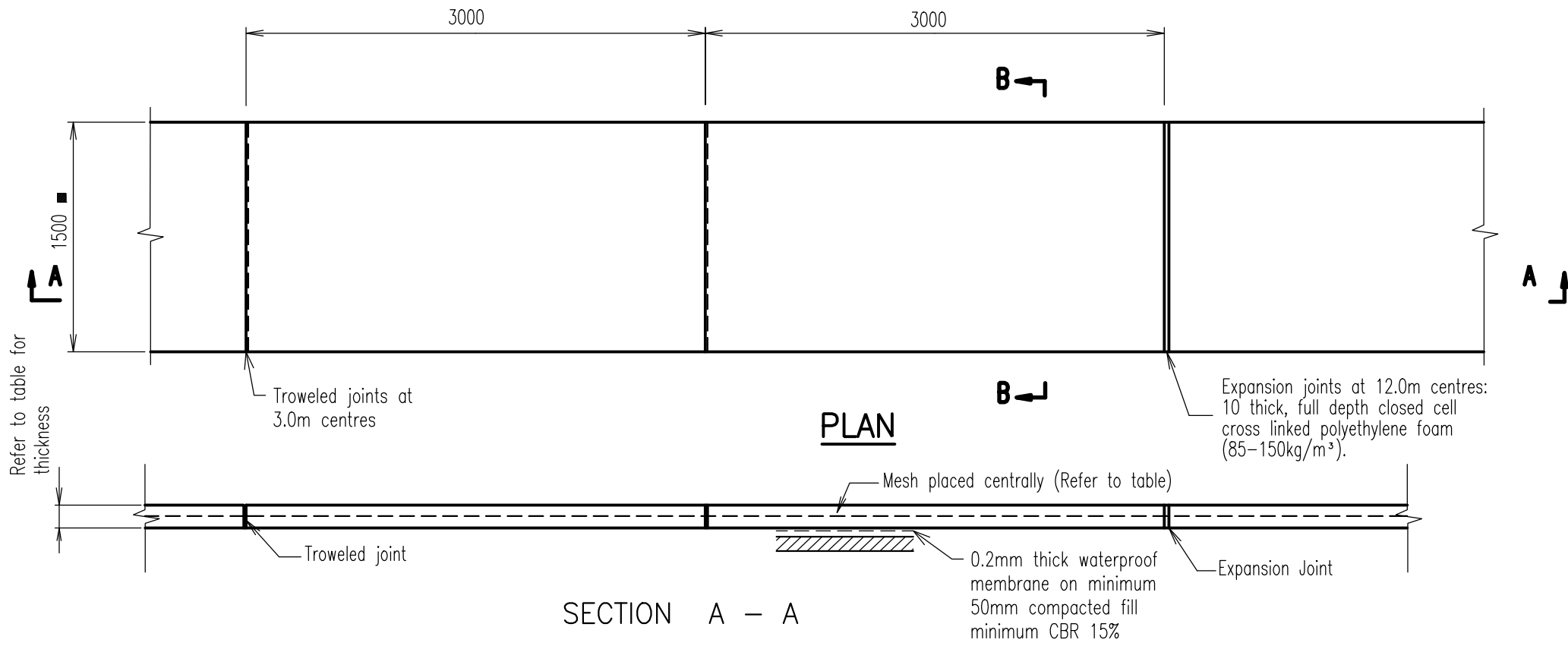
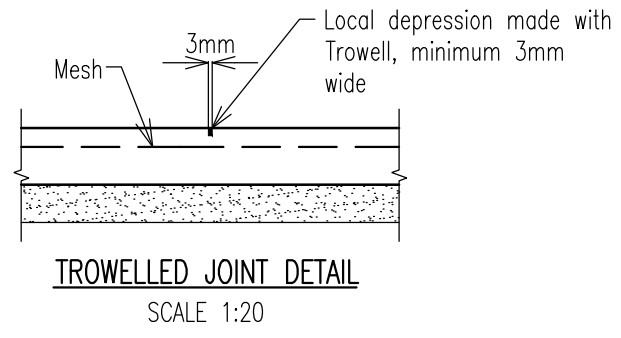
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**TYPICAL MINOR ACCESS  
DETAILS FOR COUNCIL  
RURAL ROADS**

**ROAD/STREET  
Standard  
Drawing  
R-0053**

A





**LEGEND**

- \* NOM kerb line.
- Unless otherwise specified.

**NOTES:**

1. Concrete MPa 32 in accordance with AS 1379:2007 and AS 3600:2009.
2. All concrete to be broom finished.
3. Troweled joints, 3m MAX spacing. +6mm
4. Finished surface tolerance to be maximum +6mm & -0mm relative to kerb level and crossfall specified.
5. Pattern lines to be square to sides and finished with an approved grooving tool.
6. Concrete footpaths, adjoining existing driveways are to be transitioned over a minimum 5.0m length.
7. A Roadworks permit must be obtained from Council, seek approval of location and levels prior to excavation.
8. All dimensions in millimetres.

PATHWAY LOCATION/DETAILS			
REINFORCING TYPE	FOOTPATH	RESIDENTIAL DRIVEWAY	INDUSTRIAL/ COMMERCIAL DRIVEWAY
MESH	100mm N32 SL72	125mm N32 SL72	175mm N32 SL92
COVER	CENTRALLY	CENTRALLY	50mm TOP

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
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A ORIGINAL ISSUE	1/3/97



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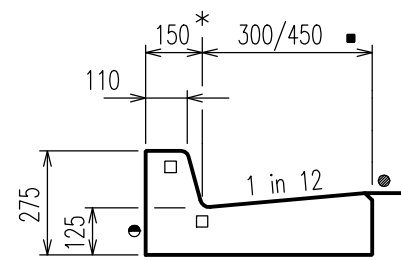
**COLLINSVILLE**  
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Collinsville 4804 Q  
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**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
Ph 07 4945 0200

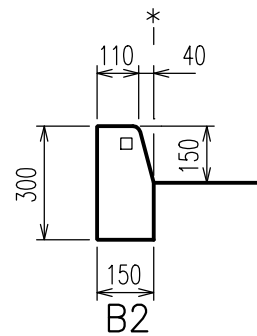
**CONCRETE STRIP FOOTPATHS**

**ROAD/STREET Standard Drawing R-0065**

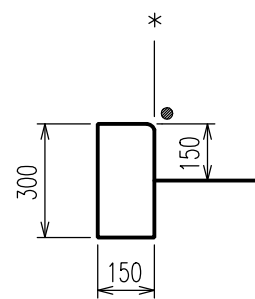
A	B	C	
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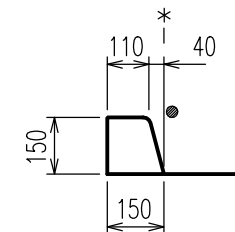
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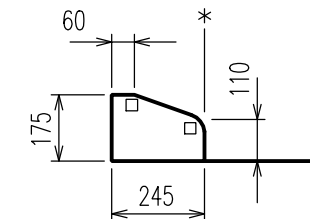
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B3

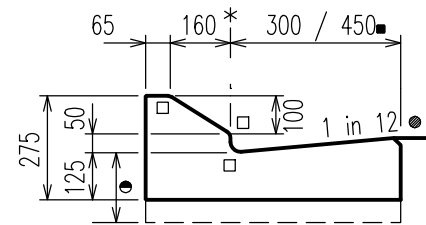


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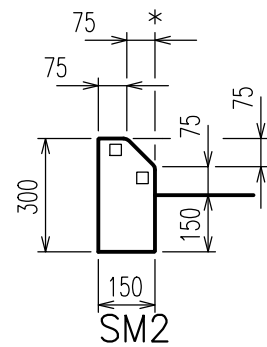


B5

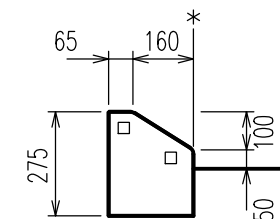
**BARRIER TYPE**



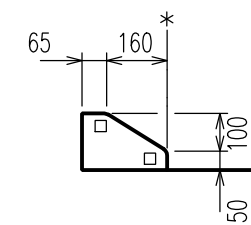
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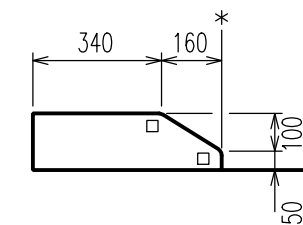
SM2



SM3

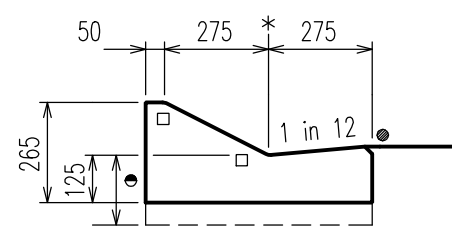


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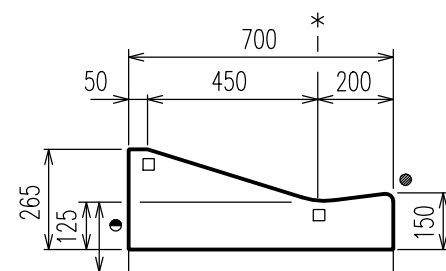


SM5

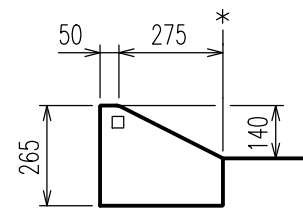
**SEMI - MOUNTABLE TYPE**



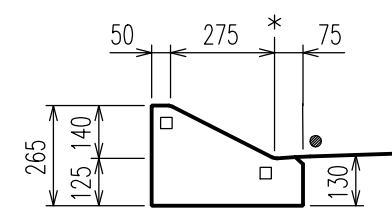
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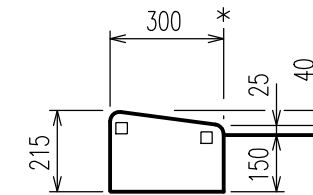
M2



M4

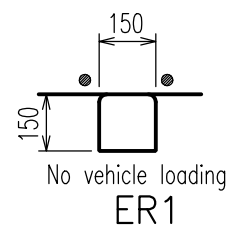


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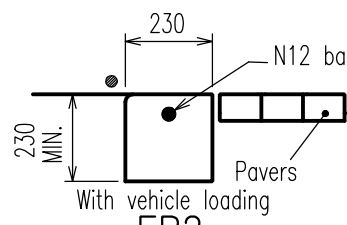


M6

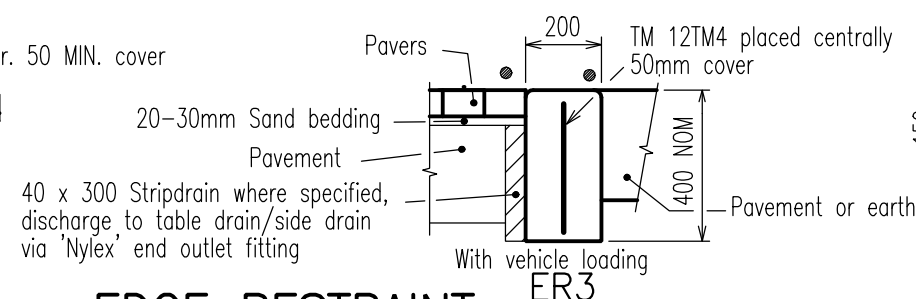
**MOUNTABLE TYPE**



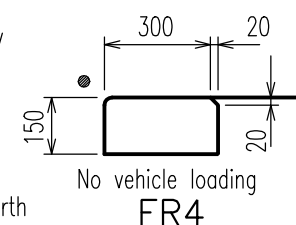
ER1



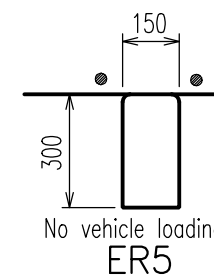
ER2



ER3

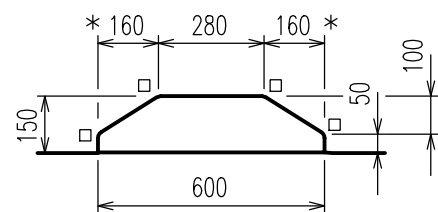


ER4

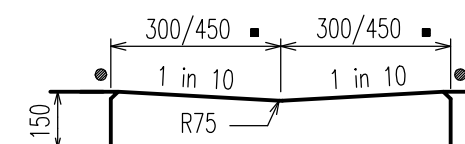


ER5

**EDGE RESTRAINT**



MEDIAN



**INVERT**

**NOTES:**

1. All materials and construction shall comply with AS 2876:2000 except for dimensions on this drawing.
2. All concrete S25 MIN (refer project documentation) in accordance with AS 1379:2007 and AS 3600:2009.
3. Reinforcement bars to AS 1302:2005, trench fabric to AS/NZS 4671:2001.
4. All dimensions in millimetres.

**LEGEND**

- \* Nominal kerb line for setting out.
- Channel, invert width - refer project drawings.
- 10mm Radius.
- R20 Radius.
- 175. for commercial and industrial applications.

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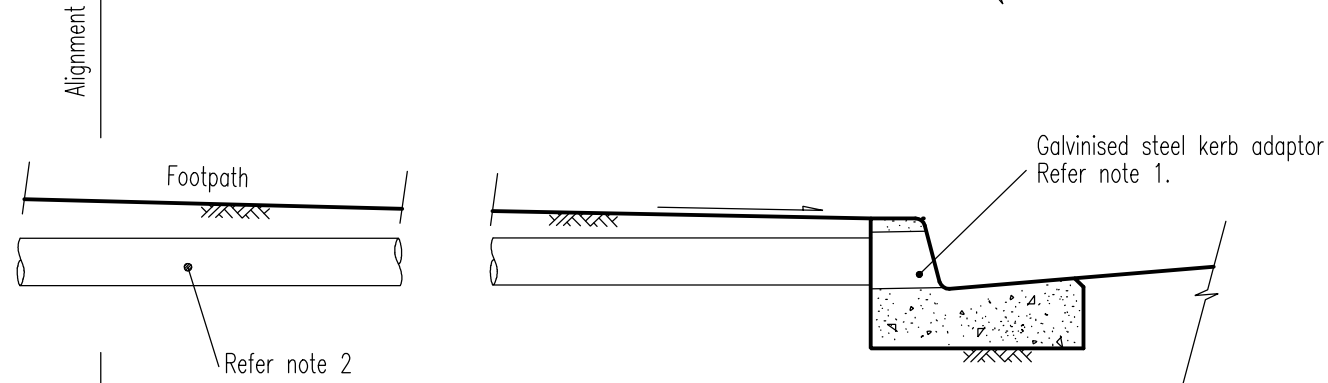
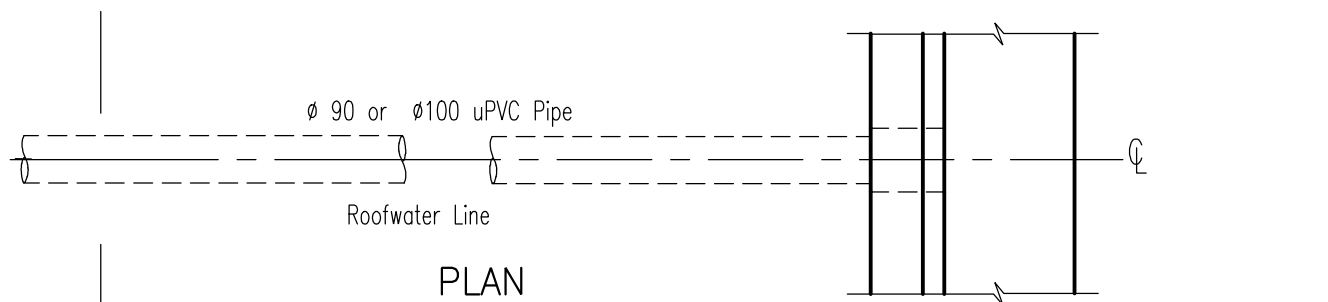
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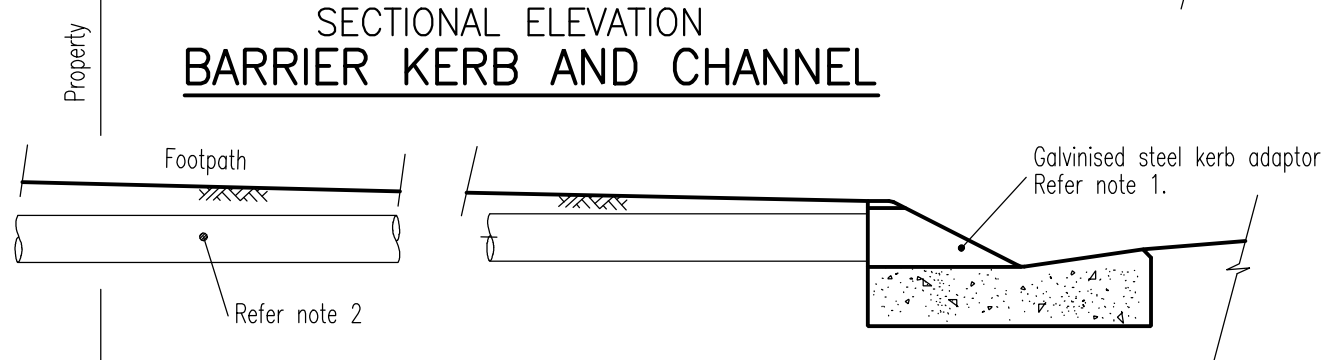
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**KERBS AND CHANNELS  
PROFILES AND DIMENSIONS  
INCL. EDGE RESTRAINTS, MEDIAN & INVERT**

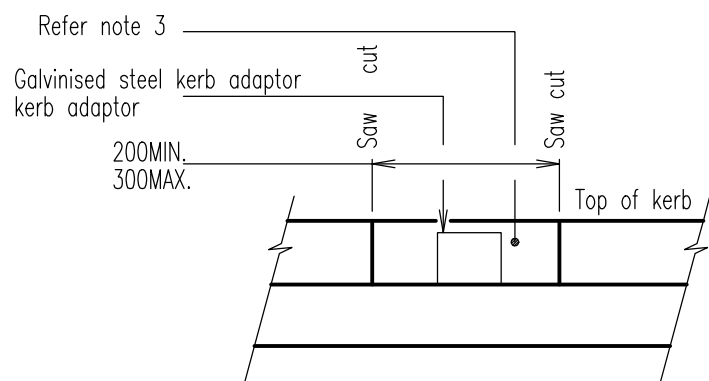
**ROAD/STREET  
Standard  
Drawing  
R-0080**



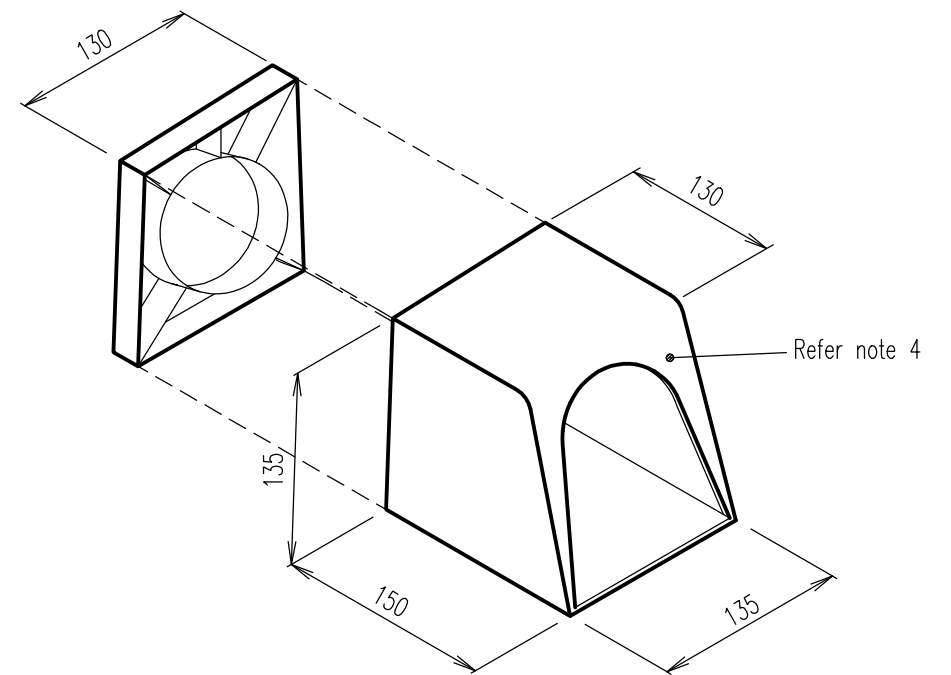
SECTIONAL ELEVATION  
**BARRIER KERB AND CHANNEL**



SECTIONAL ELEVATION  
**MOUNTABLE KERB AND CHANNEL**

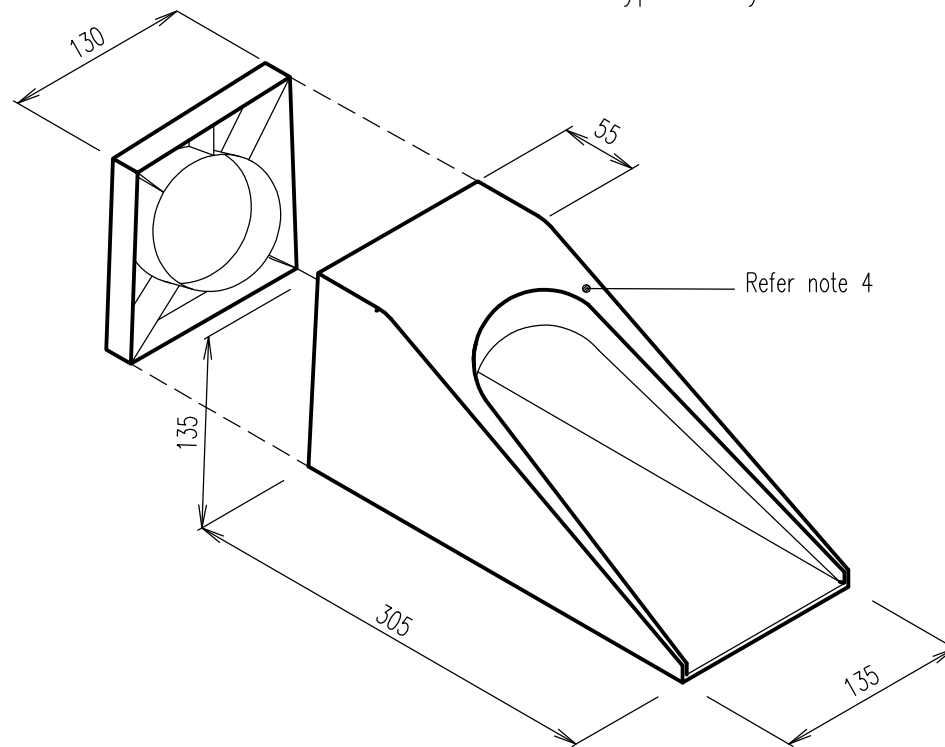


ELEVATION  
**EXISTING KERB AND CHANNEL**



**BARRIER KERB ADAPTOR**

Typical only ø90 and ø100 uPVC or galvanised steel



**MOUNTABLE KERB ADAPTOR**

Typical only ø90 and ø100 uPVC or galvanised steel  
As approved by W.R.C

**NOTES:**

1. Standard ø90 or ø100 galv. steel adaptor to suit barrier or mountable type kerb and channel.
2. Pipe across footpath to be laid with the maximum available cover, and with a minimum grade of 1 in 80.
3. At existing kerb and channel saw cut kerb as necessary. Reinstat with N20/10 concrete in accordance with AS 1379:2007 and AS 3600:2009 to clean concrete faces.
4. Use kerb adaptors that match kerb profile.
5. Refer project drawings/specifications for option to be adopted.
6. At new developments seal inlet to adaptor.
7. All dimensions in millimetres.

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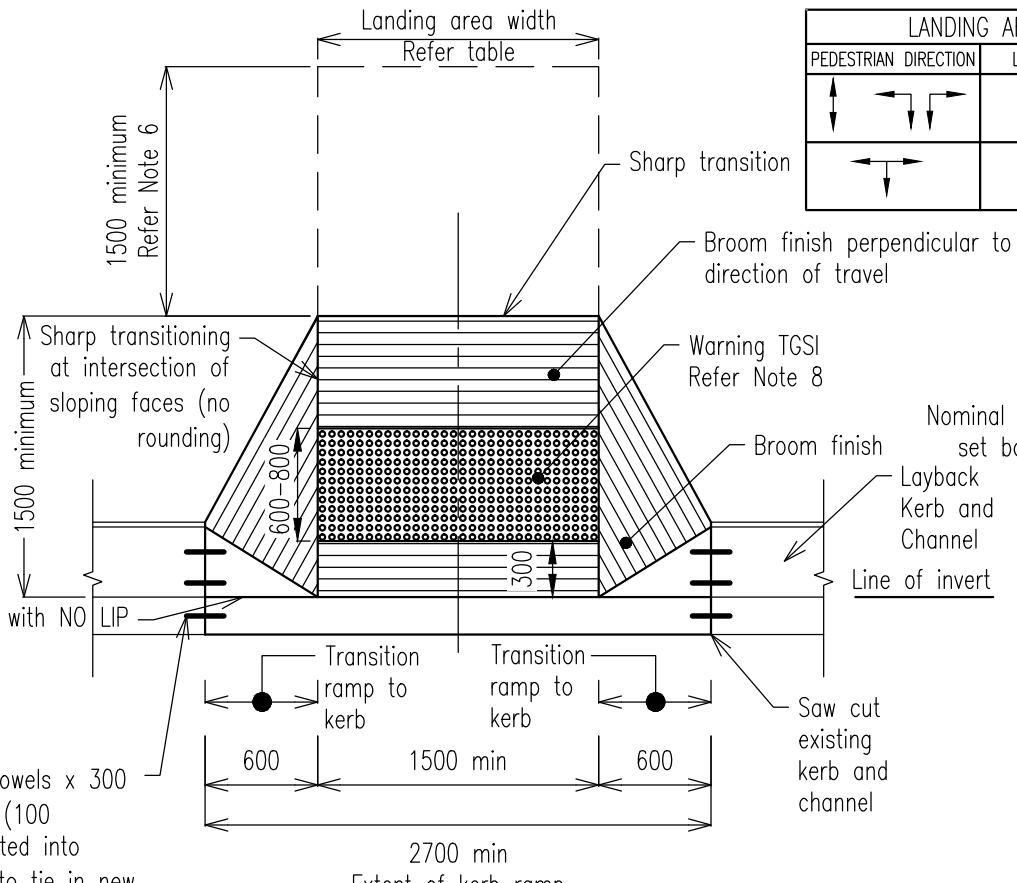
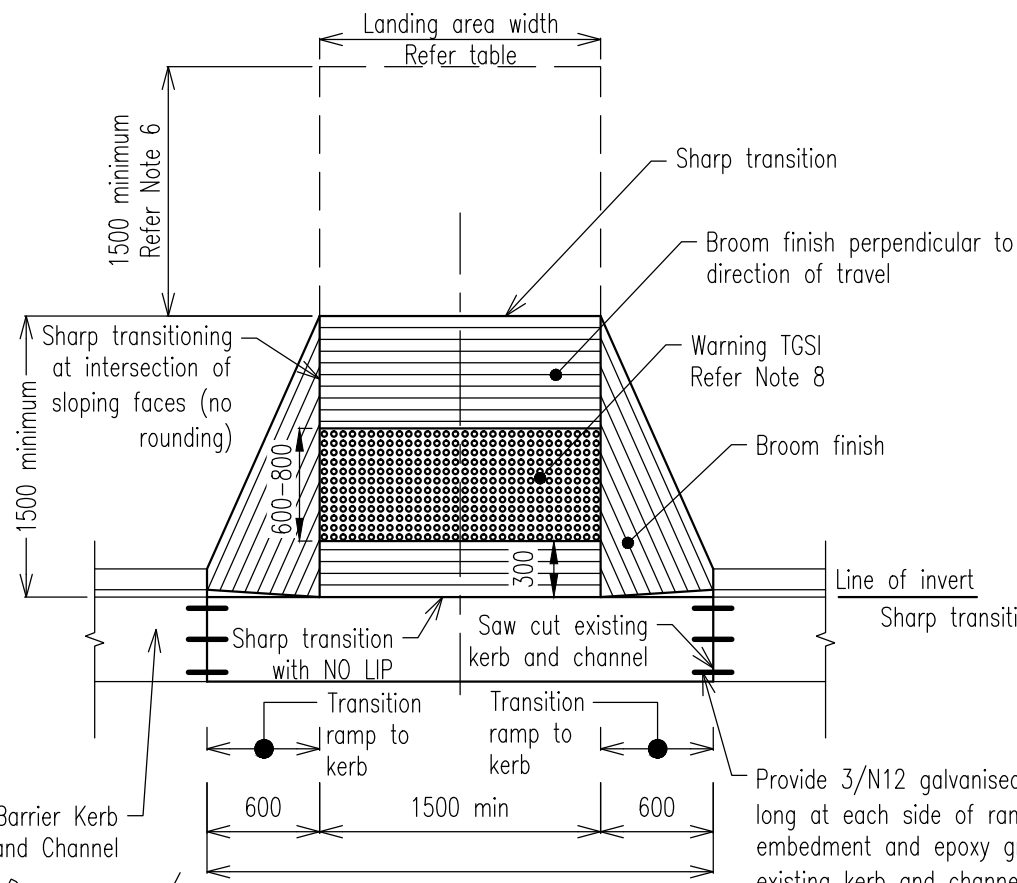
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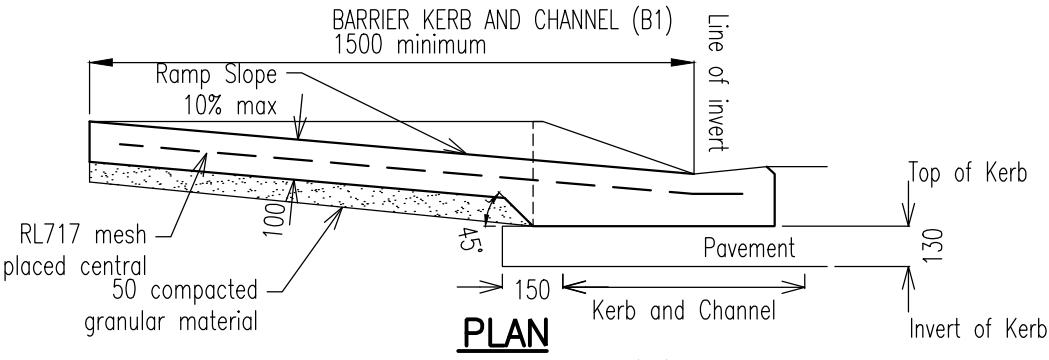
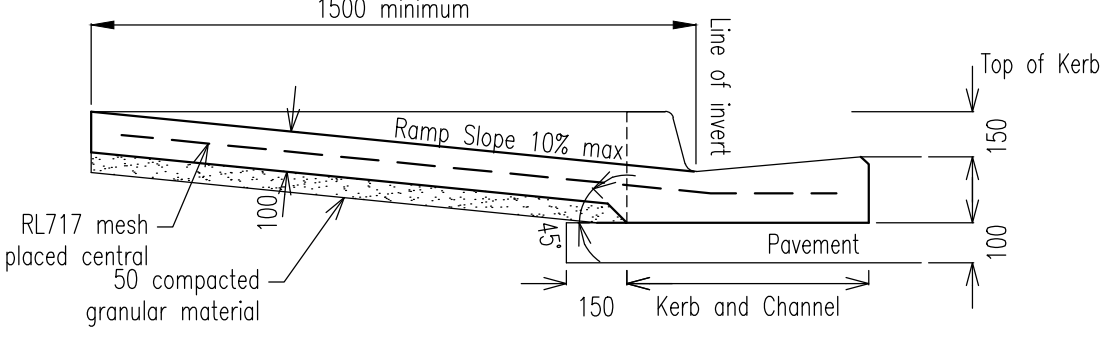
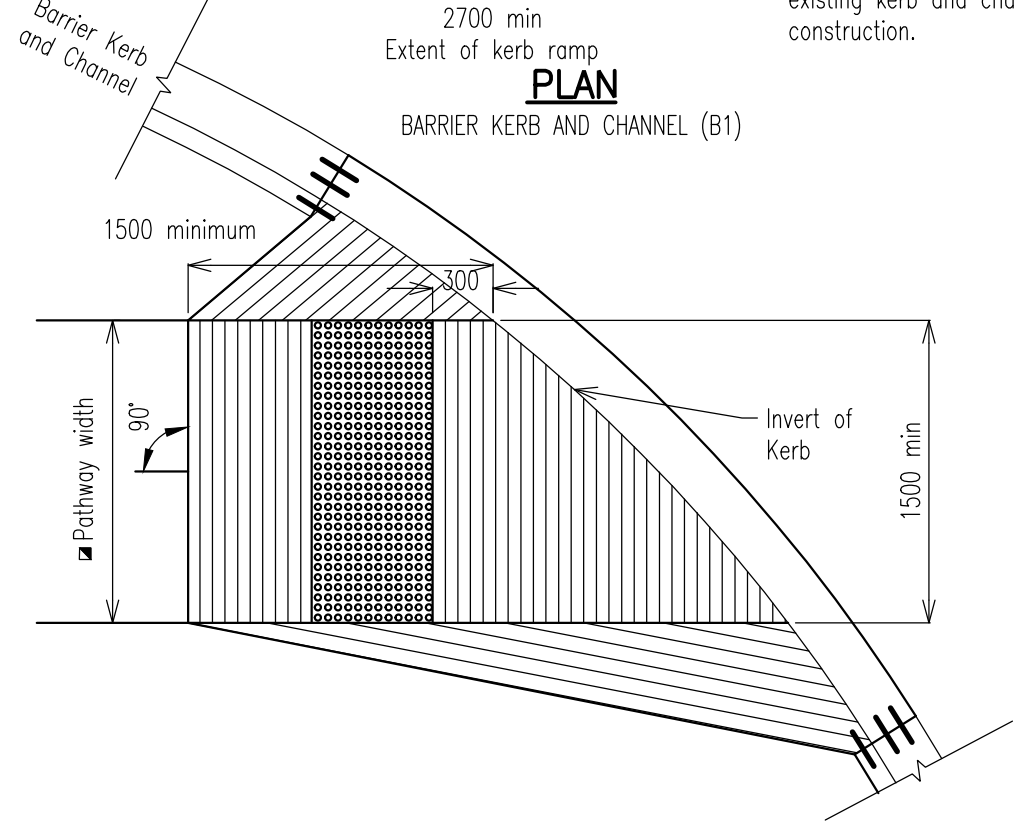
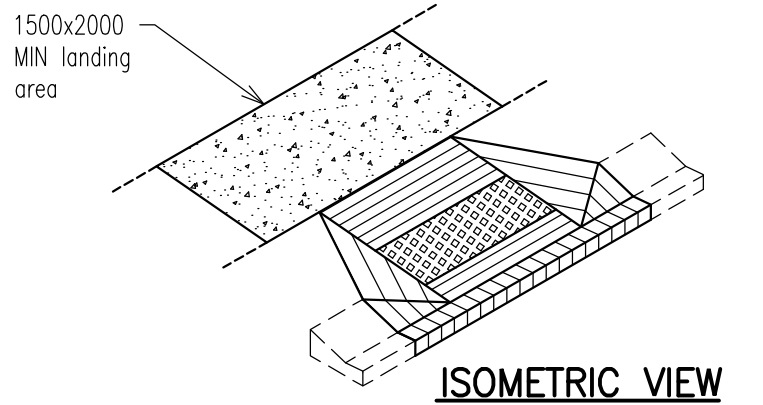
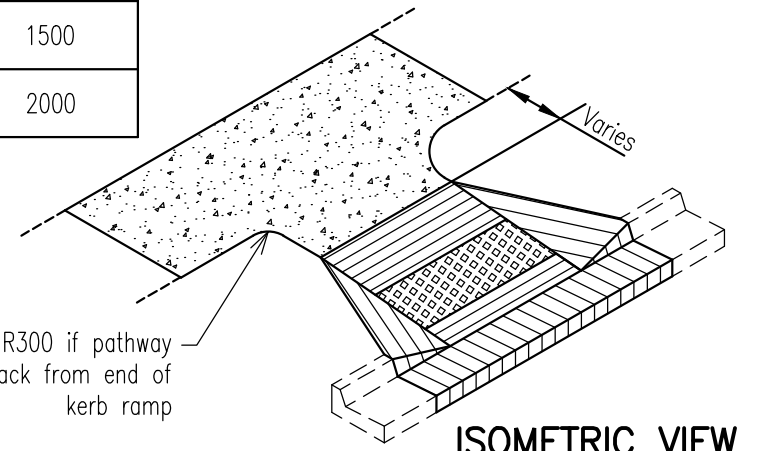
**KERB AND CHANNEL  
DRAINAGE CONNECTIONS**

**ROAD/STREET  
Standard  
Drawing  
R-0081**

A B C



LANDING AREA	
PEDESTRIAN DIRECTION	LANDING WIDTH
↕	1500
↔	2000



- NOTES:**
- All dimensions are in millimetres unless noted otherwise.
  - Concrete shall be Grade N25 (25 MPa) minimum.
  - Kerb Ramp to be cast monolithically, no construction joints will be allowed.
  - the ramp and sloping sides should be slip resistant.
  - Kerb Ramp should be aligned in the direction of travel.
  - Ramp End Clearance – There shall be a minimum wheelchair turnaround distance of 1500mm beyond the end of the ramp and be free of any obstruction. Size according to the direction of pedestrians or adjacent pathway in accordance with AS 1428.1:2009.
  - Kerb Ramp slope for wheelchair access shall not be steeper than 10%, to provide ease of access for wheelchair users.
  - Tactile Ground Surface indicators (TGSi) shall be in accordance with AS 1428.4.1:2009 Design for Access and Mobility – Tactile Indicators.
  - For kerb ramp locations and set out refer to Project/ subdivision drawings

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A ORIGINAL ISSUE	1/3/97



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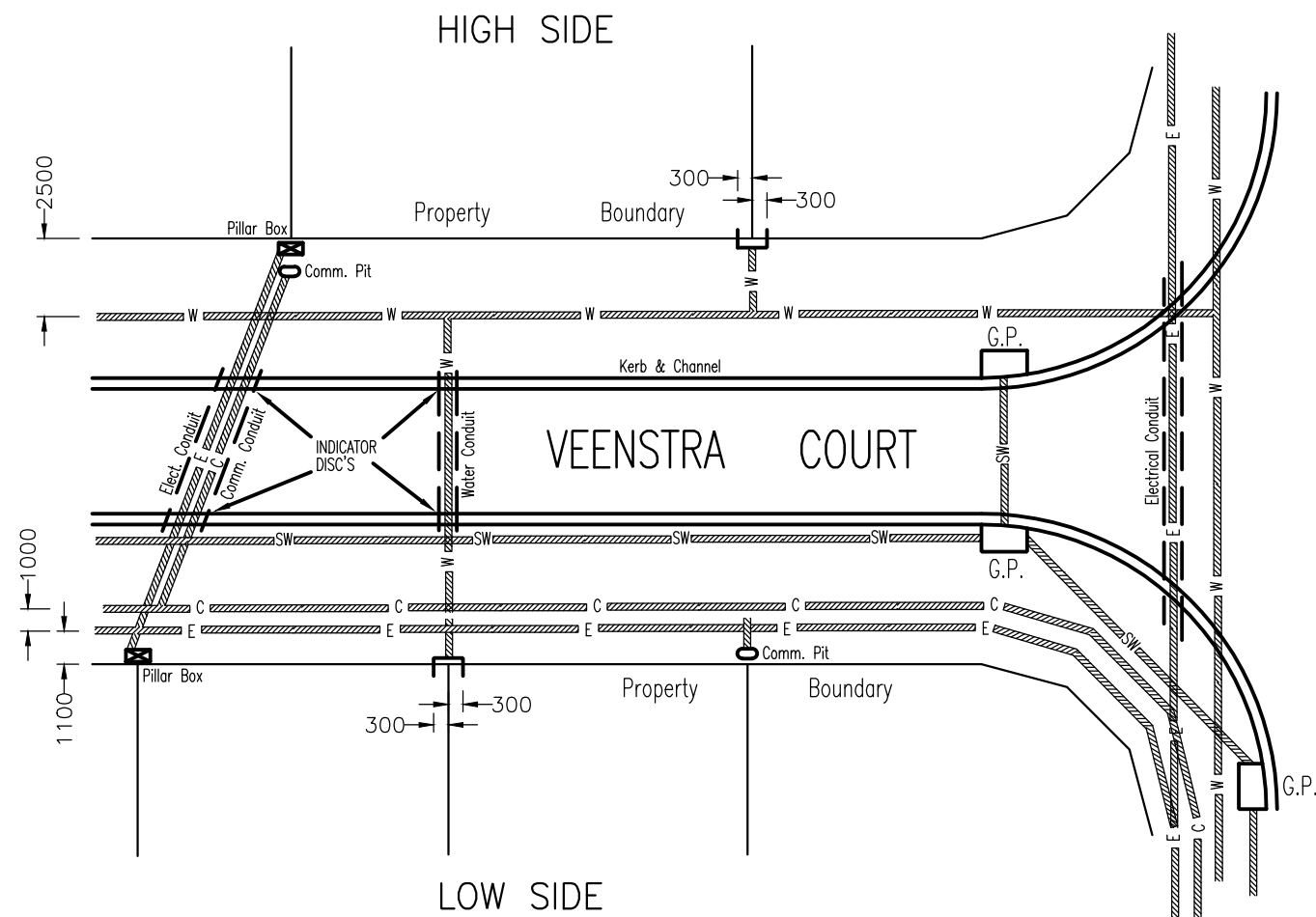
**PROSERPINE**  
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**KERB RAMP**

**ROAD/STREET  
Standard  
Drawing  
R-0084**

A	B	C
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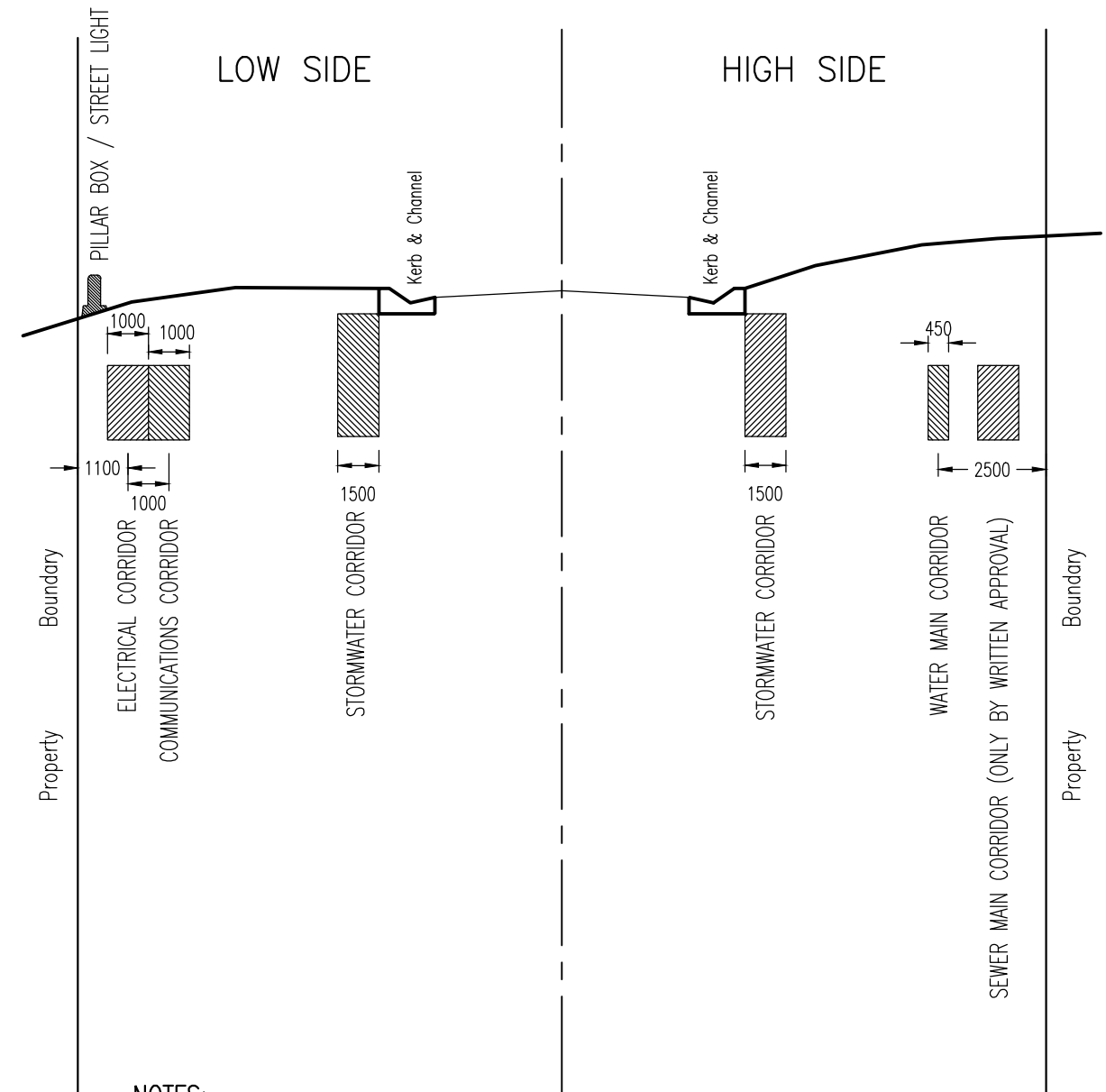
# TYPICAL SERVICE CORRIDOR



### LEGEND

Road crossing conduits	— — — —
Water -	W
Stormwater -	SW
Communications -	C
Electricity -	E

# TYPICAL CONDUIT SECTION



### NOTES:

1. The alignment and depths of existing services shall be proven on site by consultation with the relevant service authorities prior to any excavation and shall not be inferred from this drawing.
2. Various configurations of trench width and conduit numbers/diameters exist for both electricity and common trench arrangements with communication companies.
3. For split level roads, service corridors to be determined by council prior to completion of engineering design.
4. All dimensions in millimetres

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## PUBLIC UTILITIES IN SUBDIVISIONS TYPICAL SERVICE CORRIDORS AND SECTIONS

ROAD/STREET  
Standard  
Drawing  
**R-0100**

A	B		
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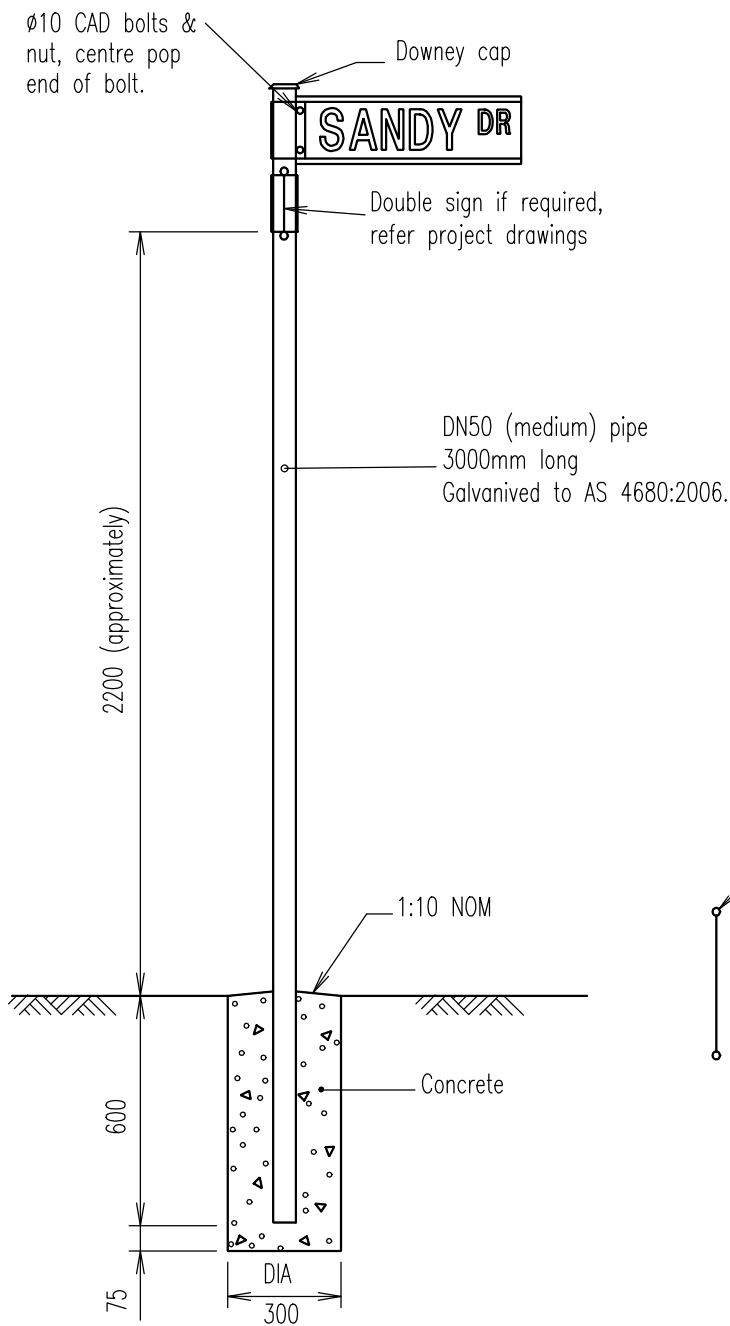
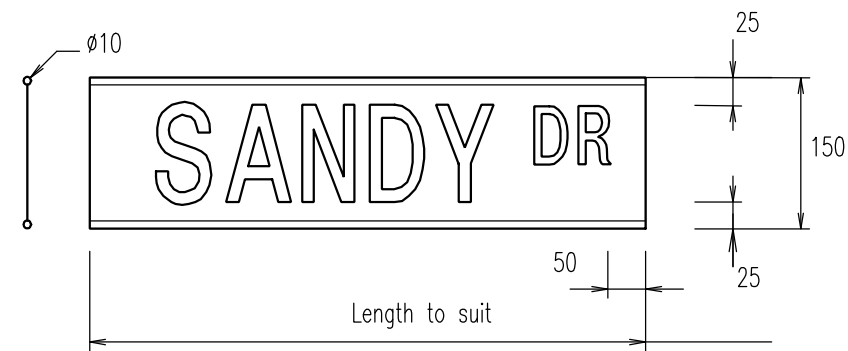


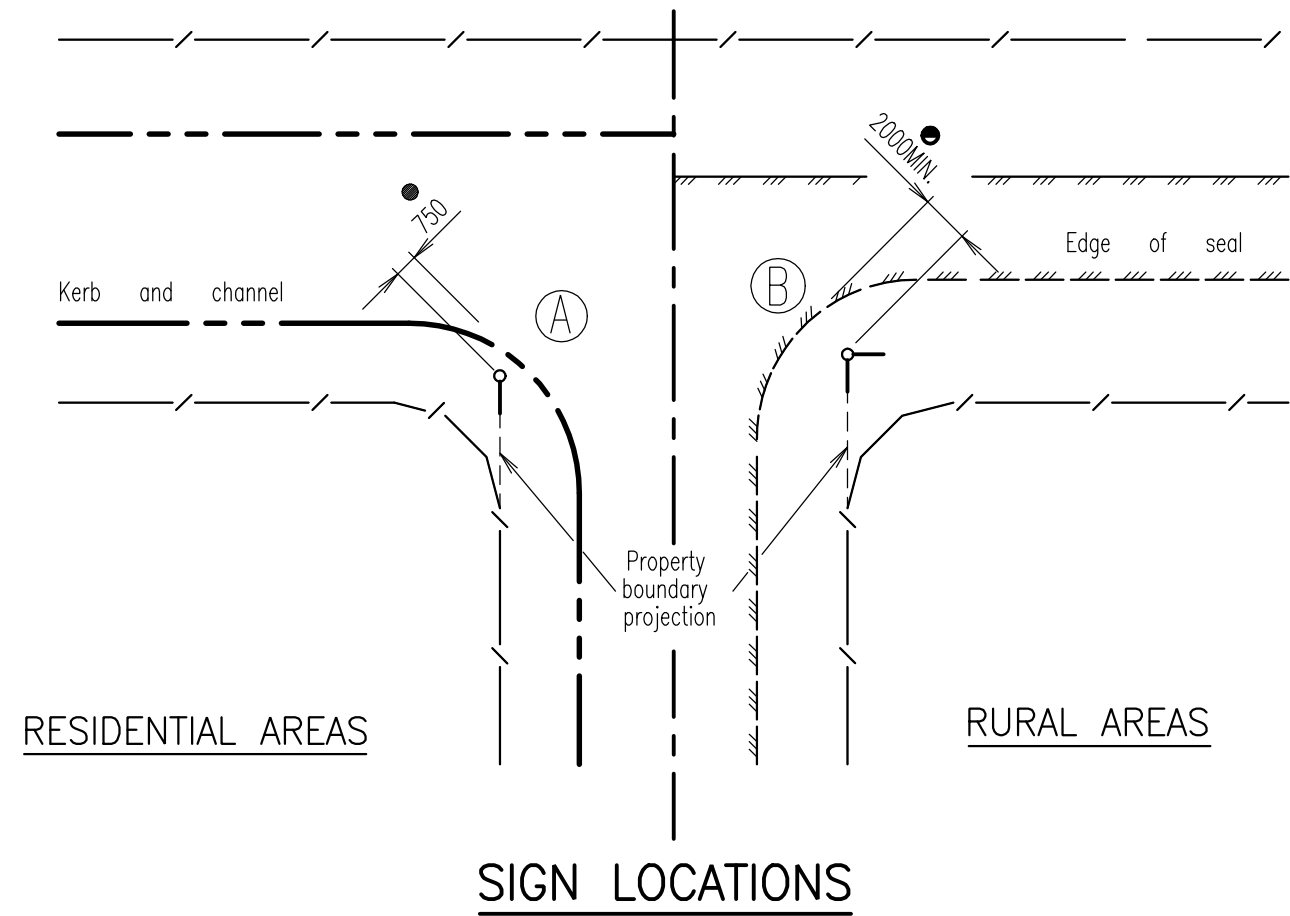
Table of Abbreviations	
Avenue	AV
Court	CT
Crescent	CR
Drive	DR
Esplanade	ESP
Lane	LA
Parade	PDE
Road	RD
Street	ST
Terrace	TCE

Other abbreviations to be approved by Superintendent.



**LEGEND**

- Sign post is to be located 750mm behind nominal kerb line.
- Sign post is to be located 2000mm MIN. – 4000mm MAX. from edge of seal, or as directed by the Superintendent.



**NOTES:**

- Street names must be approved by Council.
- Name plates: 150mm wide and 3mm thick extruded aluminium or polypropylene section.
- Bracket: Standard 150mm wide and 3mm thick aluminium extruded bracket (including 2 x Ø6 CAD bolts & nuts). CAD bolts and nuts to AS 1897.
- Background color "Freeway Green" Class 2 Reflectorised (both sides) Name Letters: "White" 100mm high, Series B, Class 2 Reflectorised Location Letters: "White" 60mm high, Series B, Class 2 Reflectorised
- All signs are to be approved by the Superintendent prior to erection.
- Signs to be positioned on the side of street/road that provides best visibility.
- Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
- All dimensions in millimetres.

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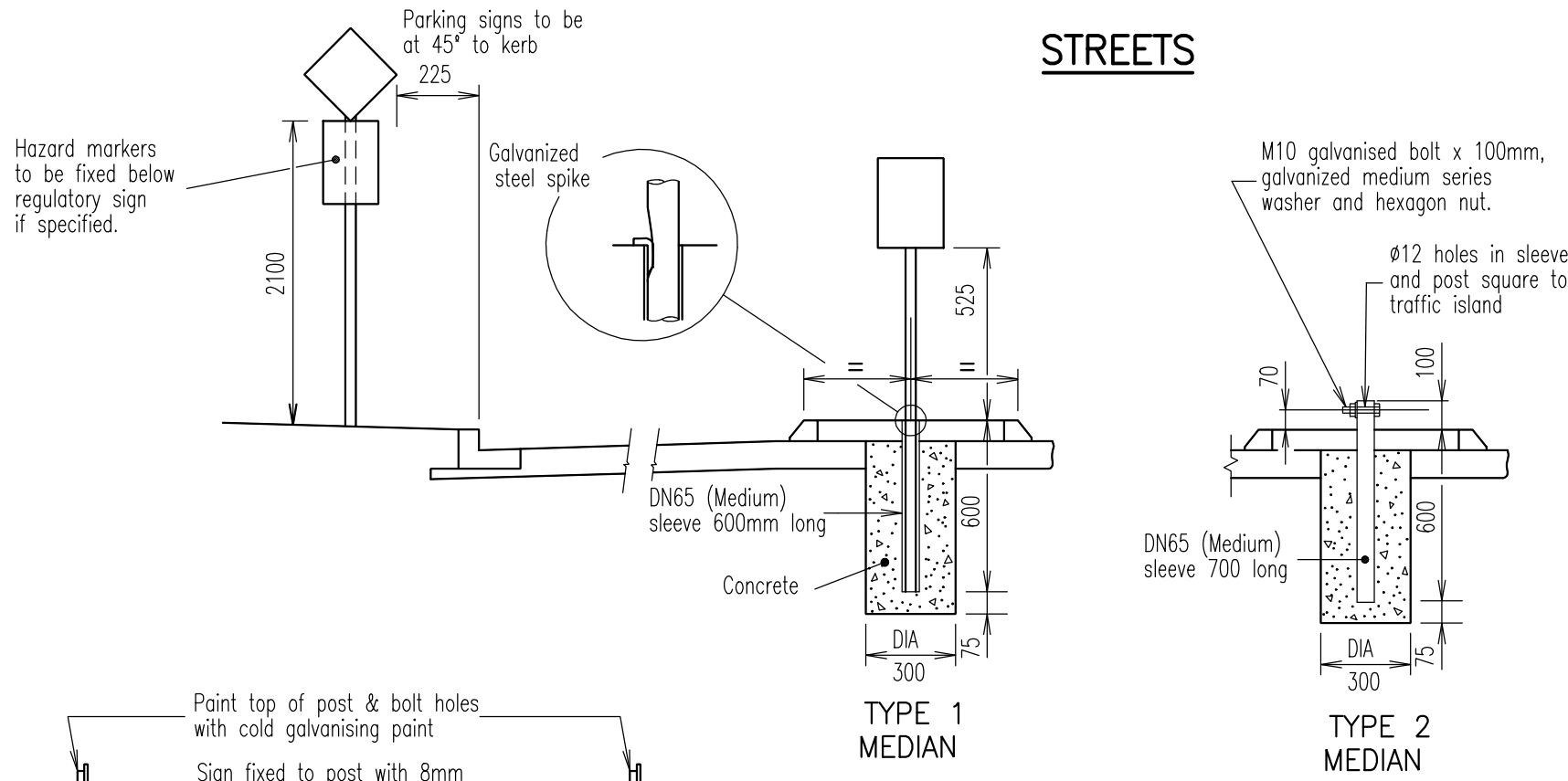
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**STREET NAME SIGN**

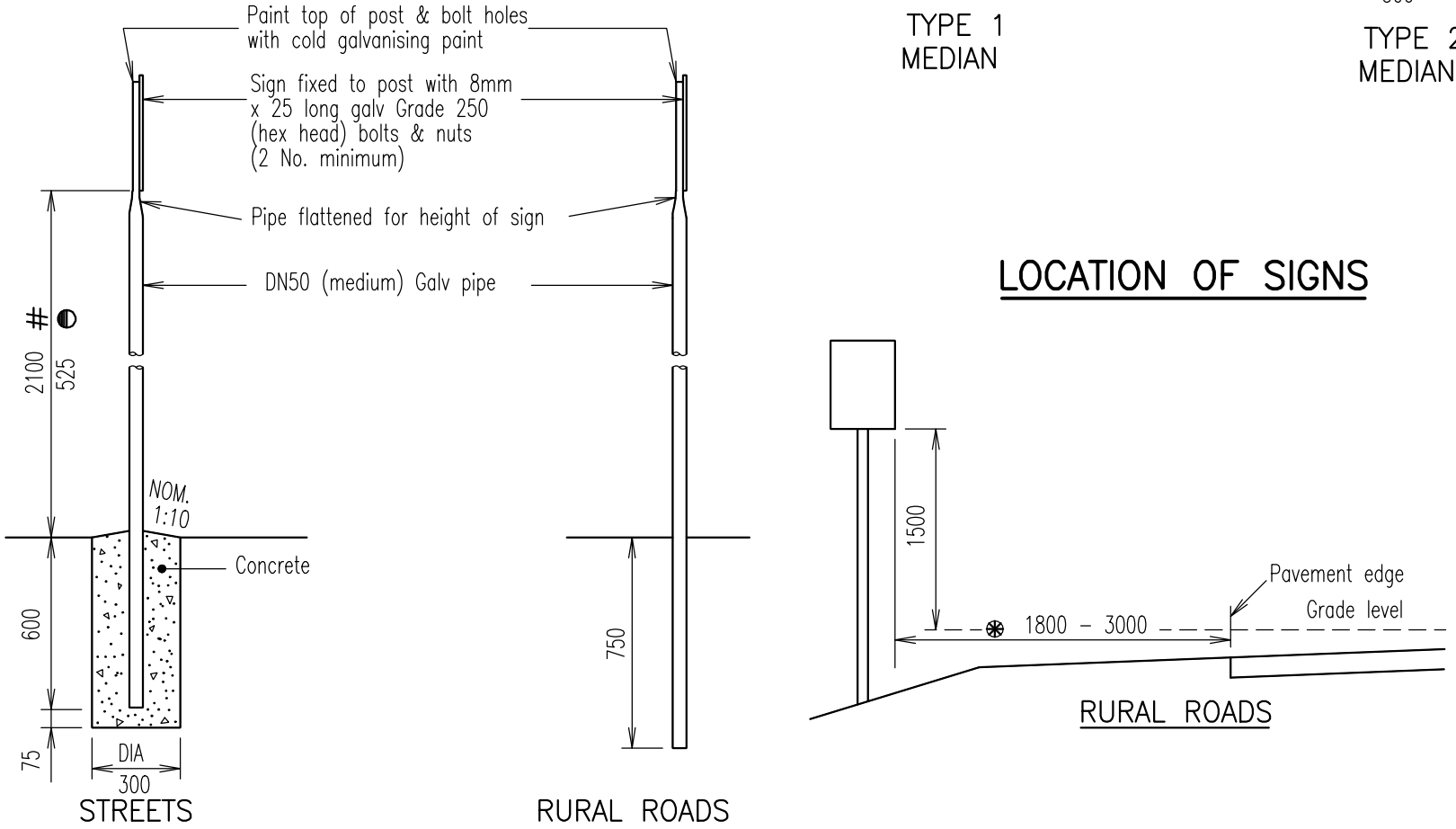
**ROAD/STREET  
Standard  
Drawing  
R-0130**

A	B	C	
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# STREETS



# LOCATION OF SIGNS



### NOTES:

1. All signage to be fabricated and installed as per M.U.T.C.D unless noted otherwise
2. All signs are to be approved by the Superintendent prior to erection.
3. Where signs are to be erected in streets where footpaths are not constructed to permanent levels the Rural Roads type base shall be adopted.
4. The DN65 sleeve and spike shall only be used on medians.
5. All pipes to be galvanized. Steel pipe to AS 1074:1989. Galvanising to AS/NZS 4680:2006.
6. Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
7. Hexagonal head bolts to AS 1111.1:2015  
Nuts to AS 1112.1:2015  
Washers to AS 1237.1:2002  
Galvanizing to AS/NZS 1214:2016
8. All dimensions in millimetres.

### LEGEND

- Series A, medium spacing
- Series A, medium spacing where space is available, if not adopt narrow spacing
- # on footpaths
- ⊗ As directed by the Superintendent
- ⊙ on medians

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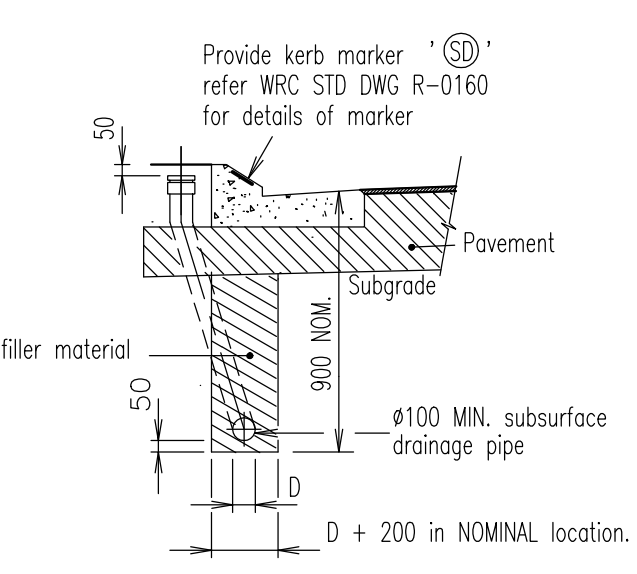
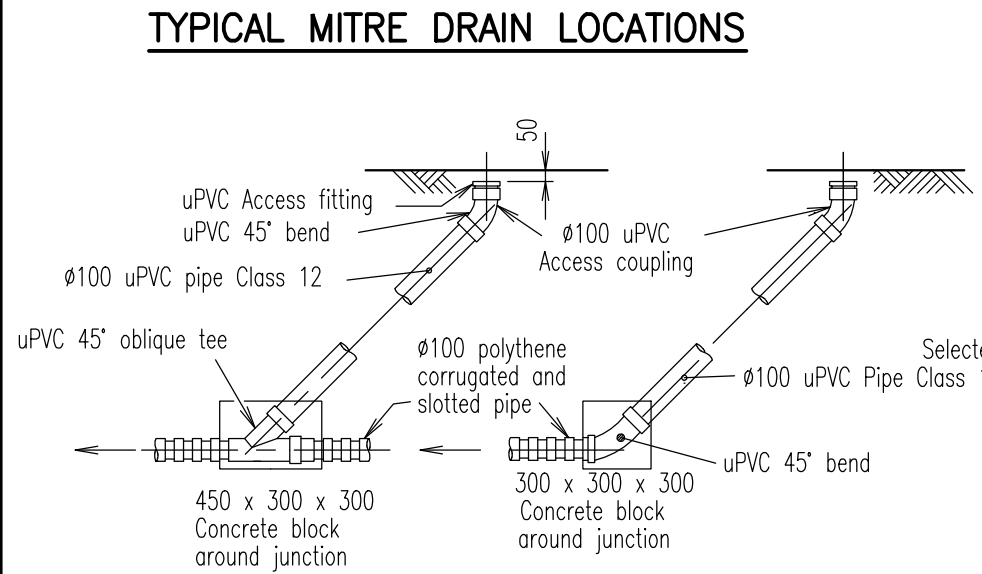
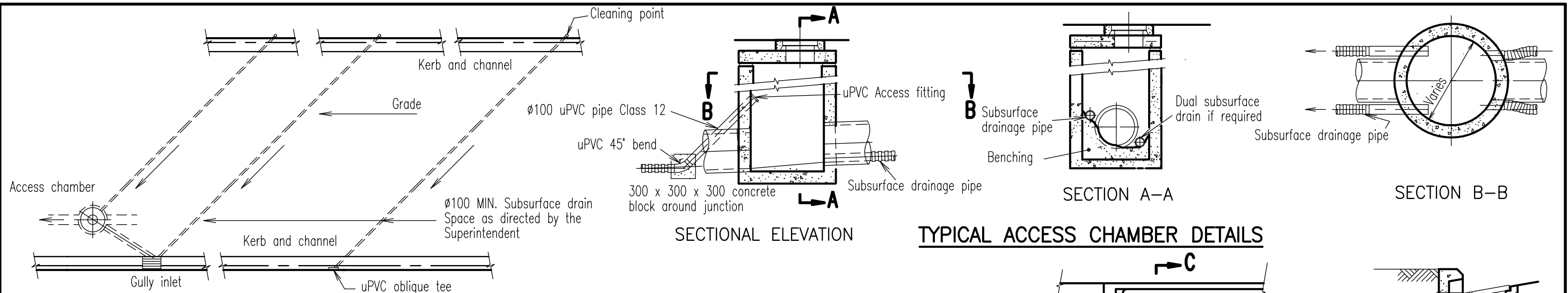
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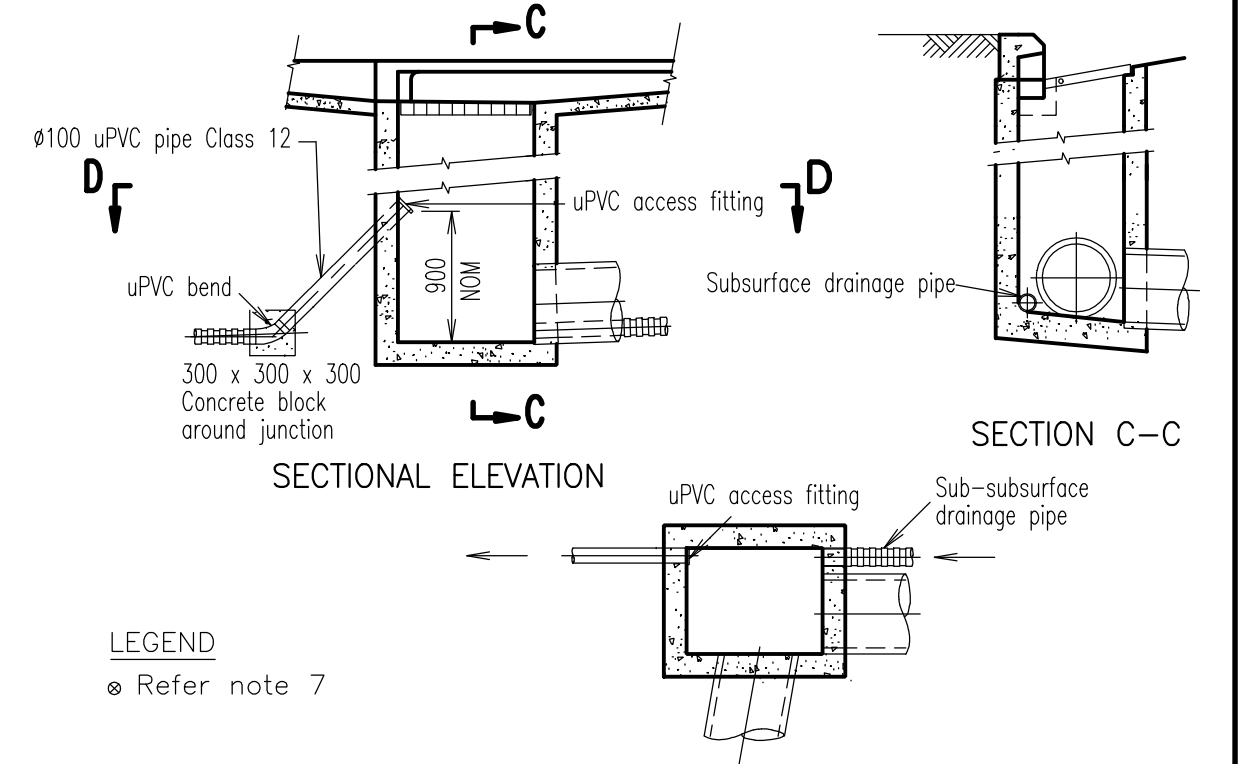
## TRAFFIC CONTROL DEVICES

ROAD/STREET  
Standard  
Drawing  
**R-0131**

A	B	C
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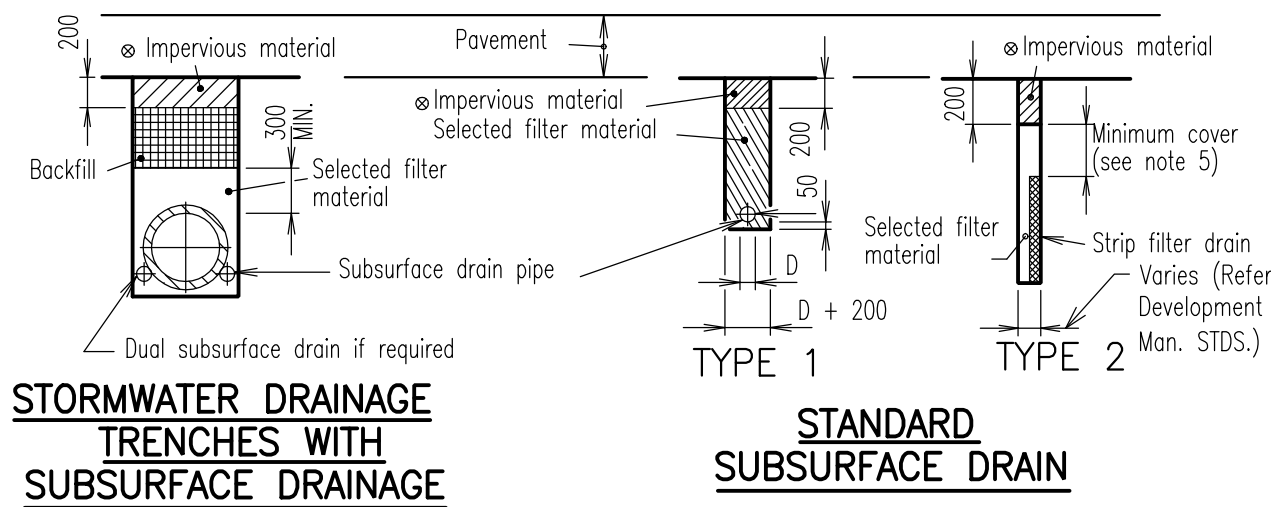
**TYPICAL ACCESS CHAMBER DETAILS**



**LEGEND**  
 ⊗ Refer note 7

- NOTES:**
- All Subsurface drains, polyethylene corrugated slotted pipe to AS 2439.1:2007, discharge at inlet pipe invert level unless detailed otherwise. 0.5% MIN grade.
  - Filter materials not complying with the specified grading requirements may be used when approved by the Superintendent. A geofabric may be used to line trenches where approved by the Superintendent.
  - Concrete anchors N20 in accordance with AS 1379:2007 and AS 3600:2009.
  - At 'oblique tee' on subsurface drain cleaning points, the contractor may install Vinindex vertical fittings if approved by the Superintendent.
  - Minimum cover over subsurface drain pipe for various compactors unless approved otherwise: Hand held units - 100, Units < 15 tonnes - 200, Units > 15 tonnes - 300
  - 'D' = 100 NOM. unless otherwise specified.
  - Impervious material to be provided where subsurface drainage is not under a pavement. When impervious material is omitted the backfill / selected filter material shall extend to underside of pavement.
  - All dimensions in millimetres.

**RECOMMENDED FILTER MATERIAL**  
 10mm-14mm AGGREGATE FILTER MATERIAL  
 ENSURE POSITIVE GRADE TO DAYLIGHT



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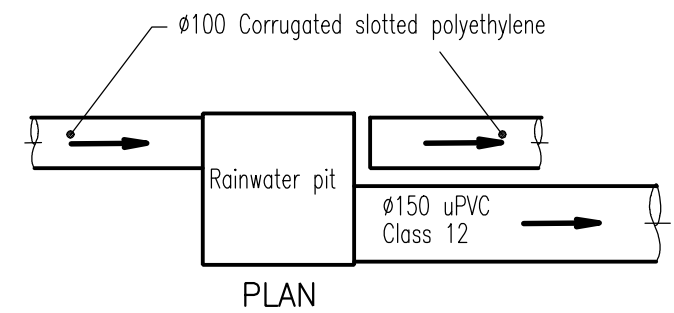
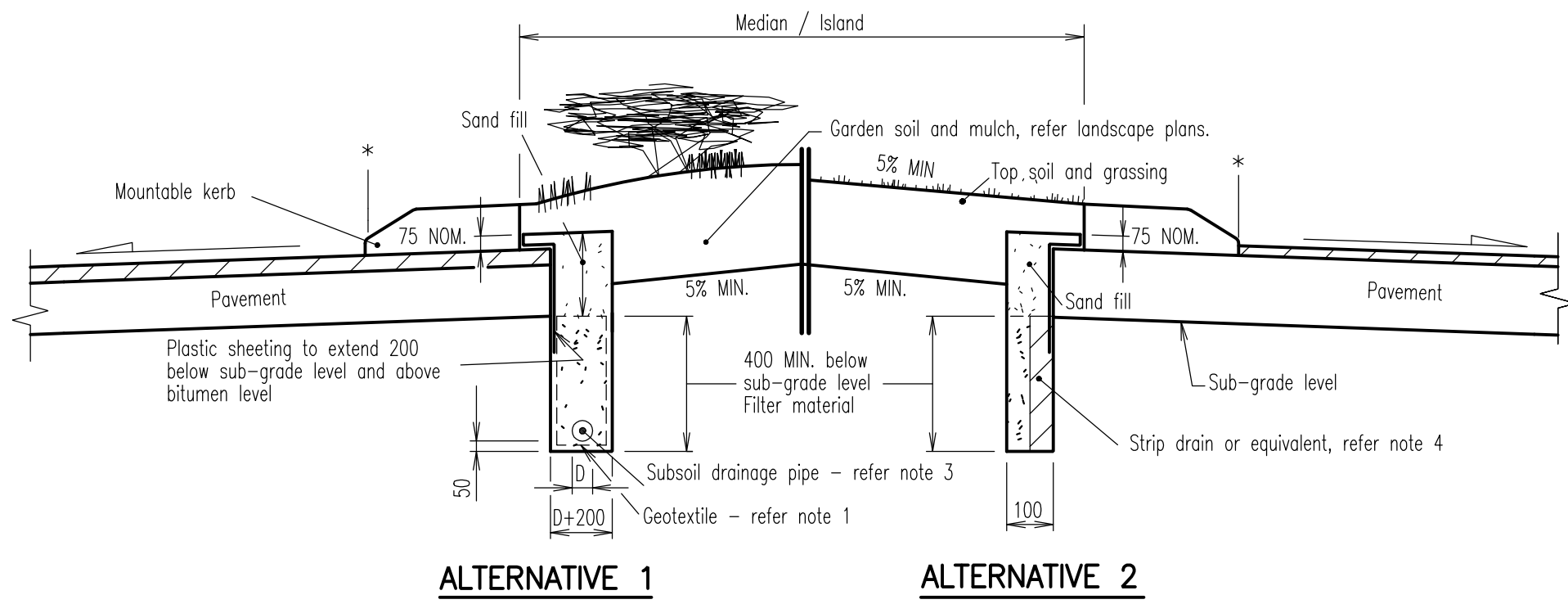
**PROSERPINE**  
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**SUBSURFACE DRAINAGE**

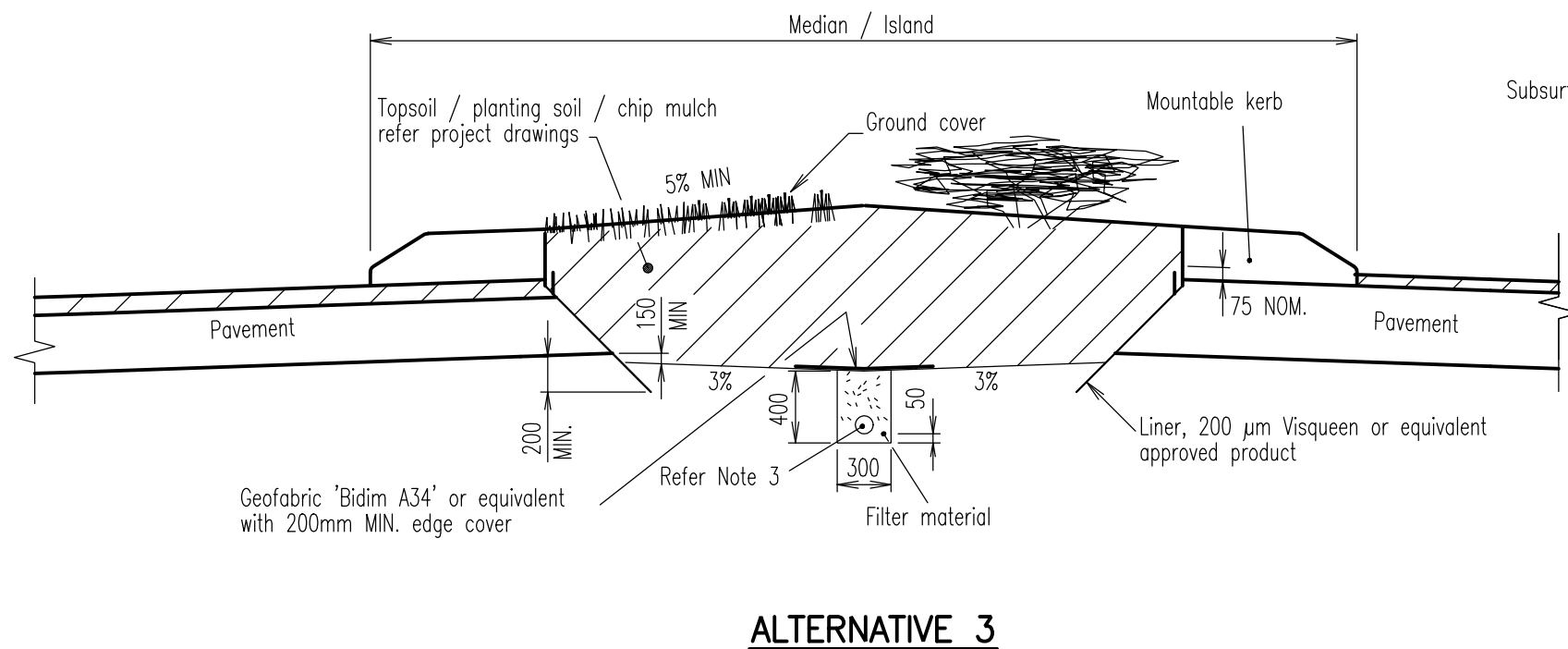
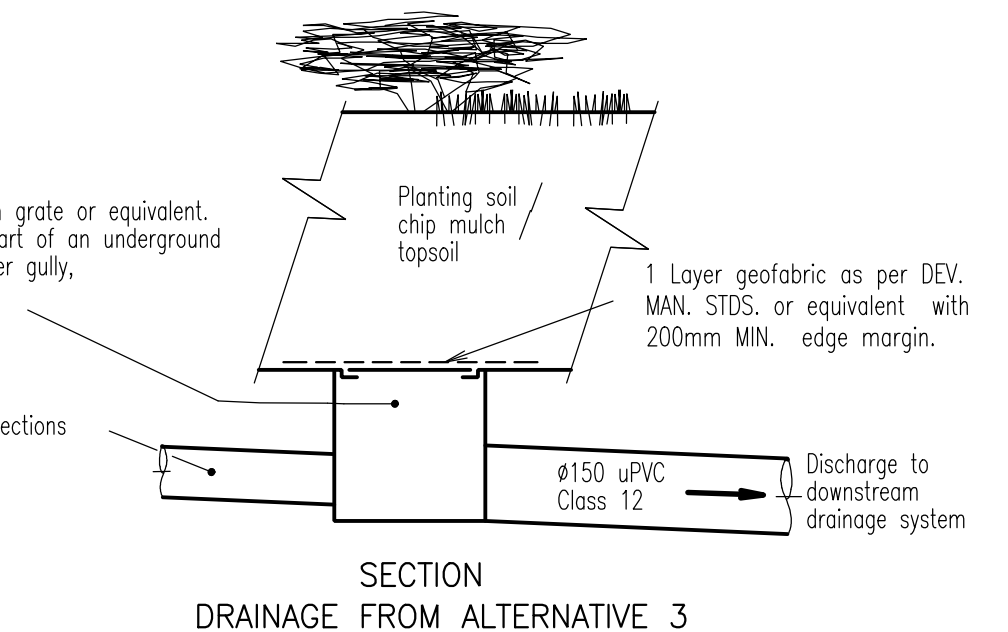
**ROAD/STREET Standard Drawing R-0140**

A	B	C		
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**Median Drainage Only :**  
 Polypropylene rainwater pit and aluminium grate or equivalent.  
 Where median / island drainage forms part of an underground drainage system, construct an anti-ponder gully, refer WRC STD DWG D-0068.



**LEGEND**

\* NOMINAL kerb line

**NOTES:**

1. Geotextile surround, propriety product, U.V. stabilised, non-woven type, flow rate > 50 l/m<sup>2</sup>/sec, G > 1300 and E.O.S. < 200 µm.
2. Filter material - 75 µm - 9.5 mm. Refer grading requirements on Standard Drawing R-0140.
3. 100mm Subsoil drainage pipe - corrugated slotted polyethylene, connect to drainage system. 0.5% MIN. grade.
4. Strip drain - propriety product, deep-fin plastic core, 120 KPa MIN. crush strength, 40mm MIN. thickness, fully enclosed by a non-woven geotextile. 0.5% MIN. grade.
5. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
B GENERAL UPDATES	15/2/12
A ORIGINAL ISSUE	1/3/97



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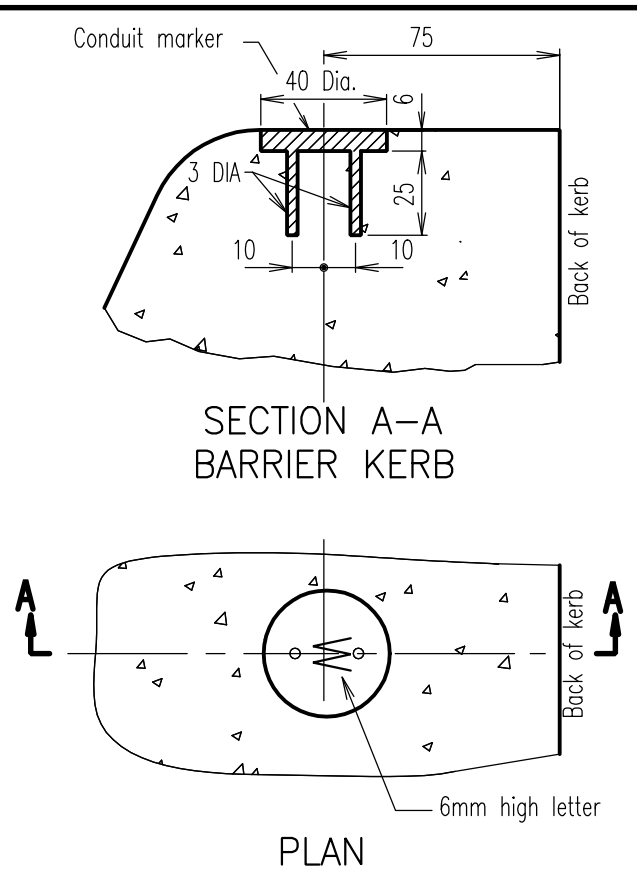
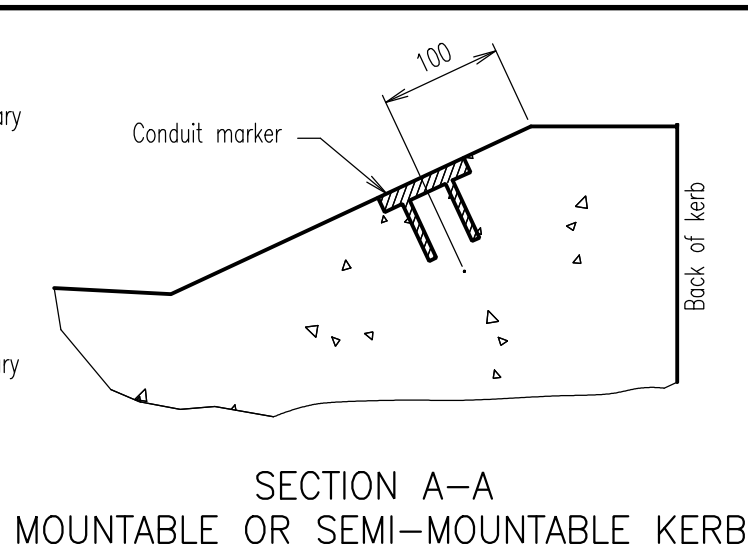
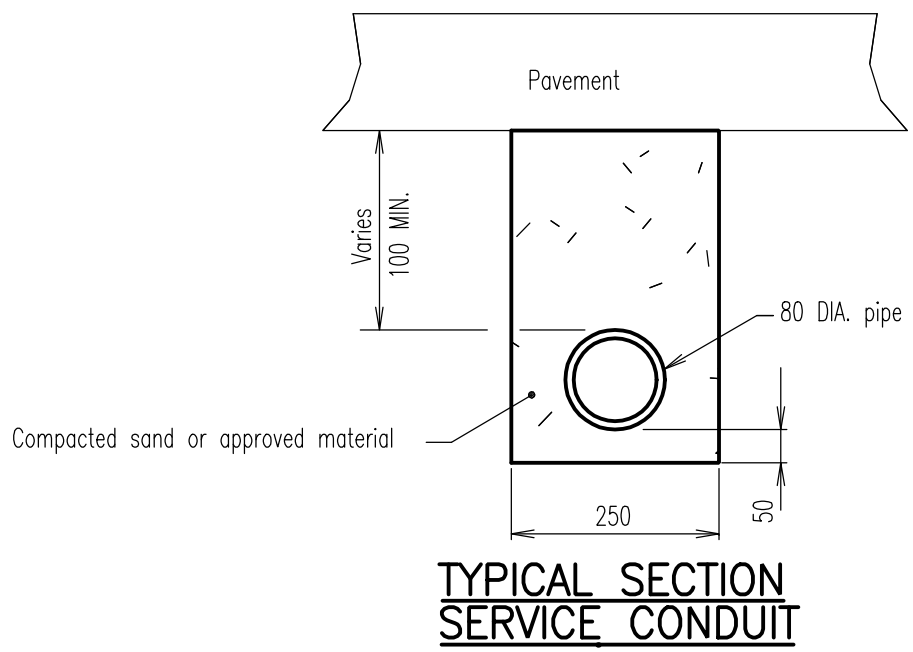
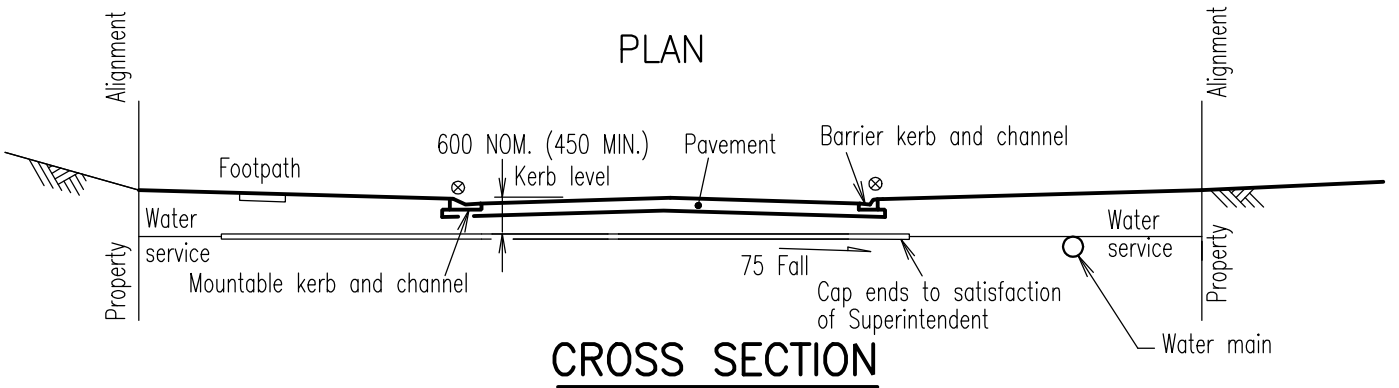
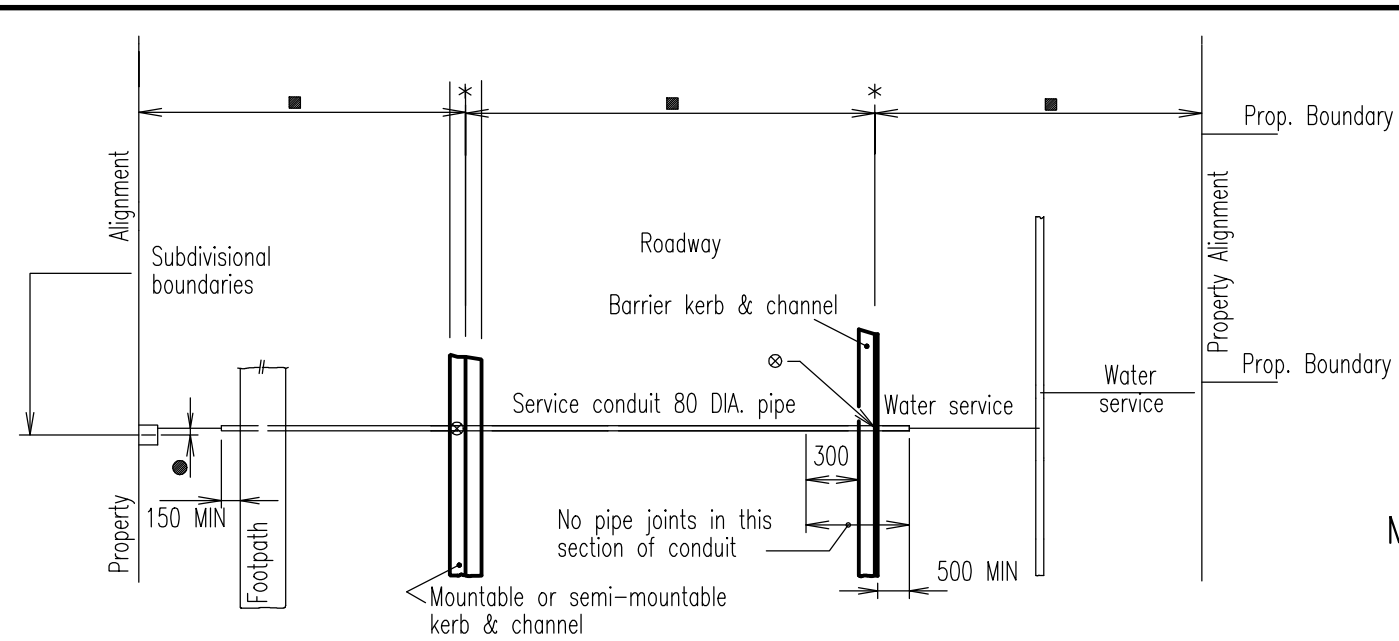
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**SUBSOIL DRAINAGE DETAILS AT MEDIANS / ISLANDS**

**ROAD/STREET Standard Drawing R-0141**

A B C



**BRASS SERVICE CONDUIT MARKER**

**LEGEND**

- \* NOM kerb line
- ⊗ Service conduit marker
- Refer project drawings.
- Service conduit to be offset 0.6 metre on low side from subdivisional boundary.
- SC ——— Service conduits (on project drawings).

**NOTES:**

1. Trimming and compaction of the subgrade to be completed and approved before excavation for service conduits is commenced. Excavated material shall be thrown on the footpath and not on the subgrade.
2. Service conduits alternatives :- 100 DIA concrete/FR pipes (S.F.) Class C or S (R.R.J.)  
100 DIA uPVC, Class 12.
3. Positions of the service conduits shown are typical only. Conduits to be located as shown on project drawings.
4. Where concrete footpaths/cyclepaths exist or are planned, the service conduit is to extend past the far side of the path.
5. Marker details may be varied if approved.
6. Refer WRC STD DWG R-0100 and R-0101 for utilities layout plan and sections.
7. All dimensions in millimetres.

B	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	24/5/16
A	ORIGINAL ISSUE	1/3/97
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**WATER SERVICE CONDUITS**

**ROAD/STREET  
Standard  
Drawing  
R-0160**

A	B		
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Std. Dwg. No.	Descriptions
	<b>AS CONSTRUCTED</b>
S-0010	SAMPLE AS CONSTRUCTED PLAN
	<b>ACCESS CHAMBERS</b>
	ACCESS CHAMBERS
S-0020	1050mm NOM DIA – INSITU CONSTRUCTION
S-0021	1050mm NOM DIA – PRECAST COMPONENTS (BY PRIOR APPROVAL ONLY)
S-0022	1500mm NOM DIA – INSITU CONSTRUCTION
S-0023	ALTERNATIVE DROPS – INSITU CONSTRUCTION
S-0024	RECTANGULAR INCLUDING CAST IRON COVERS AND FRAMES
S-0025	CAST IRON COVER AND FRAME, CAST IRON CONCRETE FILLED COVER
S-0026	CAST IRON COVER AND FRAME, BOLT DOWN
	<b>HOUSE CONNECTION BRANCHES</b>
S-0030	HOUSE CONNECTION BRANCHES
	<b>PUMP STATIONS</b>
	SUBMERSIBLE SEWAGE PUMPING STATION
S-0050	1800mm DIA & 2400mm DIA PRESSURE GAUGE ARRANGEMENT AIR RELEASE PIPEWORK DETAILS
S-0051	7.2m VENT POLE TERRAIN CAT 2 AND 3
S-0052	12.0m VENT POLE TERRAIN CAT 2 AND 3
S-0057	LIFT STATION SUBMERSIBLE, 1800mm DIA (0-20L/sec)
S-0058	PUMP STATION OVERFLOW
S-0059	SUBMERSIBLE SEWAGE PUMPING STATION GENERAL ARRANGEMENT, REINFORCEMENT 2400mm DIA.
S-0060	ALUMINIUM COVERS AND FRAMES 2400mm DIA.
	<b>PRESSURE MAINS</b>
S-0070	PRESSURE MAIN DISCHARGE DETAILS
	<b>SEWER CONSTRUCTION</b>
S-0090	SEWER CONSTRUCTION, PIPELINE CONSTRUCTION TYPES
S-0091	PIERING DETAILS FOR BUILDINGS LESS THAN 1.5m TO SEWER LINE

C	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B	S-0010, S-0020 TO 0024, S-0030, S-0050, S-0059 TO 0060, S-0070 & S-0091 (S-0054 TO 0056 DELETED)	10/3/98
A	ORIGINAL ISSUE	1/3/97
REVISIONS		DATE



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# INDEX STANDARD DRAWINGS SEWERAGE

**SEWERAGE  
Standard  
Drawing  
S-0001**

A	B	C	
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# BRETT STREET

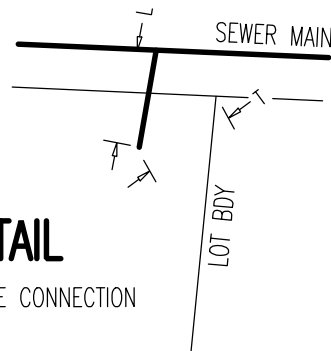
## MANHOLE DETAILS

PIT NUMBER	LID LEVEL	OUTLET LEVEL	INLET LEVEL/S
8/12	17.66	16.31	16.78 N, 16.33 S
9/12	18.5	17.28	17.33 E, 17.33 S
10/12	18.56	17.78	17.82
11/12	20.75	19.22	19.27
1/13	19.56	18.33	18.37
1/14	18.56	17.78	17.82

TABLE FORMAT FOR MANHOLE LEVEL DETAILS PREFERRED.  
 (LEVELS ON FACE OF PLAN AN ALTERNATE OPTION ONLY IF  
 PLAN IS OPEN ENOUGH TO FACILITATE CLEAR INTERPOLATION  
 SEE SETOUT OF TEXT AS SHOWN ON THIS SAMPLE PLAN)

### DETAIL

TYPE C HOUSE CONNECTION



### LEGEND

- Sewers
- Kerb and channel

This standard drawing is indicative of plan presentation only.

LOT 4  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

LOT 5  
 HC 20.5  
 TYPE A  
 DEPTH 0.5

LOT 6  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

LOT 7  
 HC 0  
 TYPE SP  
 DEPTH

M/H TOP  
 RL 18.56

LOT 8  
 HC 2.5  
 TYPE A  
 DEPTH 0.5

M/H TOP  
 RL 17.66

M/H TOP  
 RL 20.75

M/H TOP  
 RL 18.56

M/H TOP  
 RL 18.50

LOT 1  
 HC 3.5  
 TYPE A  
 DEPTH 0.7

LOT 3  
 HC 17.6  
 TYPE C  
 DEPTH 0.6  
 L 2.5  
 T 1.8

FUTURE  
 HC 38.6  
 TYPE C  
 DEPTH 0.6  
 L 2.3  
 T 3.25

LOT 2  
 HC 0  
 TYPE SP  
 DEPTH

M/H TOP  
 RL 19.56

SMITH

PSM 12345  
 RL 18.352 A.H.D. (Der.)

EXIST 225Ø uPVC

### NOTES:

1. All sewer pipes are Ø150 uPVC Class SEH unless shown otherwise.
2. Manhole numbering to be obtained from council prior to plan completion
3. Level datum to be indicated on plan, including Origin Mark and Level.
4. Plan to contain sewerage as-constructed details only.

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B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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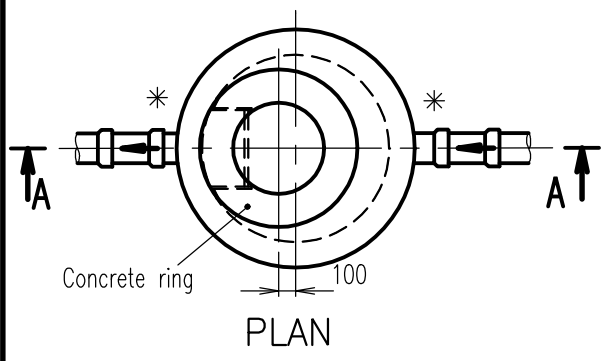
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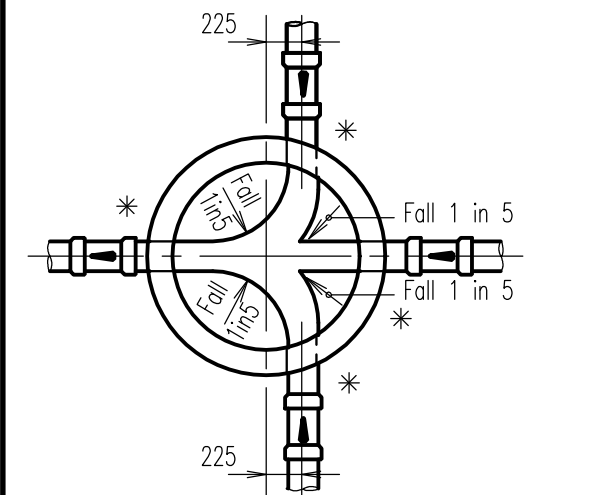
## SIMPLE AS CONSTRUCTED PLAN

SEWERAGE  
 Standard  
 Drawing  
 S-0010

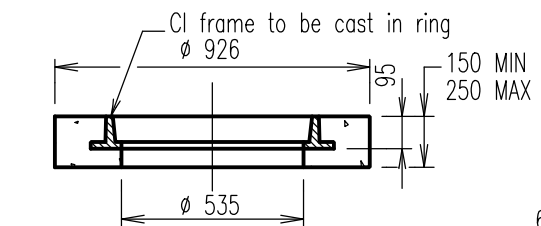
A B C



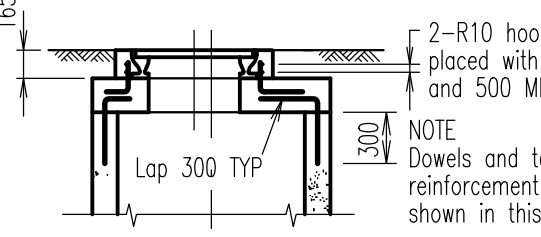
PLAN



SECTIONAL PLAN  
TYPICAL LAYOUT OF CHANNELS

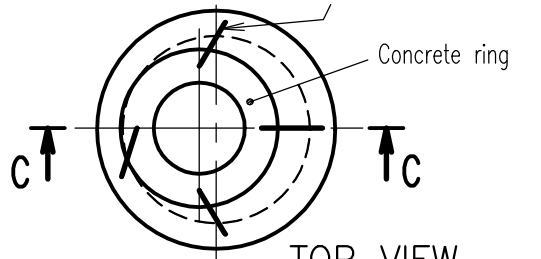


SECTIONAL ELEVATION  
CONCRETE RING

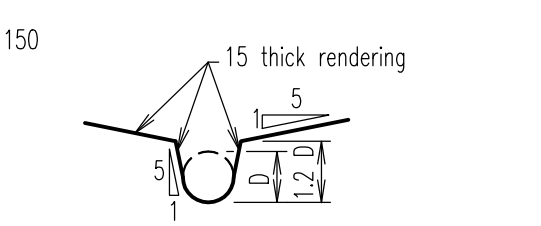


SECTION C - C

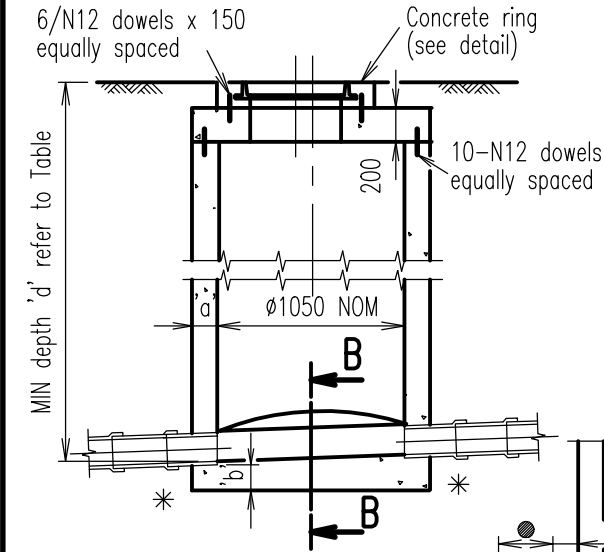
4 - N12 bars equally spaced on centre line of concrete ring with 40 cover to top of hook. (Top of bar to be hooked around 4d pin by approved method).



TOP VIEW  
REINFORCEMENT FOR  
BOLT DOWN COVER



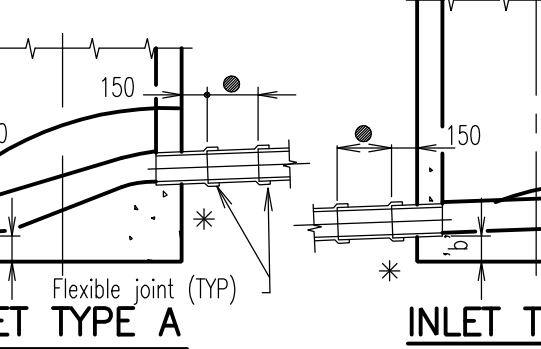
SECTION B - B



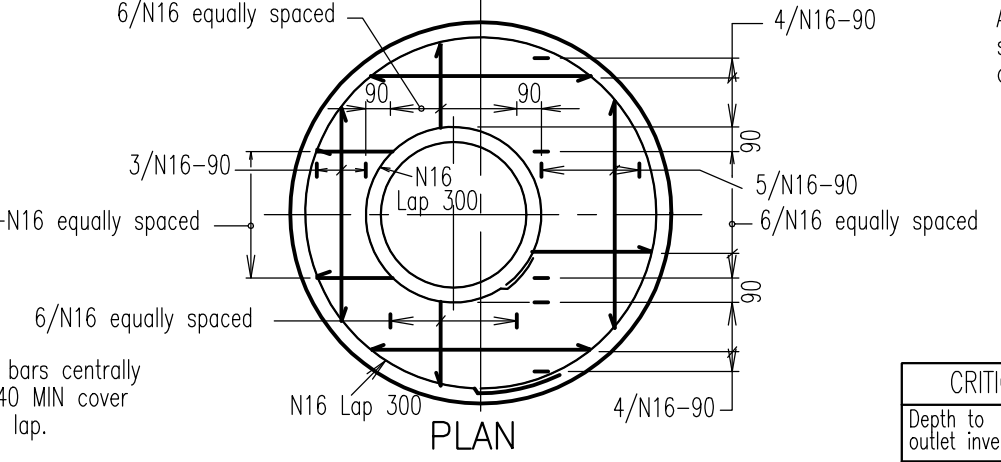
SECTION A - A



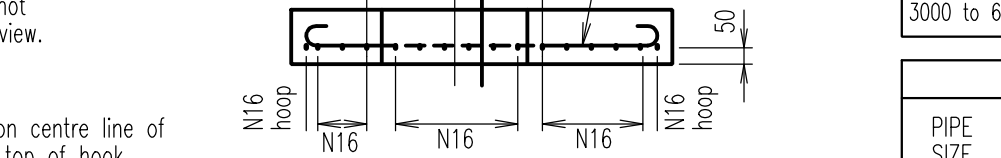
INLET TYPE A



INLET TYPE B

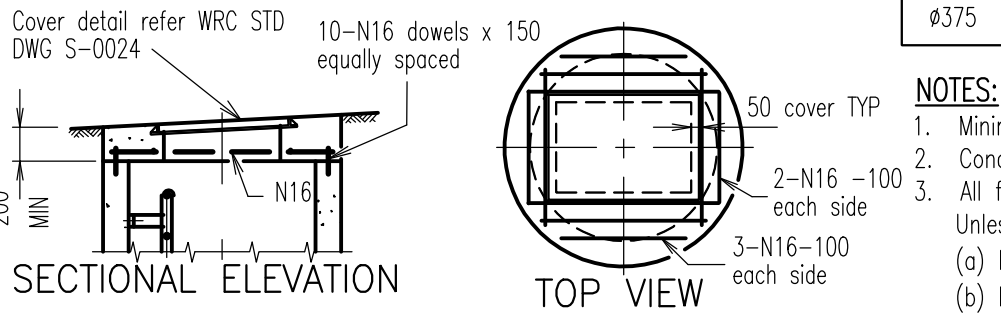


PLAN

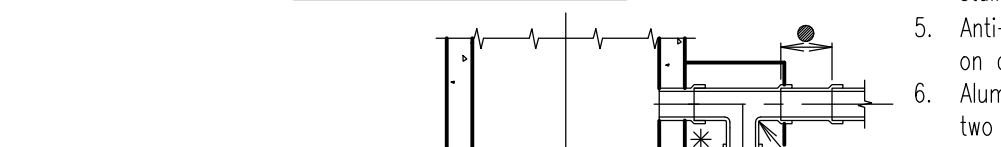


SECTIONAL ELEVATION  
TOP SLAB REINFORCEMENT

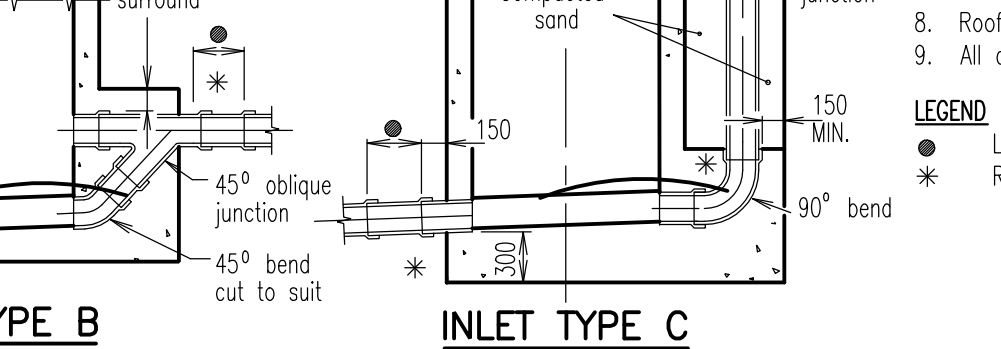
Refer Standard Drawing S-0021 for alternative top slab reinforcement



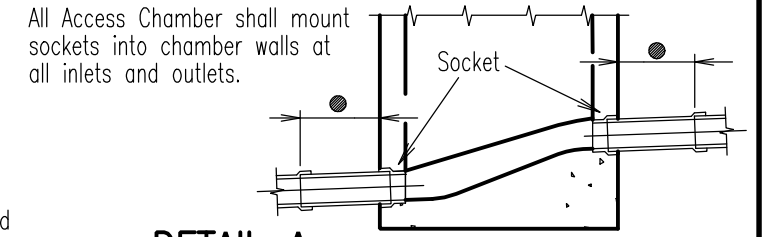
SECTIONAL ELEVATION  
ALTERNATIVE ROOF



TOP VIEW



INLET TYPE C



DETAIL A

CRITICAL DIMENSIONS		
Depth to outlet invert	Thickness	
	a	b
Minimum to 3000	150	150
3000 to 6000	225	300

MINIMUM DEPTHS	
Outlet $\phi$	Minimum Depth 'd'
$\phi 150$	1500 + (Type A fall - 100)
$\phi 225$	1575 + (Type A fall - 100)
$\phi 300$	1650 + (Type A fall - 100)
$\phi 375$	1725 + (Type A fall - 100)

PIPE SIZE	INLET DROP - DEPTH RANGE					
	V C PIPE			uPVC PIPE		
	TYPE A	TYPE B	TYPE C	TYPE A	TYPE B	TYPE C
$\phi 150$	40 to 300	300 to 600	over 350	40 to 300	300 to 600	over 600
$\phi 225$	40 to 300	500 to 800	over 550	40 to 300	500 to 1000	over 1000
$\phi 300$	40 to 300	600 to 900	over 700	40 to 300	600 to 1500	over 1500
$\phi 375$	40 to 300	700 to 1000	over 900	40 to 300	1000 to 2100	over 2100

- NOTES:**
- Minimum fall through chamber shall be 40mm.
  - Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  - All fasteners shall be Grade AS 1444:2007 stainless steel. Unless otherwise noted, fasteners shall be as described below.
    - (a) Fixing to concrete - bolts shall be approved anchors.
    - (b) Fixing to metalwork - bolts shall be HEX head bolts.
  - Nylon or polythene separation inserts shall be used between stainless steel fasteners and aluminium sections.
  - Anti-galling lubricant "Loctite 222 or 567" or similar shall be used on all threads and between all stainless steel abutting surfaces
  - Aluminium surfaces in contact with concrete shall be painted with two coats of alkali resistant bituminous paint.
  - uPVC or GRP pipes cast into access chamber wall shall be coated or sanded for the length of wall penetration to ensure bonding.
  - Roof design to Austroads W7 wheel load, dynamic factor 0.4.
  - All dimensions in millimetres.

- LEGEND**
- Length of pipe shall be 3 x DIA of pipe
  - \* Refer Detail A (above)

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B DETAIL 'A' ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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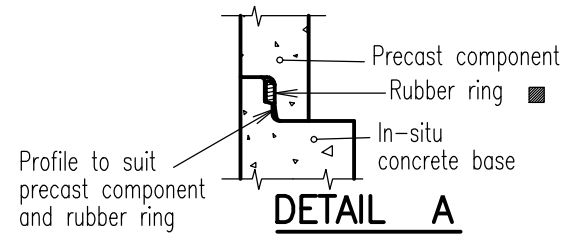
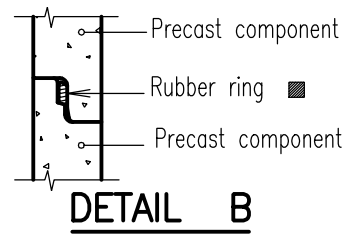
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**ACCESS CHAMBER  
1050 NOM. DIA.  
INSITU CONSTRUCTION**

**SEWERAGE  
Standard  
Drawing  
S-0020**

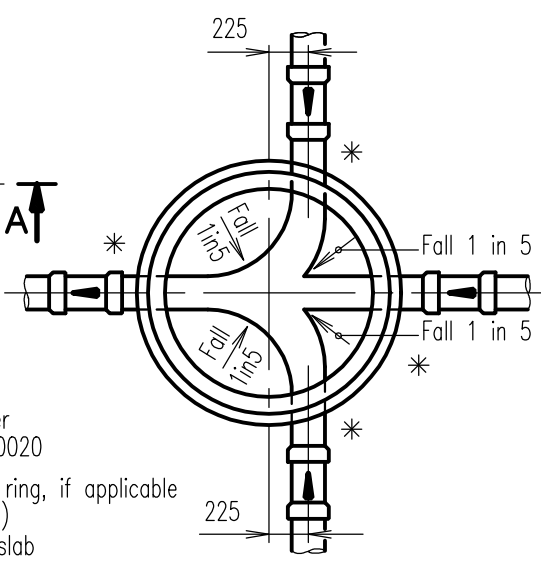
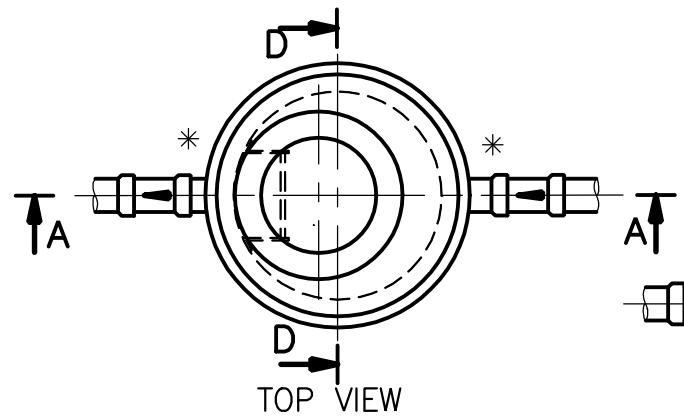
A	B	C
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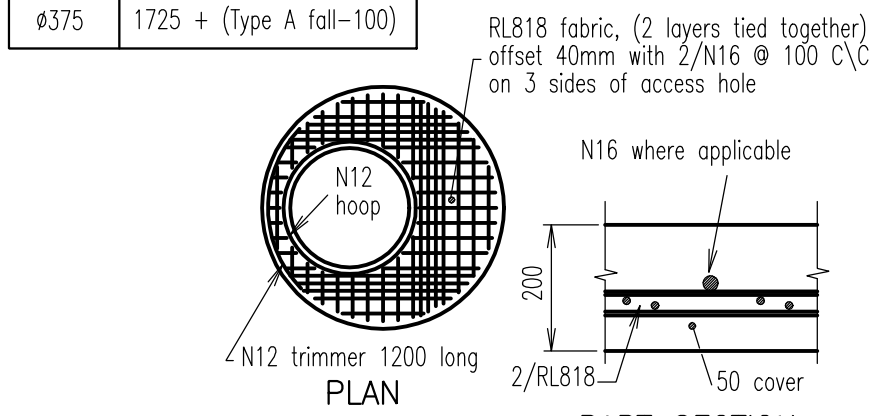
PIPE SIZE	V C PIPE			uPVC PIPE		
	TYPE A	TYPE B	TYPES C&D	TYPE A	TYPE B	TYPES C & D
Ø150	40 to 300	300 to 600	over 350	40 to 300	300 to 600	over 600
Ø225	40 to 300	500 to 800	over 550	40 to 300	500 to 1000	over 1000
Ø300	40 to 300	600 to 900	over 700	40 to 300	600 to 1500	over 1500
Ø375	40 to 300	700 to 1000	over 900	40 to 300	1000 to 2100	over 2100

MINIMUM DEPTHS	
Outlet Pipe Size	Minimum Depth to Outlet Invert
Ø150	1500 + (Type A fall-100)
Ø225	1575 + (Type A fall-100)
Ø300	1650 + (Type A fall-100)
Ø375	1725 + (Type A fall-100)

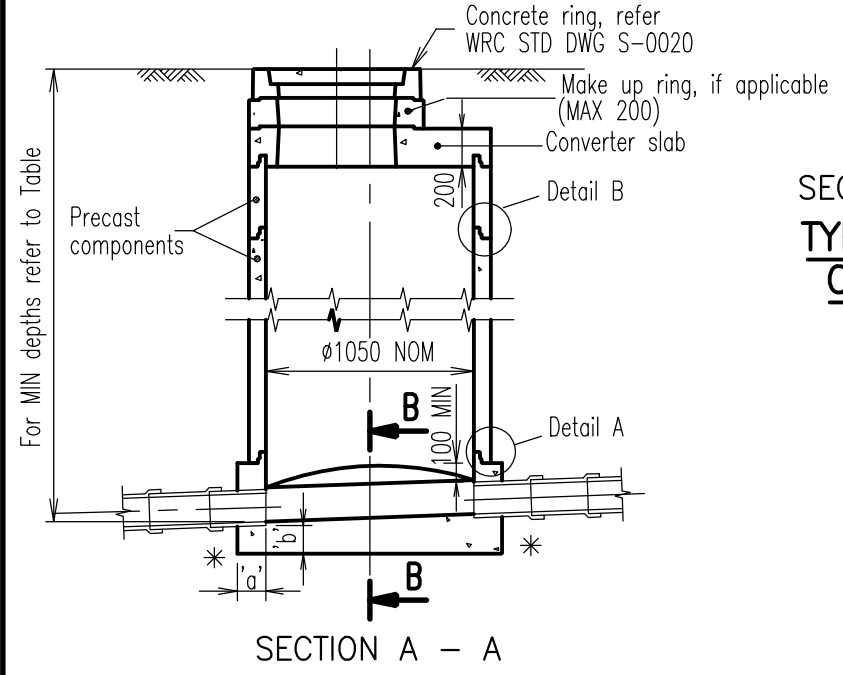
CRITICAL DIMENSIONS		
Depth to outlet invert	Thickness	
	a	b
Minimum to 3000	150	150
3000 to 6000	225	300



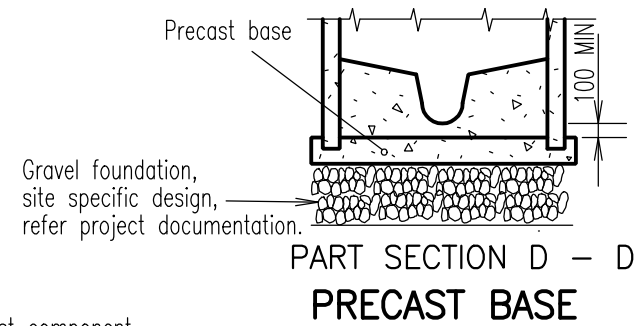
SECTIONAL PLAN  
TYPICAL LAYOUT  
OF CHANNELS



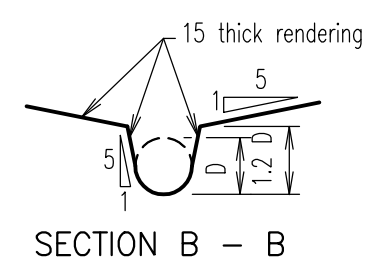
CONVERTER SLAB



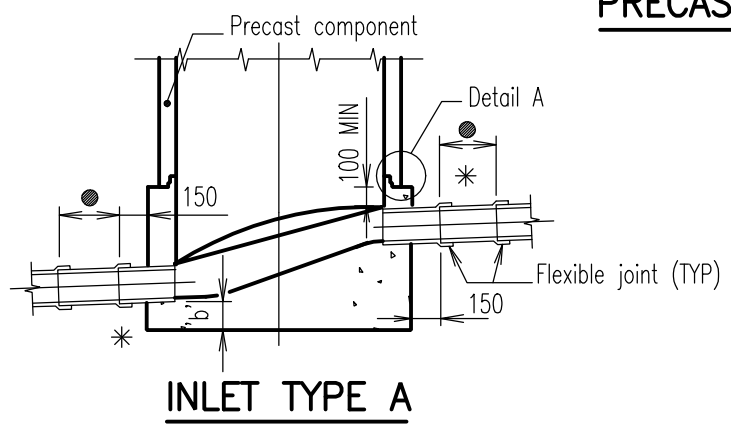
SECTION A - A



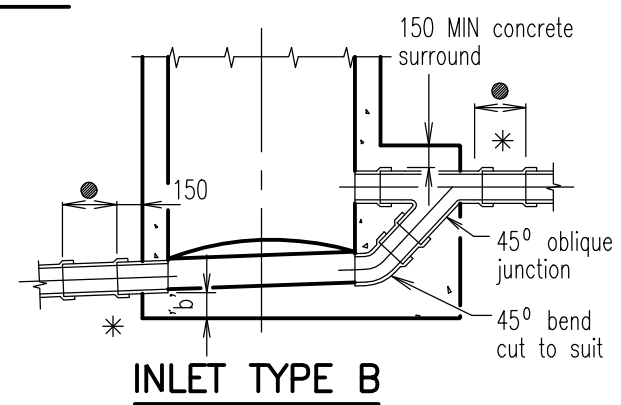
PART SECTION D - D  
PRECAST BASE



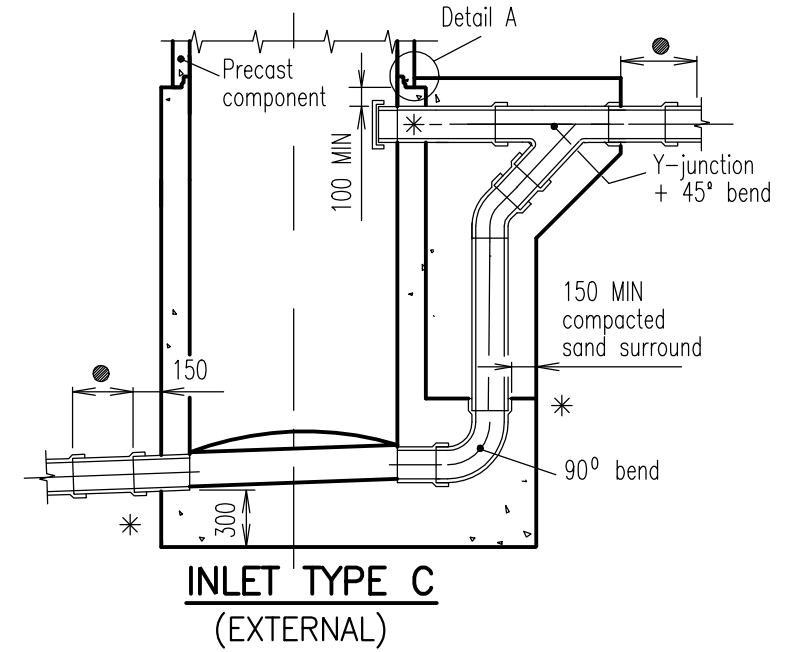
SECTION B - B



INLET TYPE A



INLET TYPE B



INLET TYPE C  
(EXTERNAL)

**NOTES**

- Minimum fall through chambers shall be 40mm.
- Concrete shall be
  - Class N32 for in-situ concrete
  - Class N40 for pre-cast segments both in accordance with AS 1379:2007 and AS 3600:2009.
- All fasteners shall be Grade AS 1444:2007 stainless steel. Unless otherwise noted, fasteners shall be as described below.
  - Fixing to concrete - bolts shall be approved anchors.
  - Fixing to metalwork - bolts shall be HEX head bolts.
- Nylon or polythene separation inserts shall be used between stainless steel fasteners and aluminium sections.
- Anti-galling lubricant "Loctite 222 or 567" or similar shall be used on all threads and between all stainless steel abutting surfaces
- Aluminium surfaces in contact with concrete shall be painted with two coats of alkali resistant bituminous paint.
- uPVC or GRP pipes cast into walls shall be coated or sanded for the length of wall penetration to ensure bonding.
- Precast chambers shall not be used where :-
  - sewer lines accept pumped flows
  - sewer lines are greater than Ø375
  - chambers are greater than 6.0m in depth
- Alternative converter slab designed to Austroads W7 wheel load, dynamic factor 0.4. Precast converter slabs must be designed to same standards.
- All dimensions in millimetres.

**LEGEND**

- Length of short pipe shall be 2 x DIA of pipe
- Lubricate concrete surface and rubber ring before placing precast components
- \* Refer DETAIL 'A' Dwg S-0020

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMMENDMENTS	10/3/98
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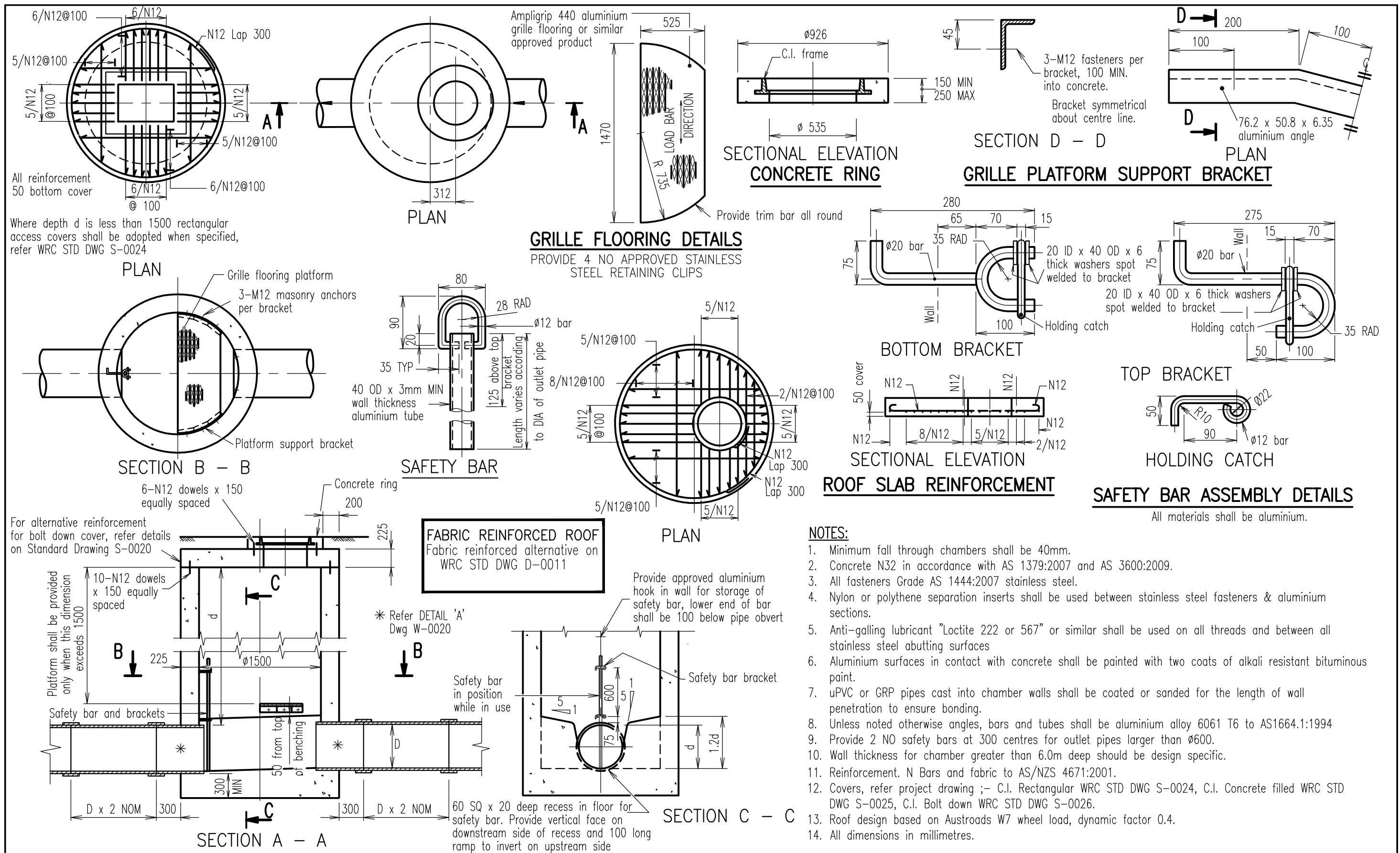
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**ACCESS CHAMBERS  
1050mm NOM. DIA.  
PRECAST COMPONENTS  
( BY PRIOR APPROVAL ONLY )**

**SEWERAGE  
Standard  
Drawing  
S-0021**

A	B	C
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REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97

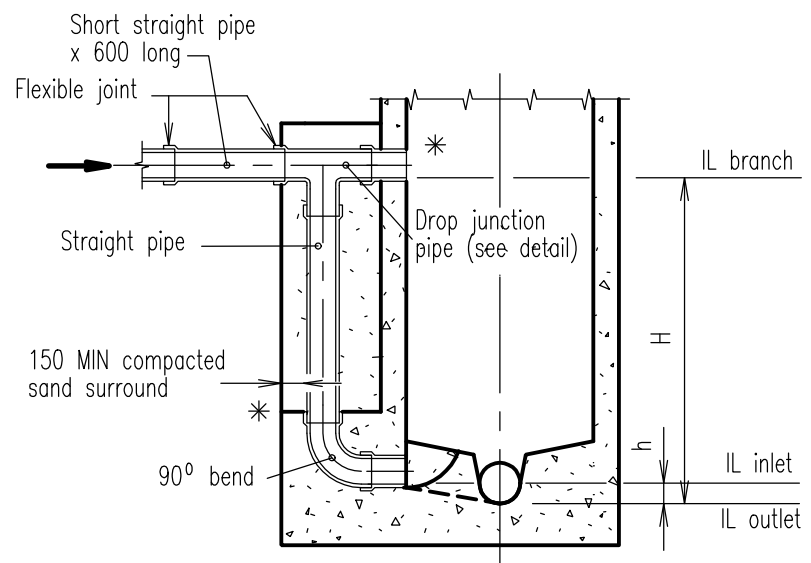

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**PROSERPINE**  
 83-85 Main St  
 Proserpine 4800 Q  
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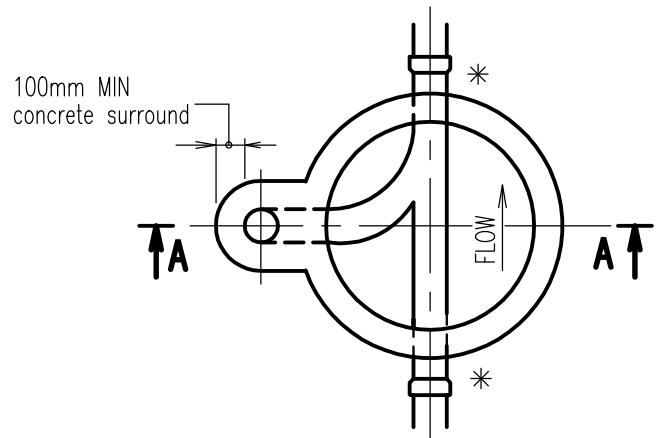
**ACCESS CHAMBERS**  
**1500mm DIA.**  
**INSITU CONSTRUCTION**

**SEWERAGE**  
**Standard**  
**Drawing**  
**S-0022**

A | B | C

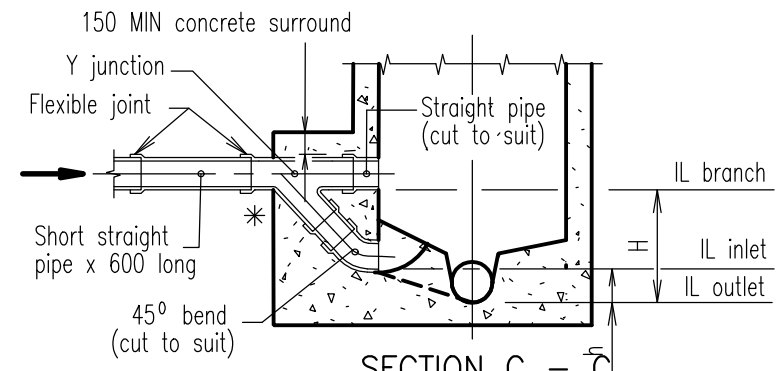


SECTION A - A

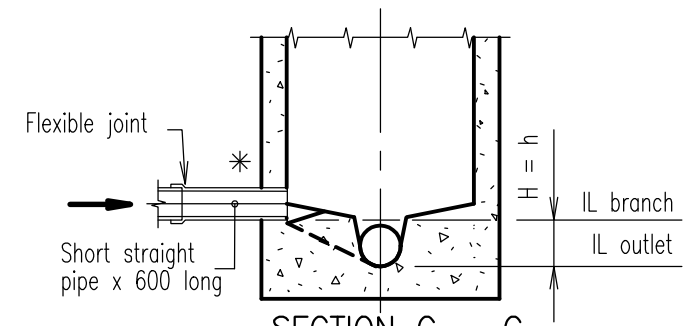


PLAN EXTERNAL VERTICAL DROP

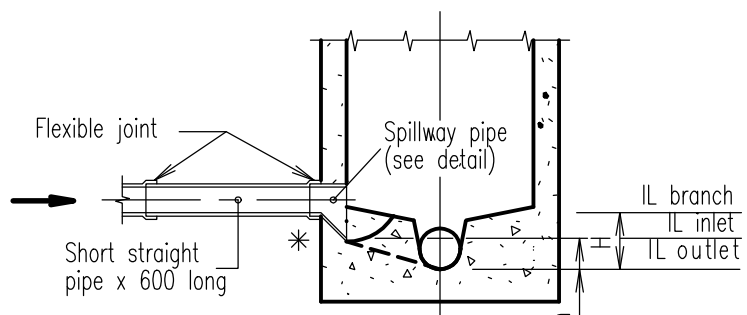
Only to be used where approved or ordered by Service Authority



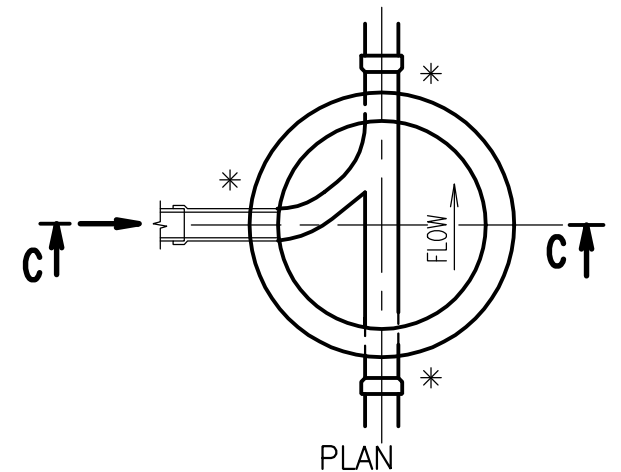
SECTION C - C SHORT SLOPE DROP



SECTION C - C BENCHING ONLY



SECTION C - C SPILLWAY DROP



PLAN

\* Refer DETAIL 'A' WRC STD DWG W-0020

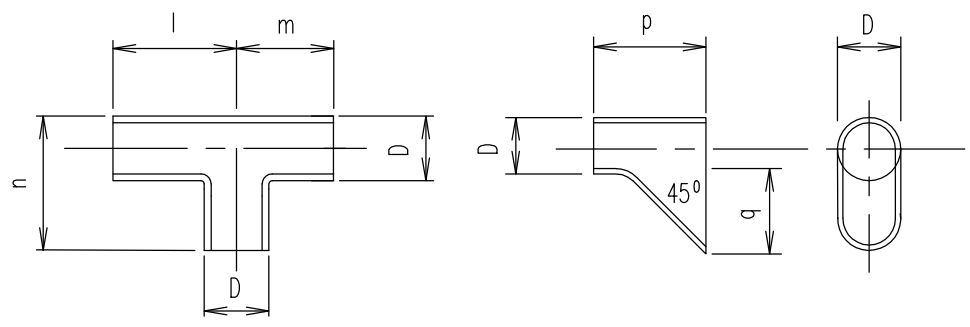
PIPE DIA D	MAXIMUM DROPS			
	CHAMBER DROP 'H'			
	Normal Benching	Spillway Drop	Short Slope Drop	Vertical Drop
100	Under 250	250 to 350	350 to 600	over 600
150	Under 250	250 to 400	400 to 700	over 700
225	Under 300	300 to 500	500 to 800	over 800
300	Under 350	350 to 650	650 to 1000	over 1000

PIPE DIA D	SPECIAL PIPES				
	Drop Junction			Spillway	
	l	m	n	p	q
100	380	225	300	150	100
150	380	225	300	225	150
225	420	350	425	325	225
300	450	450	525	425	300

Angle Through Chamber	MINIMUM DROPS	
	Minimum Drop 'h'	
Branch Sewer	0° to 30°	25
	30° to 60°	50
	60° to 90°	75
Main Sewer	0° to 45°	25
	45° to 90°	40

**NOTES:**

1. Unless otherwise approved for particular types of sewer pipe used or particular site conditions, short pipes (600mm MAX) to be flexibly jointed to all sections bedded on or surrounded with concrete.
2. All benching to be 1 in 5 MIN.
3. 100mm external uPVC drop to be provided where house drain connection is well above chamber invert.
4. Refer WRC STD DWG S-0020 for 1050 NOM. access chamber insitu construction details.
5. Vertical and short slope drops to be formed using special pipes and standard fittings with couplings & sealing rings.
6. All dimensions in millimetres.



DROP JUNCTION PIPE

SPILLWAY PIPE

**SPECIAL PIPES**

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
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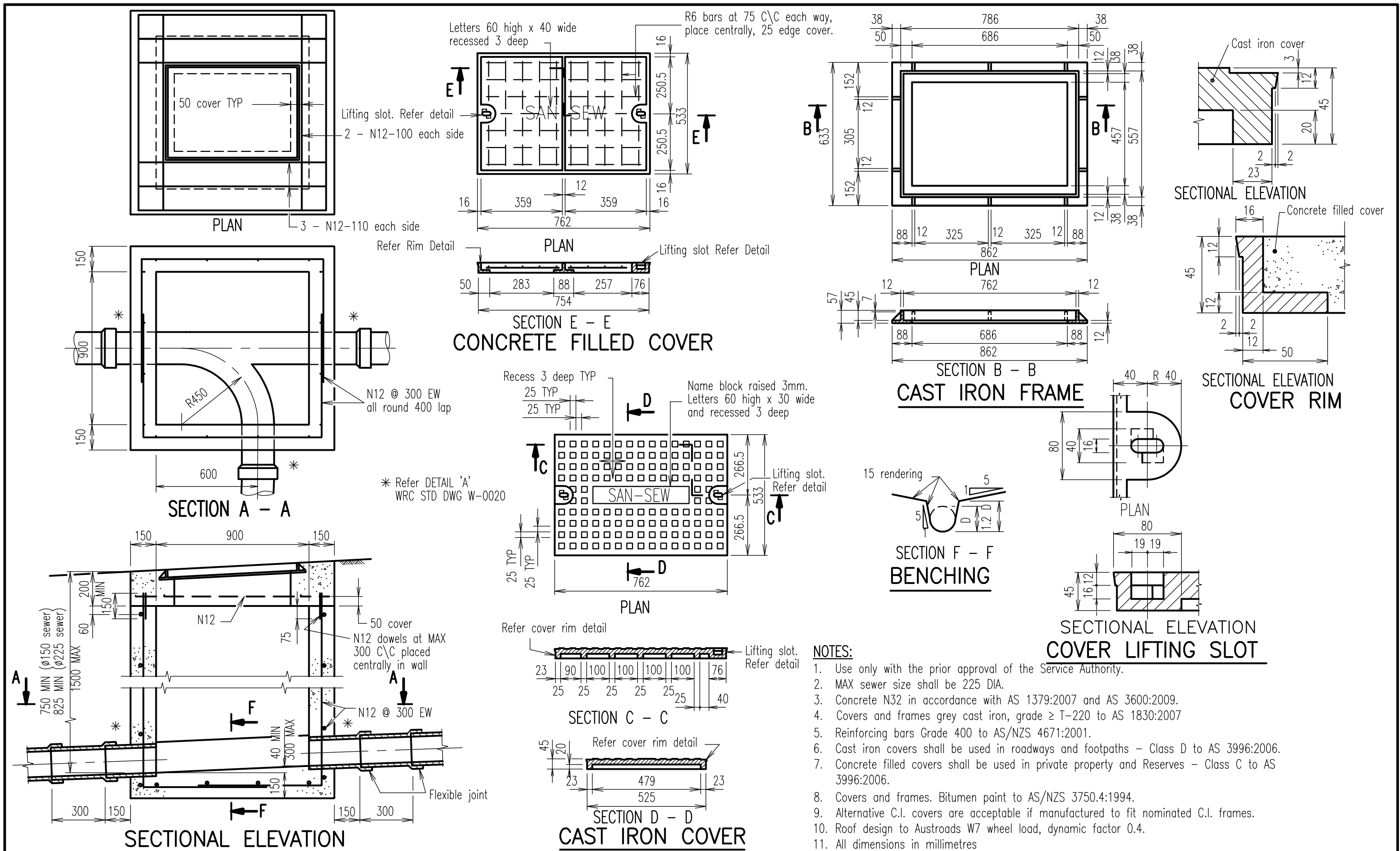
**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
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**ACCESS CHAMBERS  
ALTERNATIVE DROPS  
INSITU CONSTRUCTION**

**SEWERAGE  
Standard  
Drawing  
S-0023**

A B B





- NOTES:**
1. Use only with the prior approval of the Service Authority.
  2. MAX sewer size shall be 225 DIA.
  3. Concrete N12 in accordance with AS 1379:2007 and AS 3600:2009.
  4. Covers and frames grey cast iron, grade  $\geq$  T-220 to AS 1830:2007
  5. Reinforcing bars Grade 400 to AS/NZS 4671:2001.
  6. Cast iron covers shall be used in roadways and footpaths - Class D to AS 3996:2006.
  7. Concrete filled covers shall be used in private property and Reserves - Class C to AS 3996:2006.
  8. Covers and frames. Bitumen paint to AS/NZS 3750.4:1994.
  9. Alternative C.I. covers are acceptable if manufactured to fit nominated C.I. frames.
  10. Roof design to Austroads W7 wheel load, dynamic factor 0.4.
  11. All dimensions in millimetres

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
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A ORIGINAL ISSUE	1/3/97



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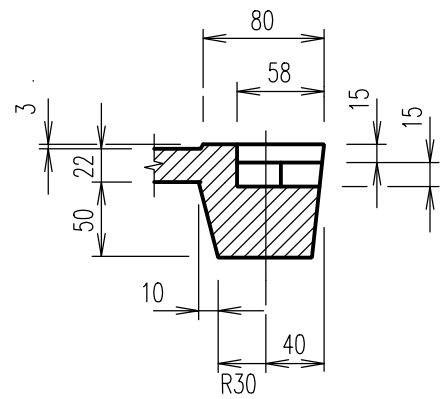
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**ACCESS CHAMBERS  
RECTANGULAR INCLUDING  
C.I. COVERS & FRAMES**

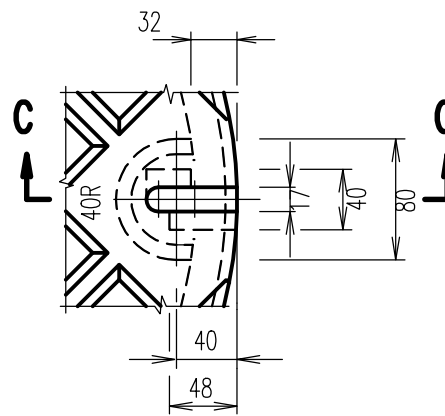
**SEWERAGE  
Standard  
Drawing  
S-0024**

A	B	C
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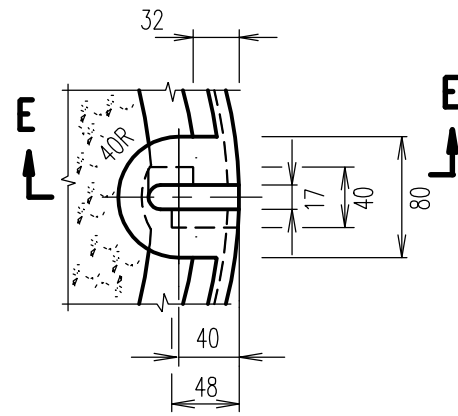


SECTION C-C

LIFTING SLOTS - DETAIL A

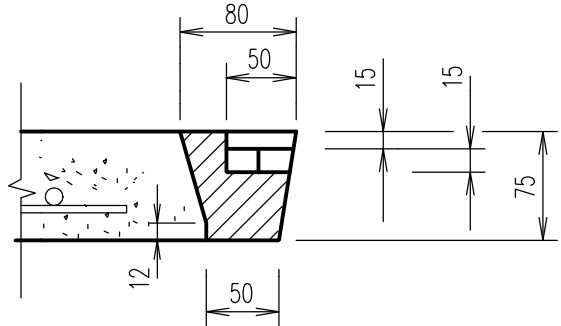


PLAN

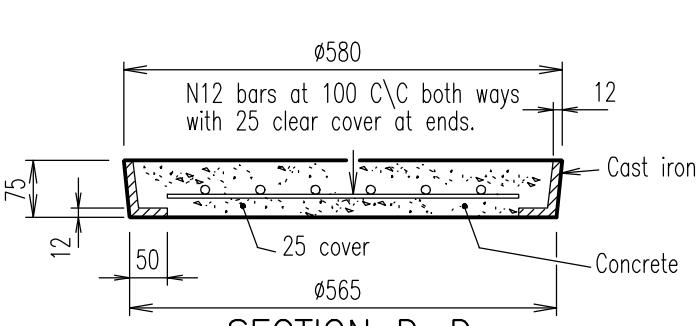


PLAN

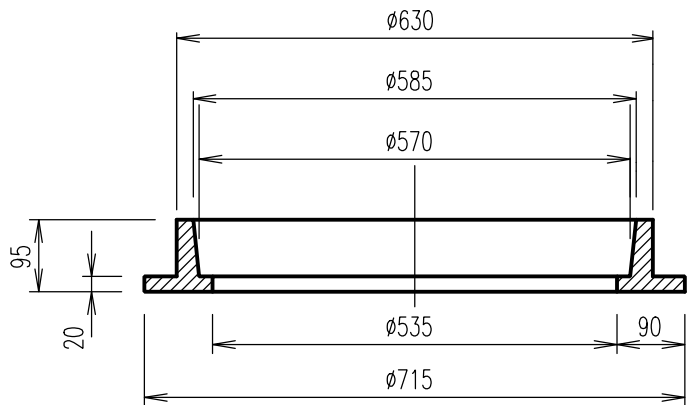
SLOTS - DETAIL B



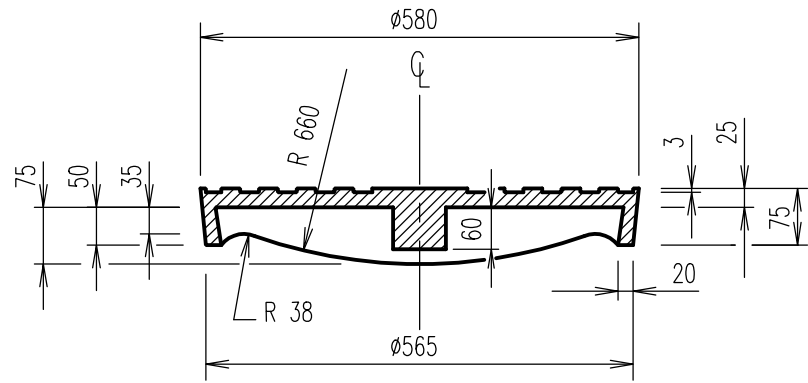
SECTION E - E



SECTION D-D

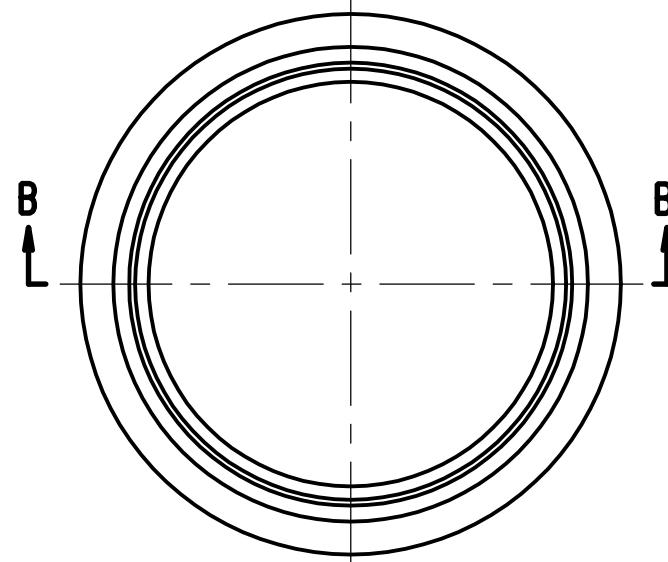


SECTION B-B

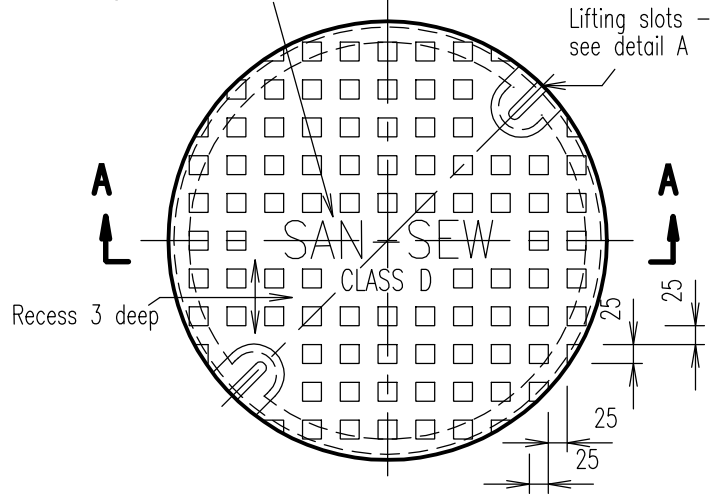


SECTION A-A

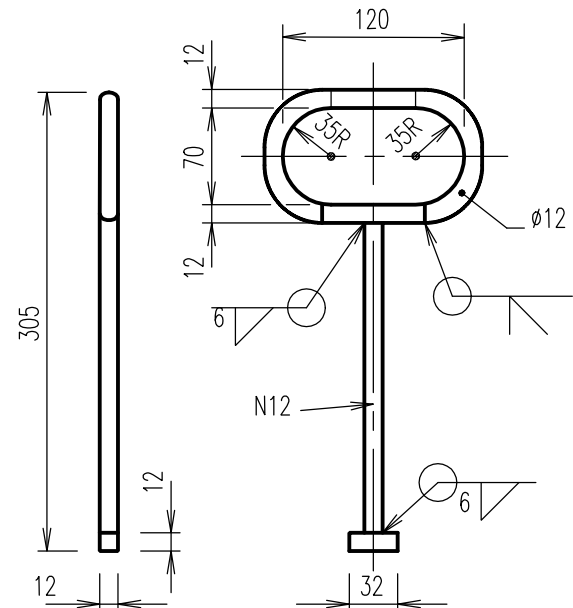
Name block raised 3 with 60 high letters for SAN-SEW and 30 high letters for CLASS D



PLAN - FRAME

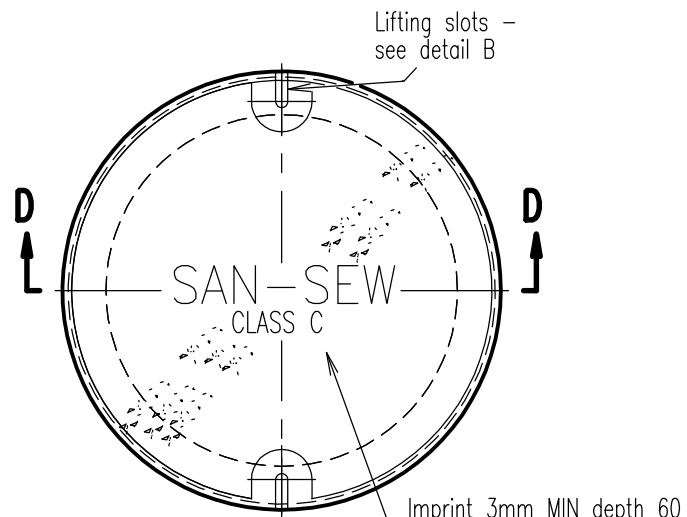


PLAN - C.I. COVER



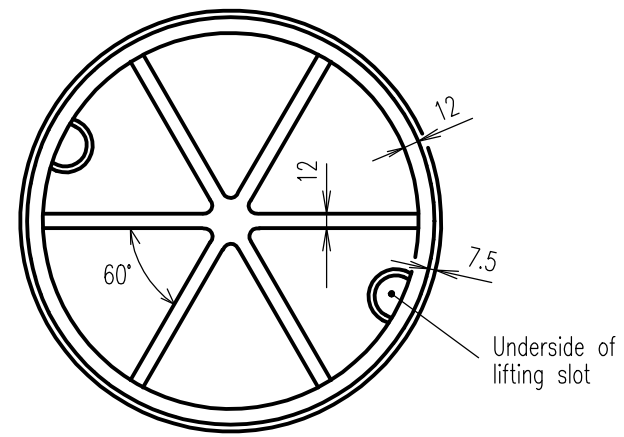
STEEL LIFTING KEY

Hot dip galvanized to AS 4680:2006



PLAN

PLAN - C.I. CONCRETE FILLED COVER



UNDERSIDE OF C.I. COVER

- NOTES:**
1. Mass of C.I. frames = 42 kg approx.
  2. Mass of C.I. cover = 46 kg approx.
  3. Cover and frame, grey cast iron Grade ≥ T220 to AS 1830:2007.
  4. All steel Grade 400 to AS/NZS 3679.1:2016.
  5. Concrete infill N32/10 in accordance with AS 1379:2007 and AS 3600:2009.
  6. All welds to AS 1554.1:2014  
Welding symbols to AS 1101.3:2005
  7. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
  8. Bitumen paint cover and frame to AS/NZS 3750.4:1994.
  9. Covers and frames to AS 3996:2006
  10. All dimensions in millimetres.

REVISIONS	DATE
B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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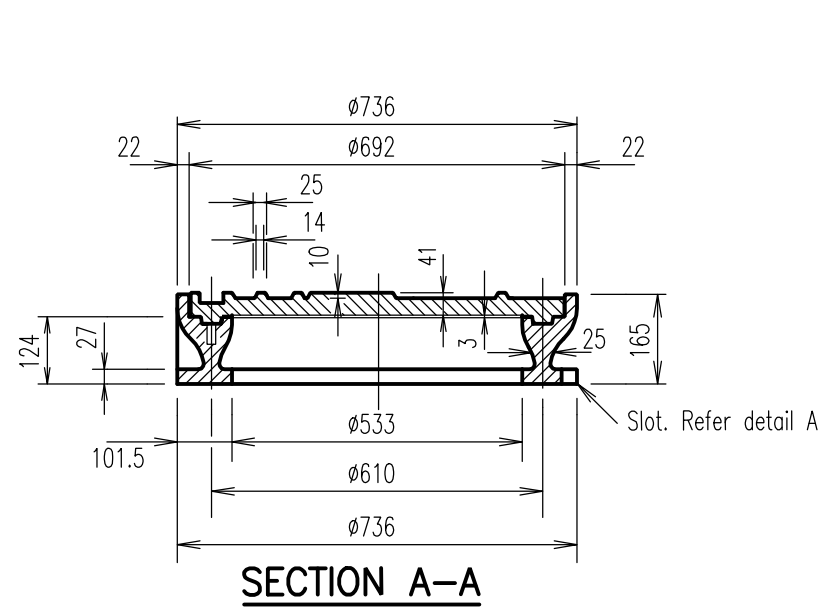
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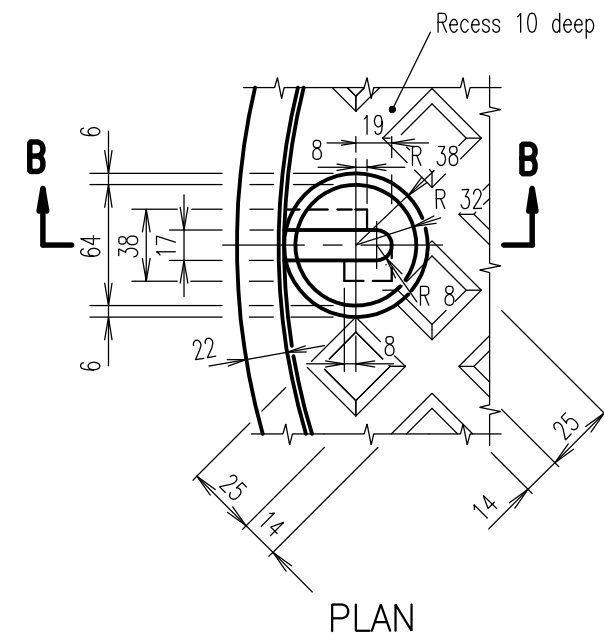
**ACCESS CHAMBERS  
RECTANGULAR INCLUDING  
C.I. COVERS & FRAMES**

**SEWERAGE  
Standard  
Drawing  
S-0025**

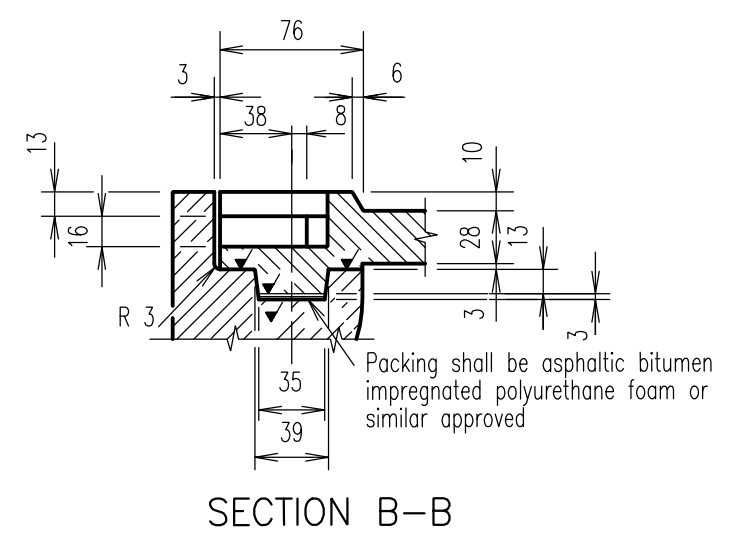
A	B		
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**SECTION A-A**

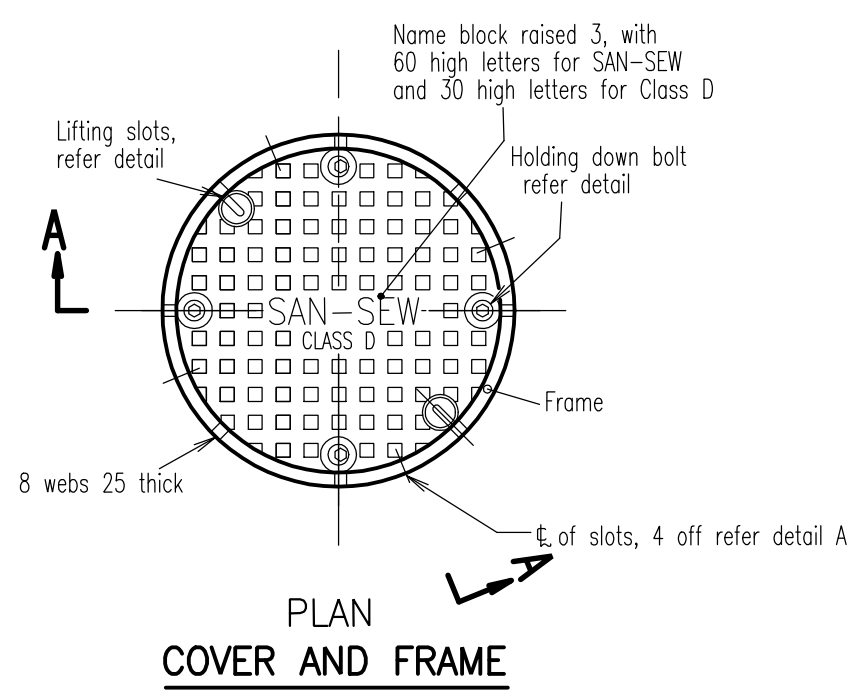


**PLAN**

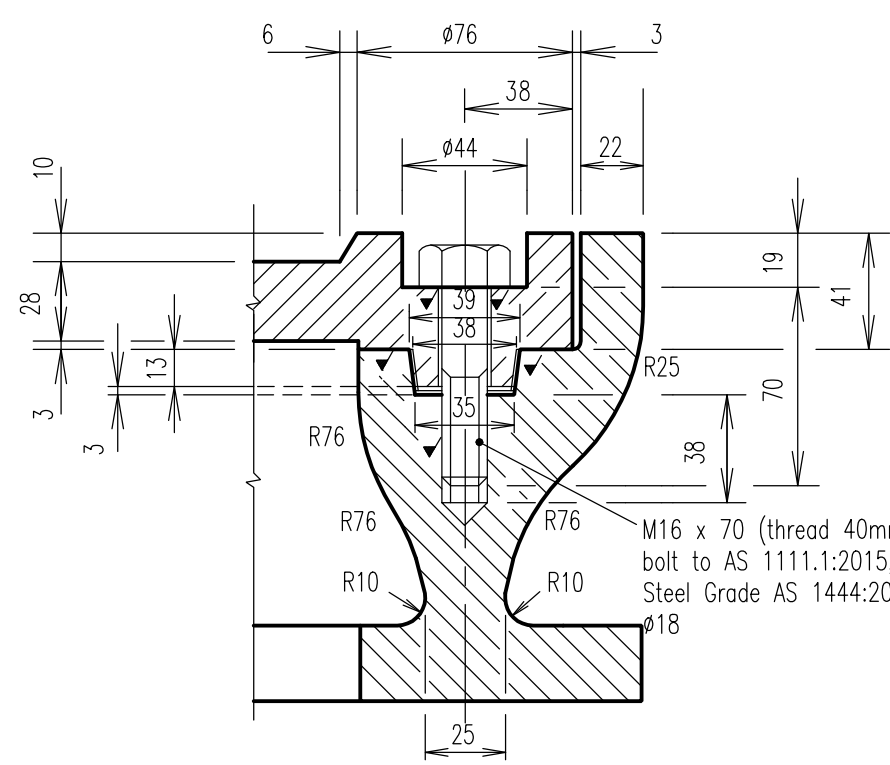


**SECTION B-B**

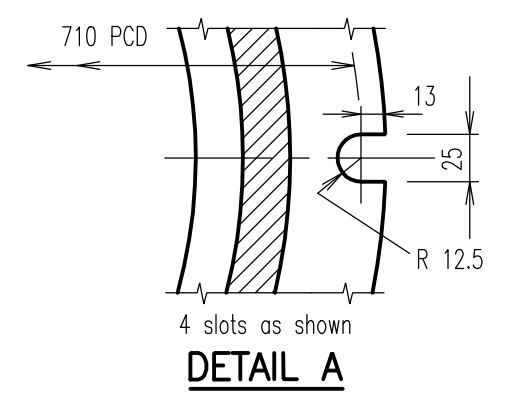
**DETAIL AT LIFTING SLOTS**



**PLAN COVER AND FRAME**



**DETAIL OF HOLDING DOWN BOLTS**



**DETAIL A**

**LEGEND**

▼ Denotes machined surface.

**NOTES:**

1. Mass of cover = 66 kg approx.
2. Mass of frame = 100 kg approx.
3. Cover and frame, grey cast iron Grade  $\geq$  T220 to AS 1830:2007.
4. Cover design Class D to AS 3996:2006.
5. Alternative C.I. covers designed to Austroads bridge code, W7 wheel loads are acceptable if manufactured to fit nominated C.I. frames.
6. Bitumen point cover & frame to AS/NZS 3750.4:1994.
7. All dimensions in millimetres.

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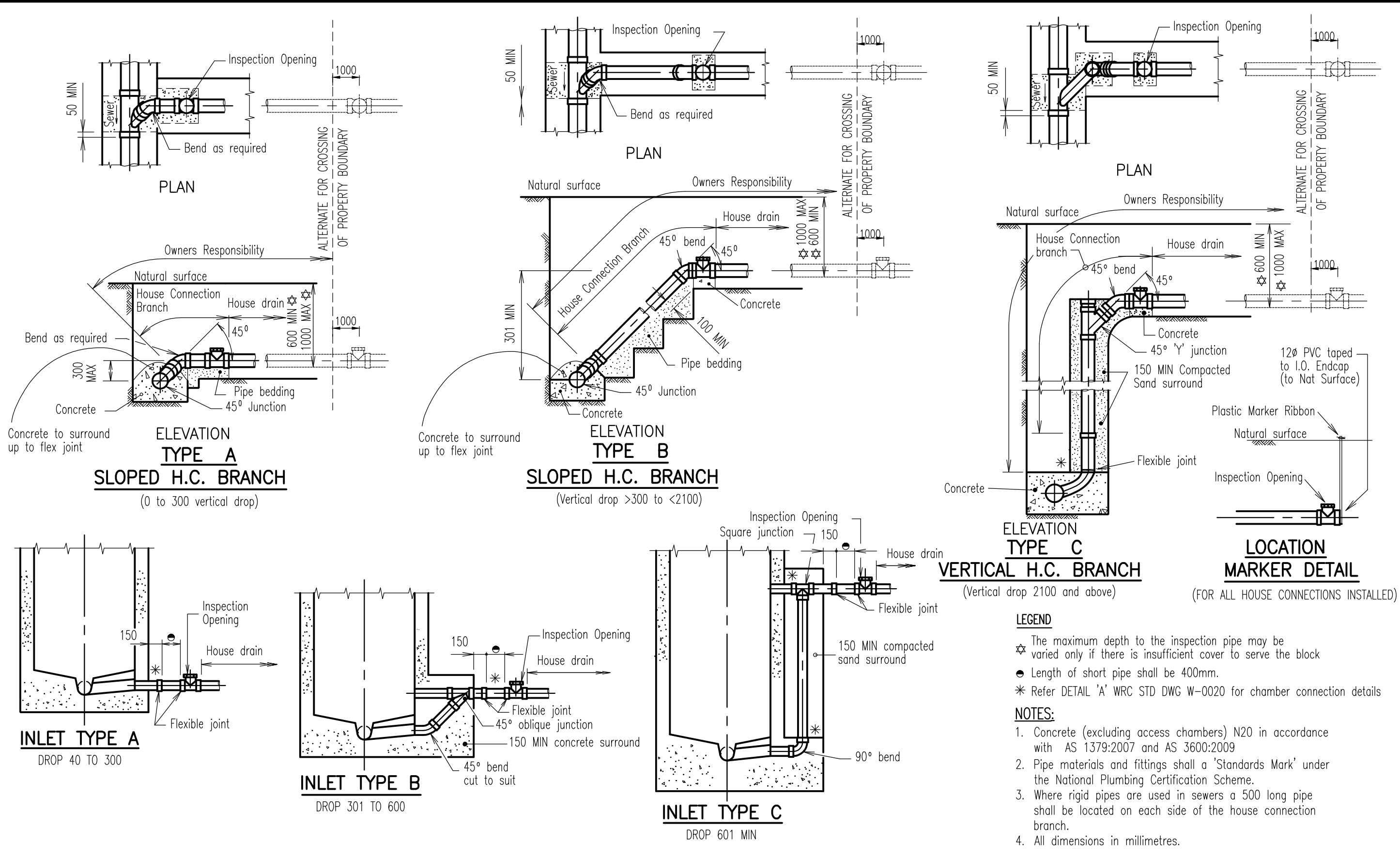
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Ph 07 4785 5366

**PROSERPINE**  
83-85 Main St  
Proserpine 4800 Q  
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**ACCESS CHAMBERS  
CAST IRON COVER AND FRAME  
BOLT DOWN**

**SEWERAGE  
Standard  
Drawing  
S-0026**

A	B		
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**LEGEND**

- ☆ The maximum depth to the inspection pipe may be varied only if there is insufficient cover to serve the block
- Length of short pipe shall be 400mm.
- \* Refer DETAIL 'A' WRC STD DWG W-0020 for chamber connection details

**NOTES:**

1. Concrete (excluding access chambers) N20 in accordance with AS 1379:2007 and AS 3600:2009
2. Pipe materials and fittings shall have a 'Standards Mark' under the National Plumbing Certification Scheme.
3. Where rigid pipes are used in sewers a 500 long pipe shall be located on each side of the house connection branch.
4. All dimensions in millimetres.

REVISIONS	DATE
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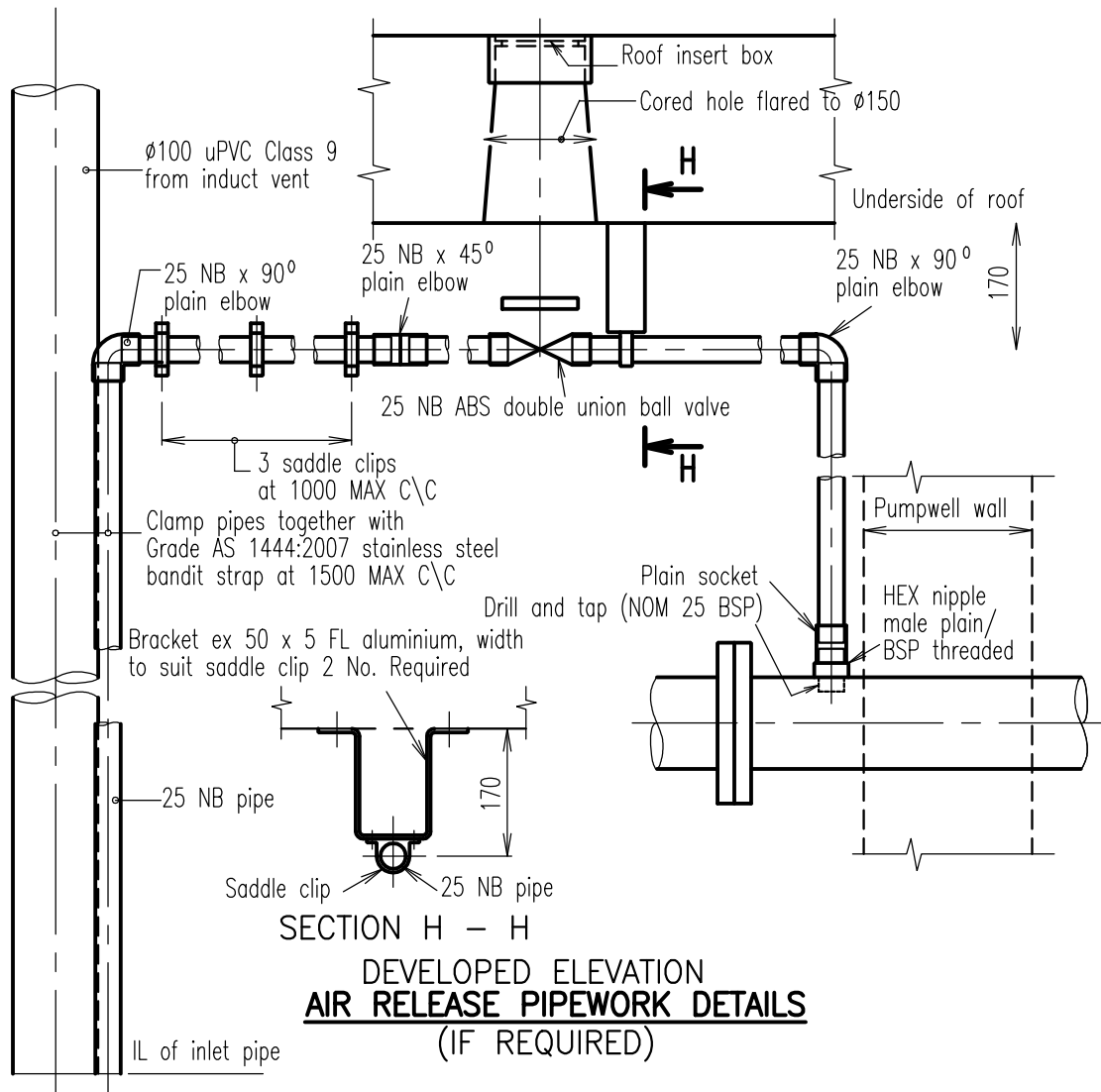
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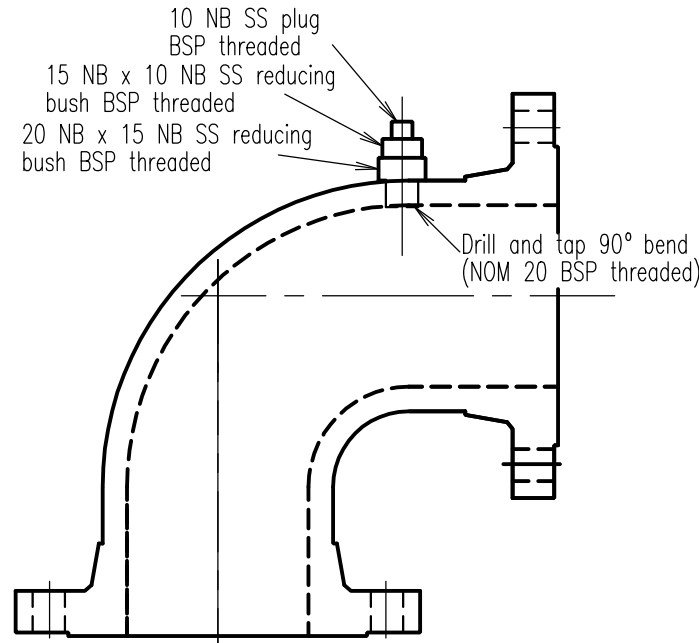
## HOUSE CONNECTION BRANCHES

**SEWERAGE Standard Drawing S-0030**

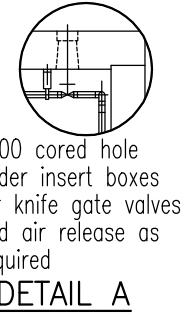
A B C



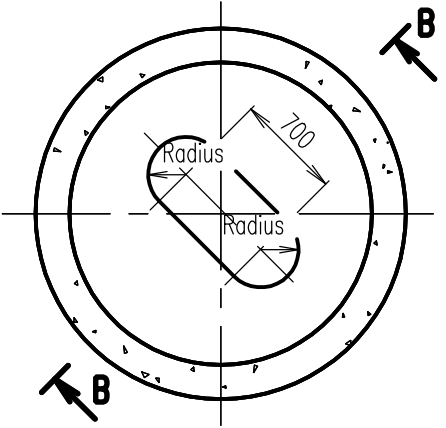
SECTION H - H  
DEVELOPED ELEVATION  
**AIR RELEASE PIPEWORK DETAILS**  
(IF REQUIRED)



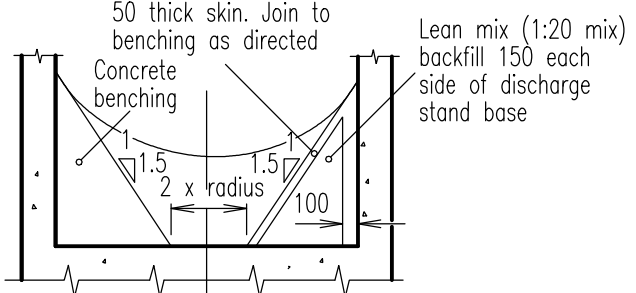
**PRESSURE GAUGE ARRANGEMENT**  
SS INDICATES STAINLESS STEEL GRADE 316



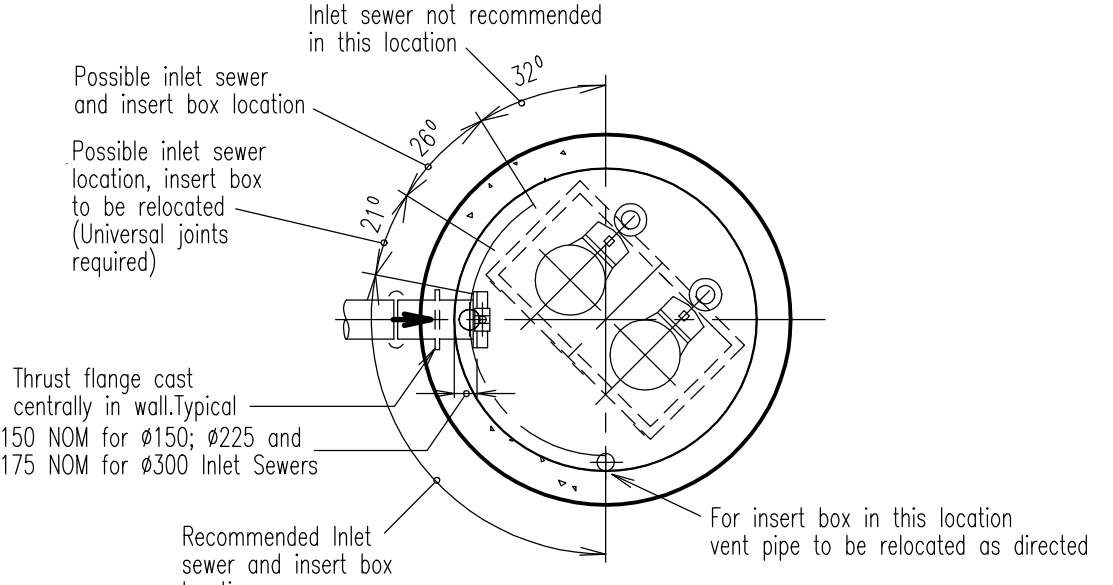
- NOTES:**
- Benching dimensions shall be as directed by the Superintendent. The "Radius" at floor level shall be equal to the pump's volute radius with concurrent centre lines. The 700\* dimension shall be adjusted to suit the pump unit spacing. The 50mm thick skin shall be 2:1 fine sand and cement mortar.
  - (a) The isolating valve on the inlet sewer shall be a fully Grade AS 1444:2007 stainless steel lugged knife gate valve including stainless steel superstructure and non-rising spindle adaptor with stainless steel metal to metal seat.  
(b) Reflux valves shall be coated internally and externally with a fusion bonded epoxy and shall be counter weighted.
  - All dimensions in millimetres.



**PUMPWELL FLOOR**  
Showing benching only  
Refer note 1



**SECTION B - B**



**INLET SEWER LOCATIONS**

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B COMBINED PARTS OF S-0050 & S-0054	10/3/98
A ORIGINAL ISSUE	1/3/97



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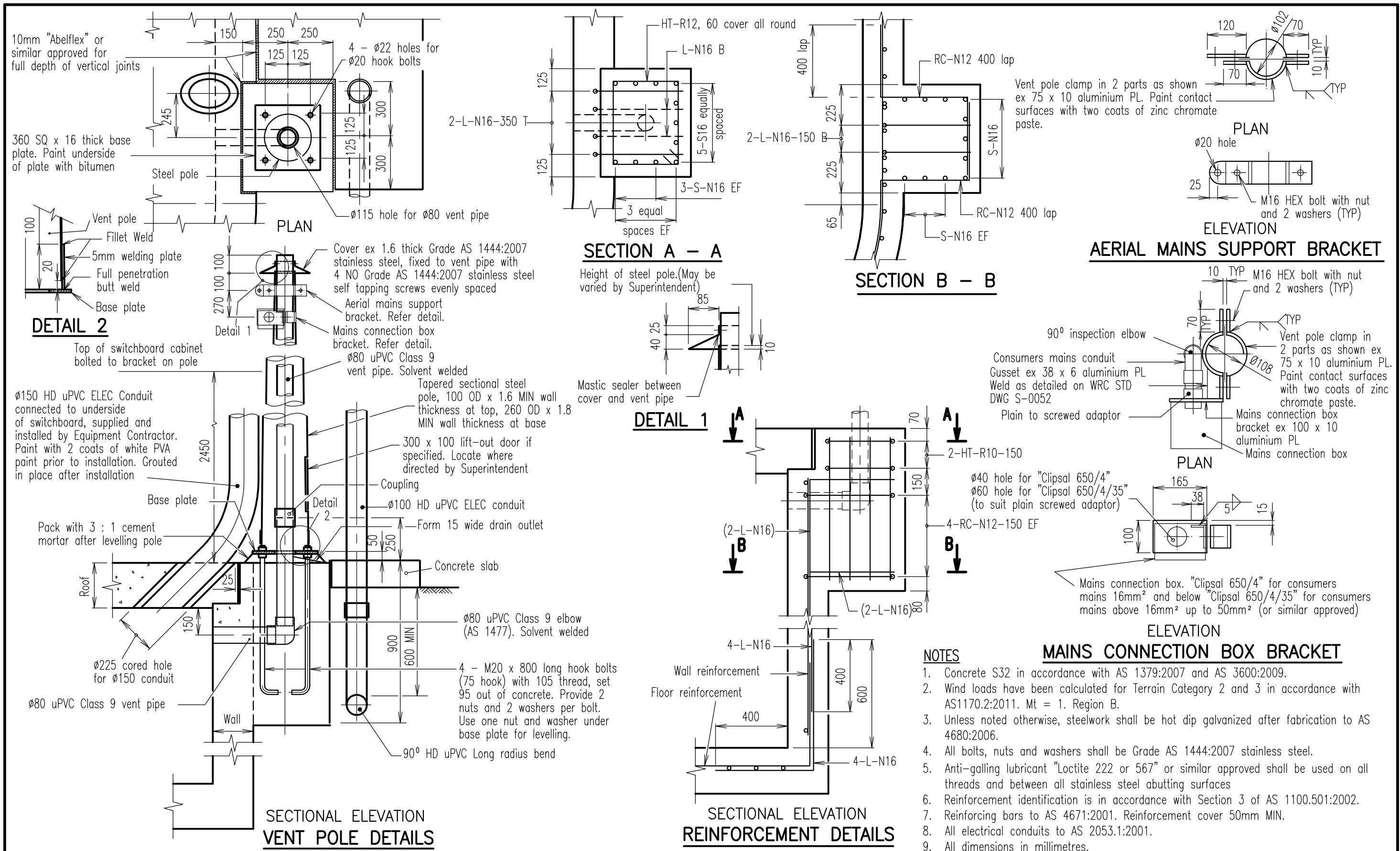
**COLLINSVILLE**  
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**1800 mm DIA. & 2400 mm DIA**  
**PRESSURE GAUGE ARRANGEMENT**  
**AIR RELEASE PIPEWORK DETAILS**

**SEWERAGE Standard Drawing S-0050**

A	B	C
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B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97

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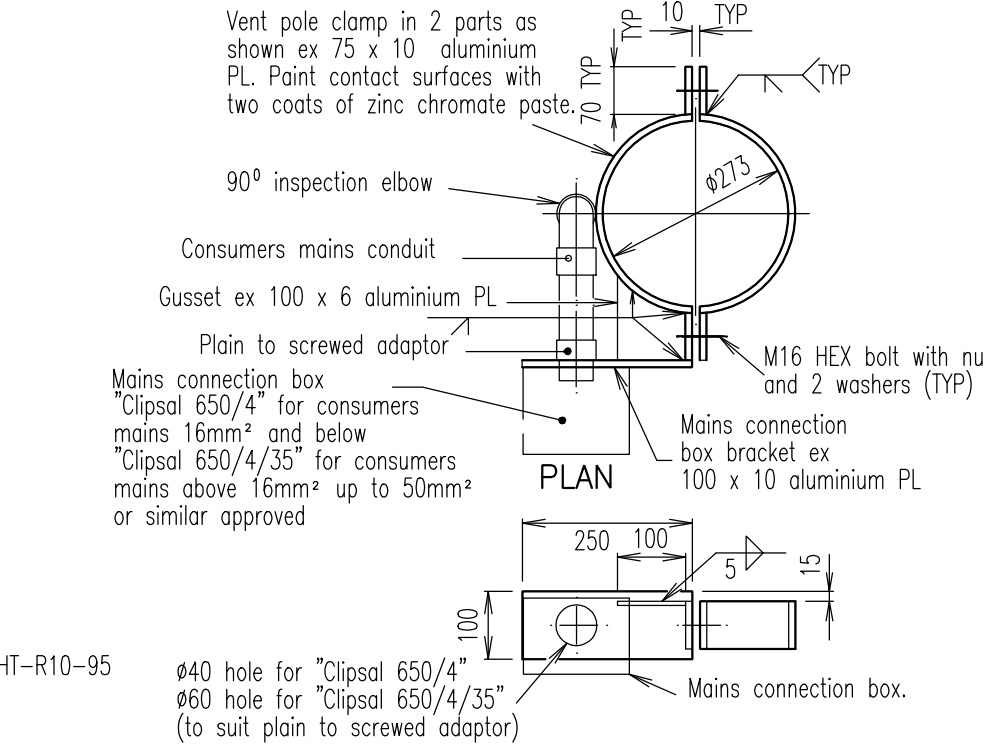
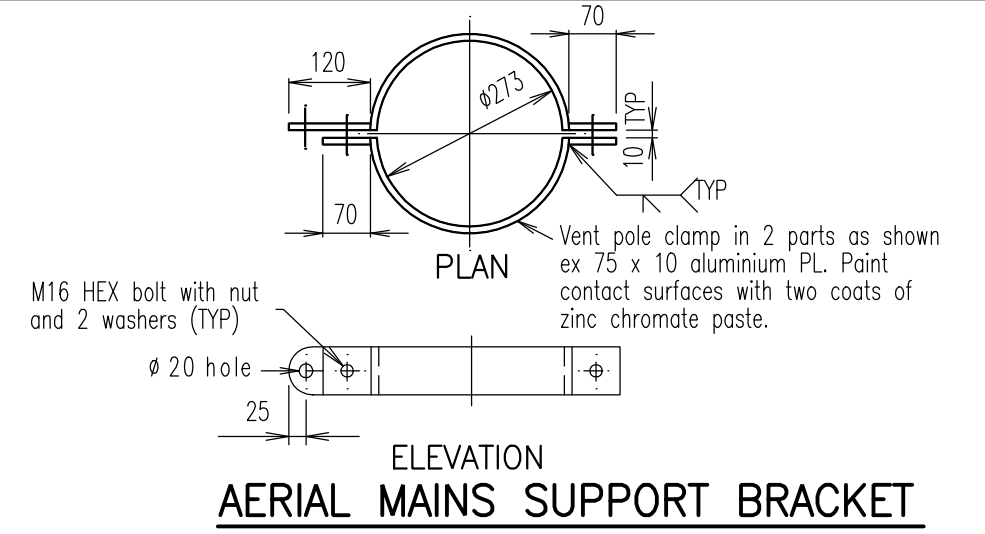
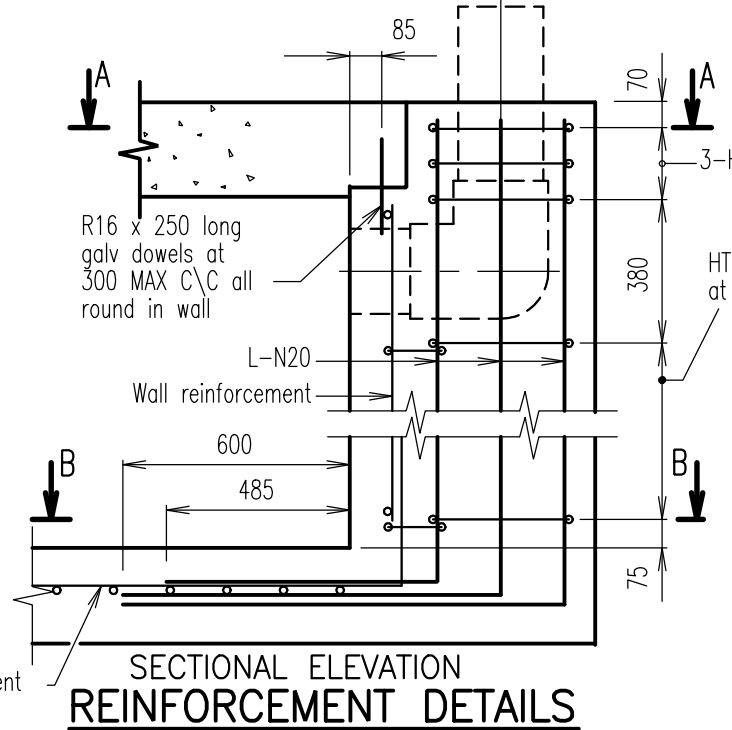
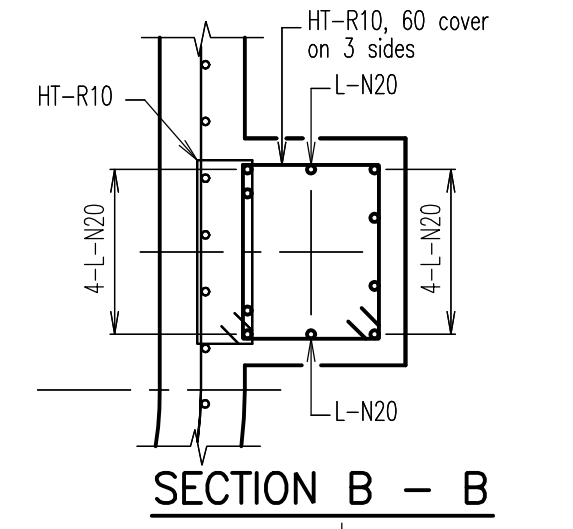
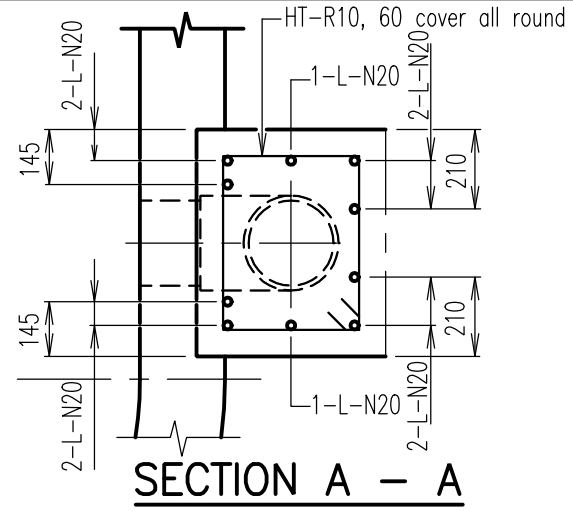
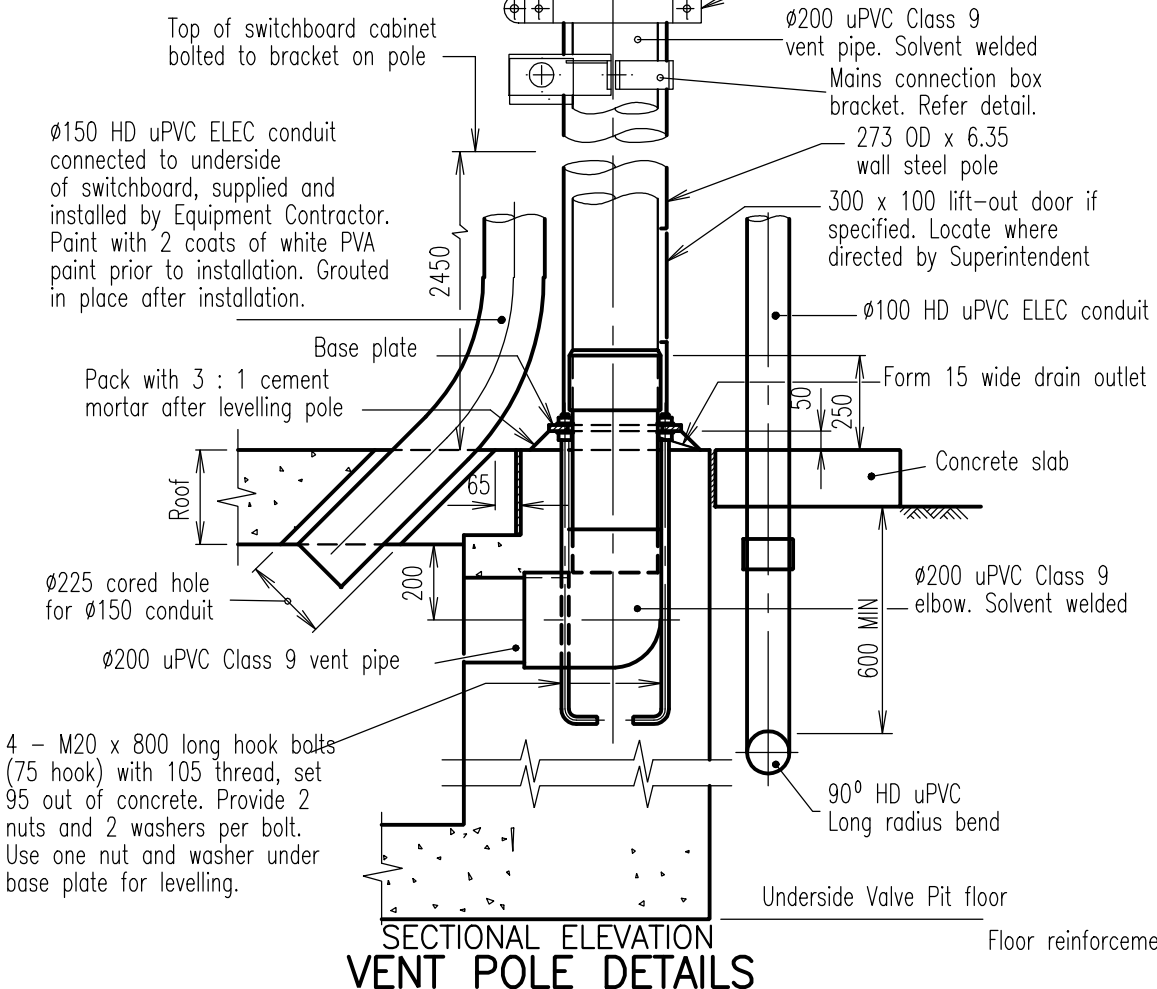
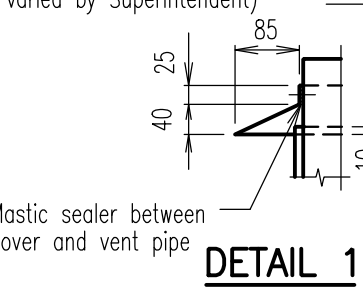
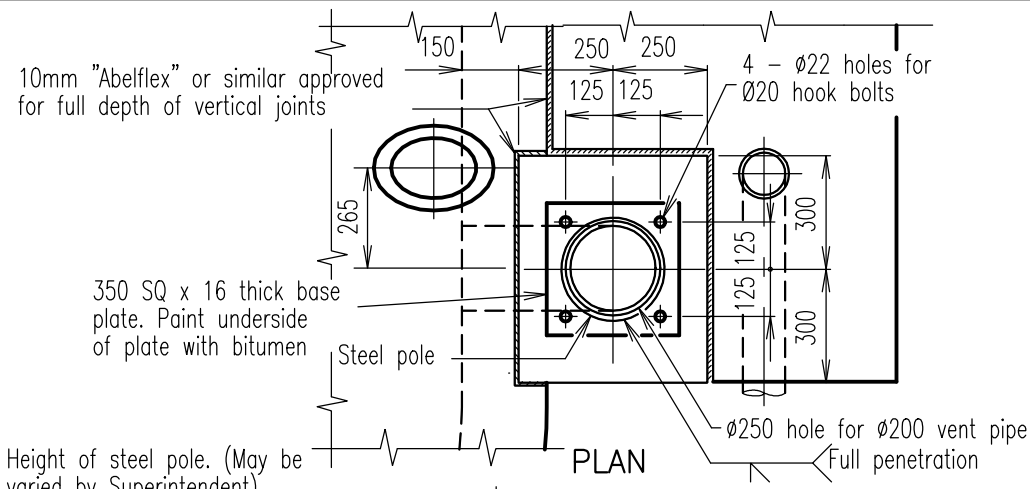
**SUBMERSIBLE SEWAGE PUMPING STATION**

**7.2m VENT POLE**

**TERRAIN CAT 2 AND 3**

**SEWERAGE Standard Drawing S-0051**

A B



- NOTES:
- Concrete S32 in accordance with AS 1379:2007 and AS 3600:2009.
  - Wind loads have been calculated for Terrain Category 2 and 3 in accordance with AS 1170.2:2011. Mt = 1. Region B.
  - Unless noted otherwise, steelwork shall be hot dip galvanized after fabrication to AS 4680:2006.
  - All bolts, nuts and washers shall be Grade AS 1444:2007 stainless steel.
  - Anti-galling lubricant "Loctite 222 or 567" or similar approved shall be used on all threads and between all stainless steel abutting surfaces
  - Reinforcement identification is in accordance with Section 3 of AS 1100.501:2002.
  - Reinforcing bars to AS 4671:2001. Reinforcement cover 50mm MIN.
  - All electrical conduits to AS 2053.1:2001.
  - All dimensions in millimetres.

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A ORIGINAL ISSUE	1/3/97



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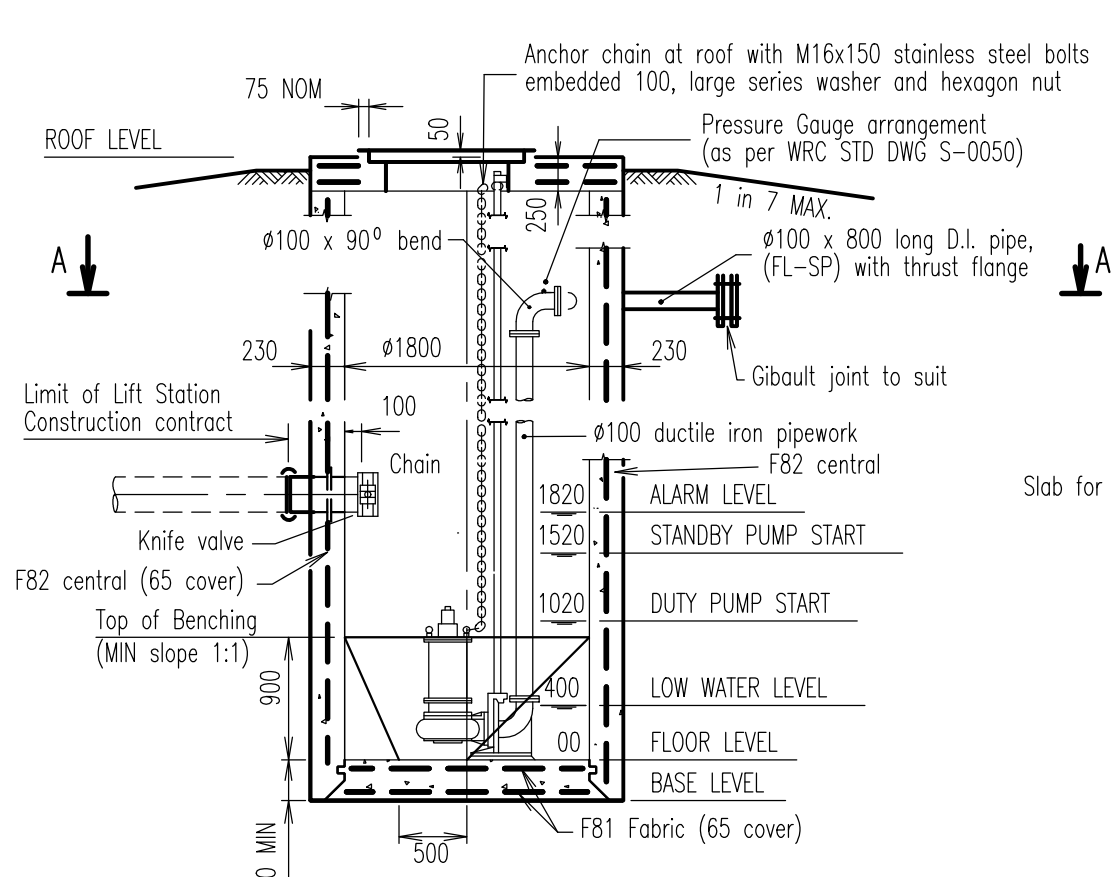
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SUBMERSIBLE SEWAGE PUMPING STATION  
12.0m VENT POLE  
TERRAIN CAT 2 AND 3

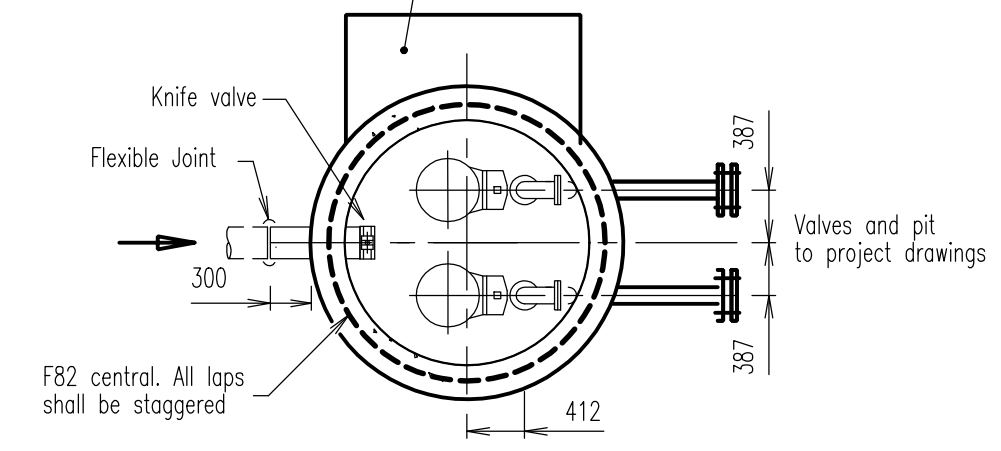
SEWERAGE Standard Drawing S-0052

A	B		
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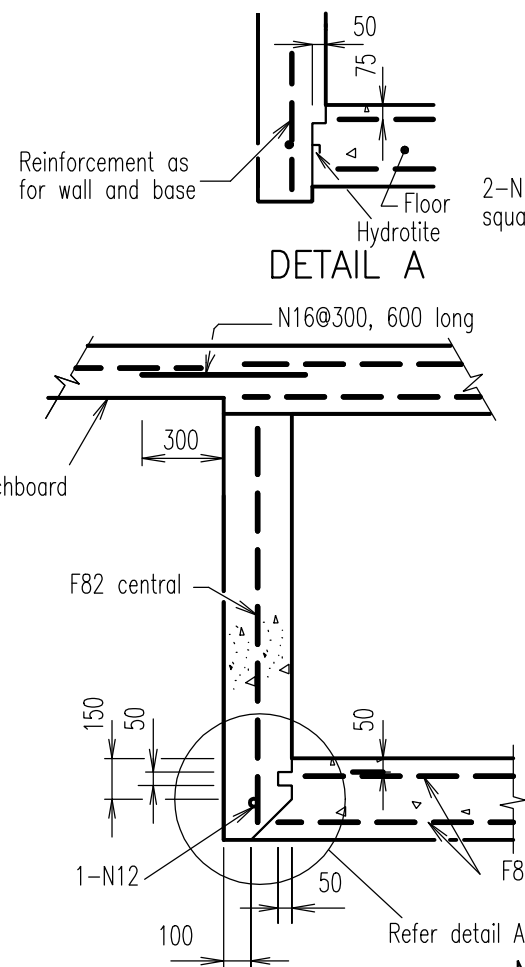


**SECTIONAL ELEVATION**

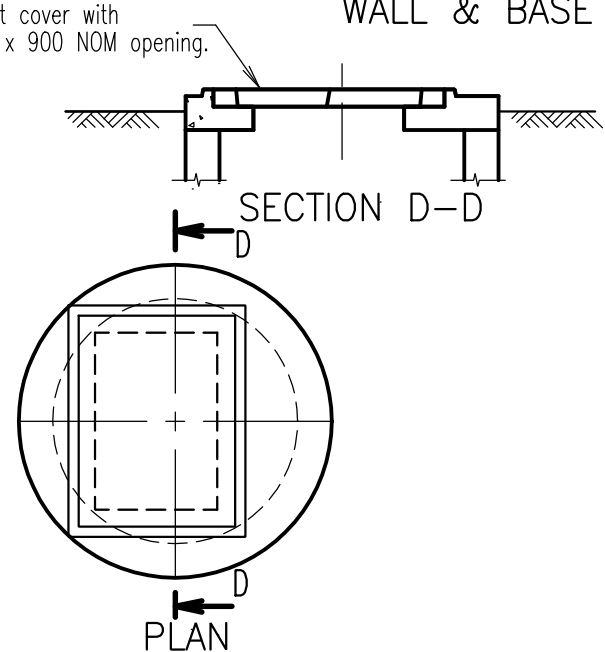
Concrete slab for switchboard 150mm thick reinforced with F82 placed centrally 50 edge cover. Refer project drawings for shape of slab and conduit requirements



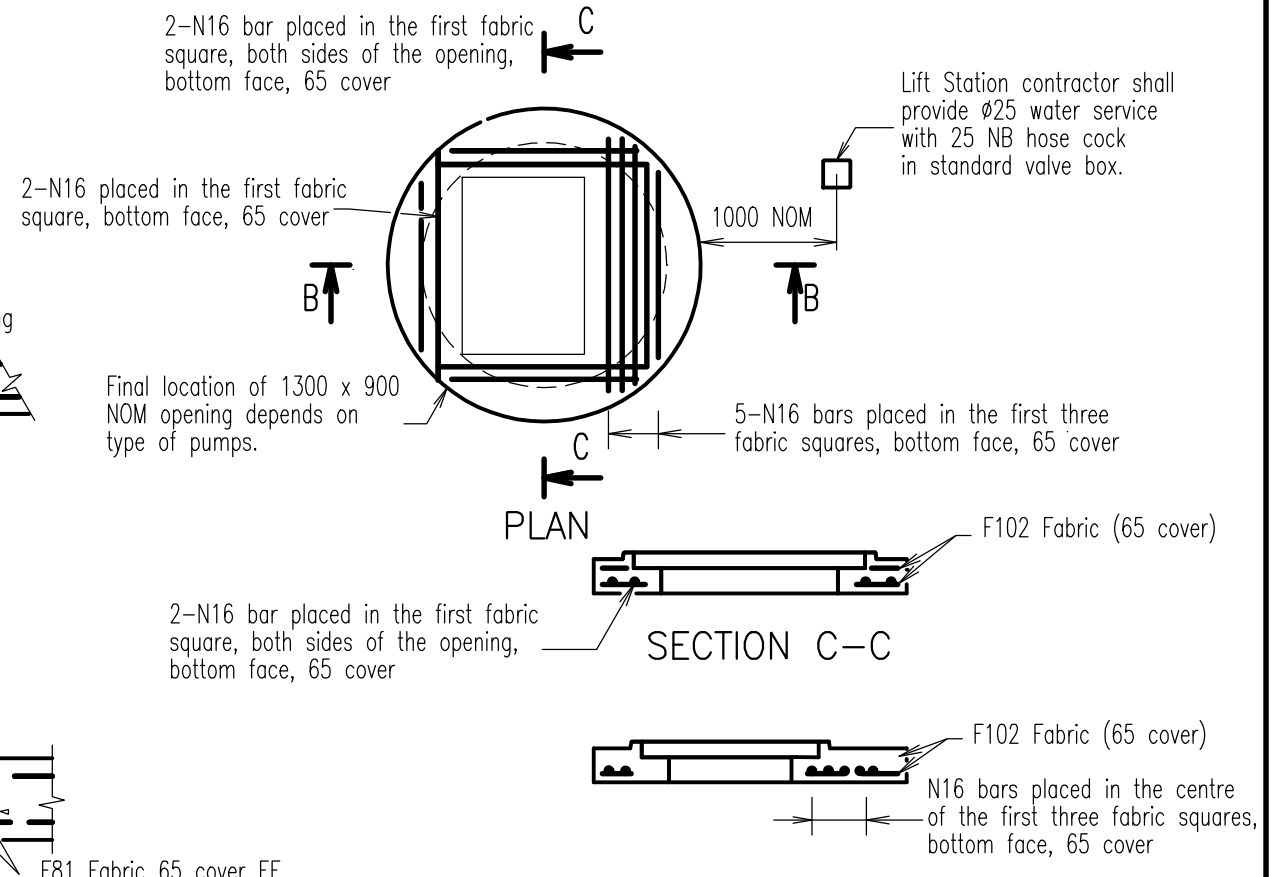
**SECTION A-A**



**WALL & BASE**



**ALUMINIUM COVERS**



**SECTION B-B**

**NOTES: REINFORCEMENT DETAILS**

1. Refer project documentation for specific details.
2. Joint between roof and walls shall be well scabbled and roof shall be bedded in mortar containing an approved waterproof adhesive additive to manufacturer's instructions.
3. Concrete S32 in accordance with AS 1379:2007 and AS 3600:2009.
4. Steel reinforcing bars and fabric to AS 4671:2001.
5. All internal surfaces of the pumpwell and valve pit shall be coated with Peerless Emulsion "Epigen 1311" or Wattyl "Sigmaguard CSF75". The concrete surface shall be smooth and free from holes and lightly sandblasted or acid-etched before painting. The concrete surface shall have cured for not less than 28 days. The paint shall be applied in two coats with a total dry film thickness of not less than 600 microns.
6. Floor thicknesses shown are minimum only, thickness to counter flotation of structure shall be determined by the designer.
7. The covers shall be gastight similar to those produced by Halco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998 All embedded surfaces shall be painted with two coats of alkali resistant bitumous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
8. If covers are subject to vehicular loading, use appropriately rated C.I. covers to AS 3996:2006.
9. All welds to AS 1554.1:2014 All welding symbols comply with AS 1101.3:2005.
10. An overflow shall be provided with the invert level 300 below the surface level of the lowest chamber in the system, subject to the approval by D.E.H.
11. Roof design to Austroads W7 wheel load, dynamic factor 0.4.
12. Wall reinforcement based on well depth of 8m MAX.
13. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B KNIFE VALVES ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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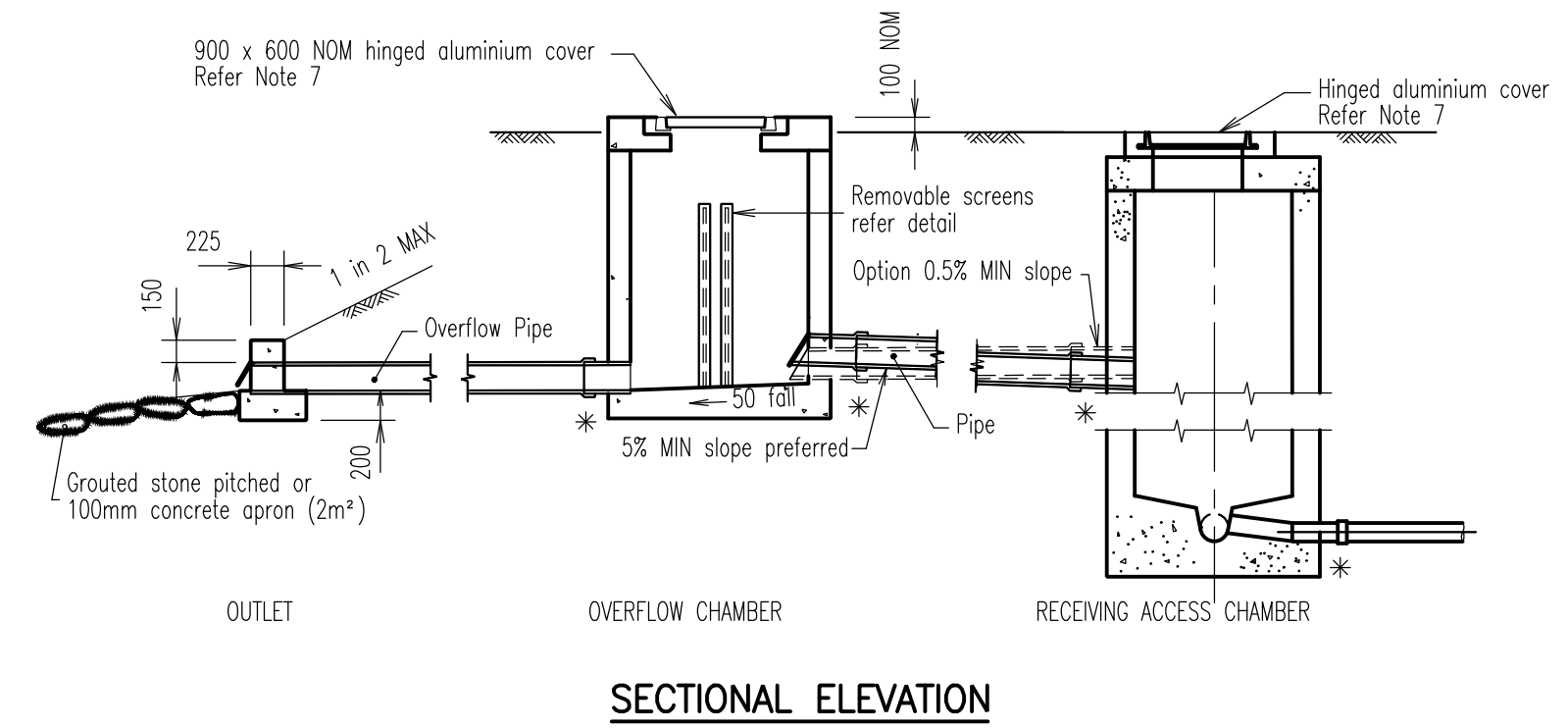
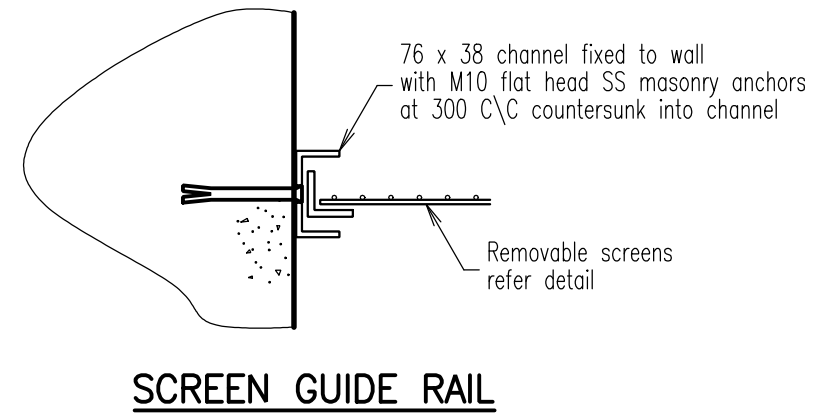
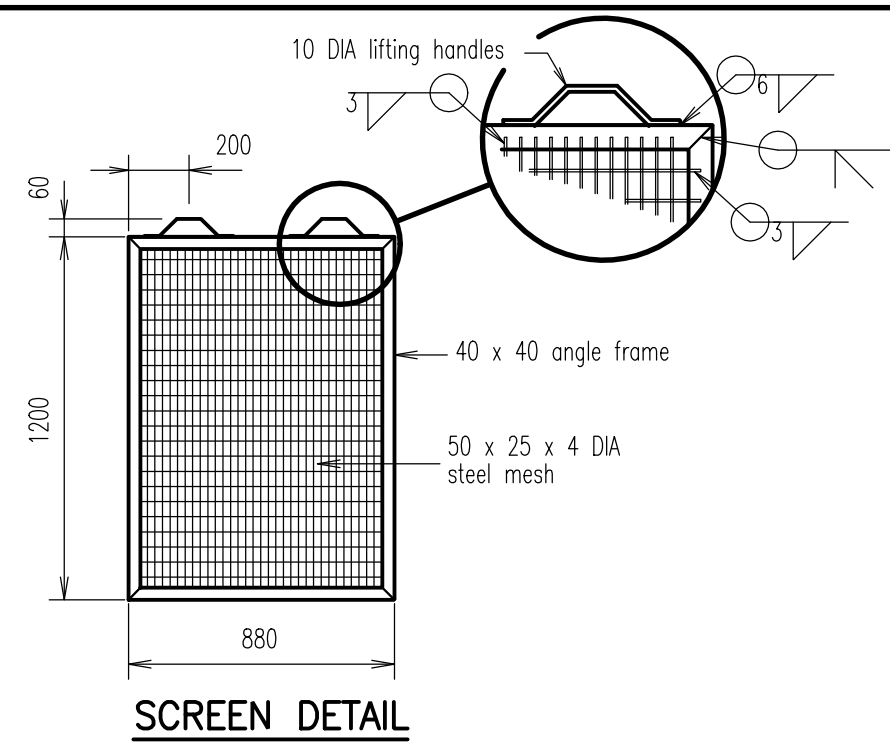
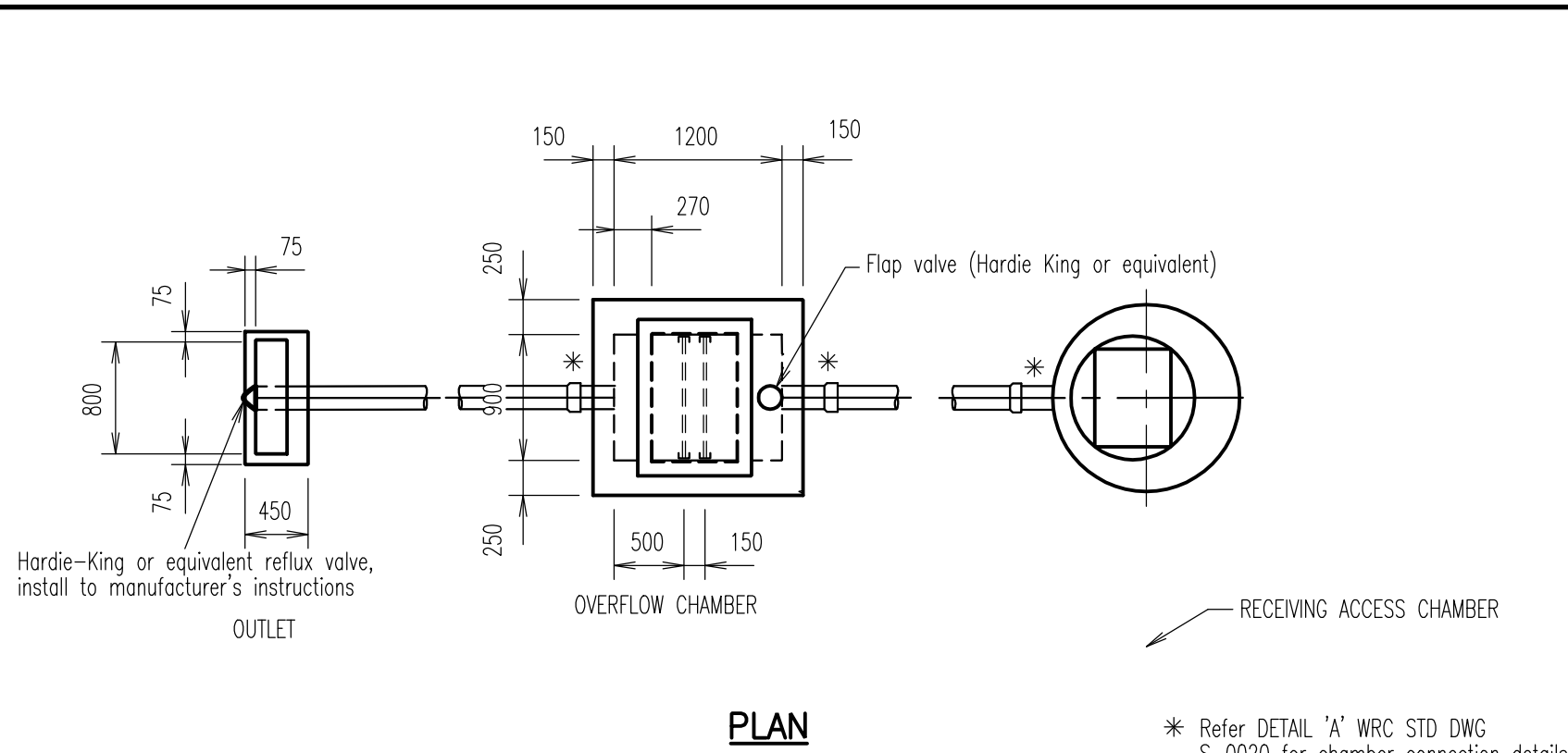
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**LIFT STATION – SUBMERSIBLE  
1800mm DIAMETER (0-20L/Sec)**

**SEWERAGE  
Standard  
Drawing  
S-0057**

A	B	C	
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- NOTES:**
1. Pipes shown are diagrammatic only, refer project drawings for layout and levels.
  2. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  3. All steelwork hot dip galvanised to AS/NZS 4680:2006 after fabrication.
  4. All bars and angles Grade 250 to AS/NZS 3679.1:2016.
  5. All bolts, nuts and washers shall be Grade AS 1444:2007 stainless steel with approved anti-galling compound.
  6. All welds to AS 1554.1:2014 All welding symbols comply with AS 1101.3:2005.
  7. The covers shall be gastight similar to those produced by Hallco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998. All embedded surfaces shall be painted with two coats of alkali resistant bitumous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
  8. If covers are subject to vehicular loading, use appropriately rated C.I. covers.
  9. All dimensions in millimetres.

REVISIONS	DATE
B GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A ORIGINAL ISSUE	1/3/97



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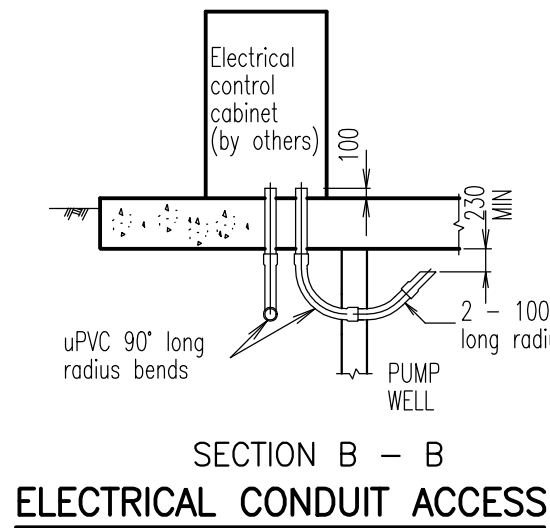
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**PUMP STATION OVERFLOW**

**SEWERAGE Standard Drawing S-0058**

A	B		
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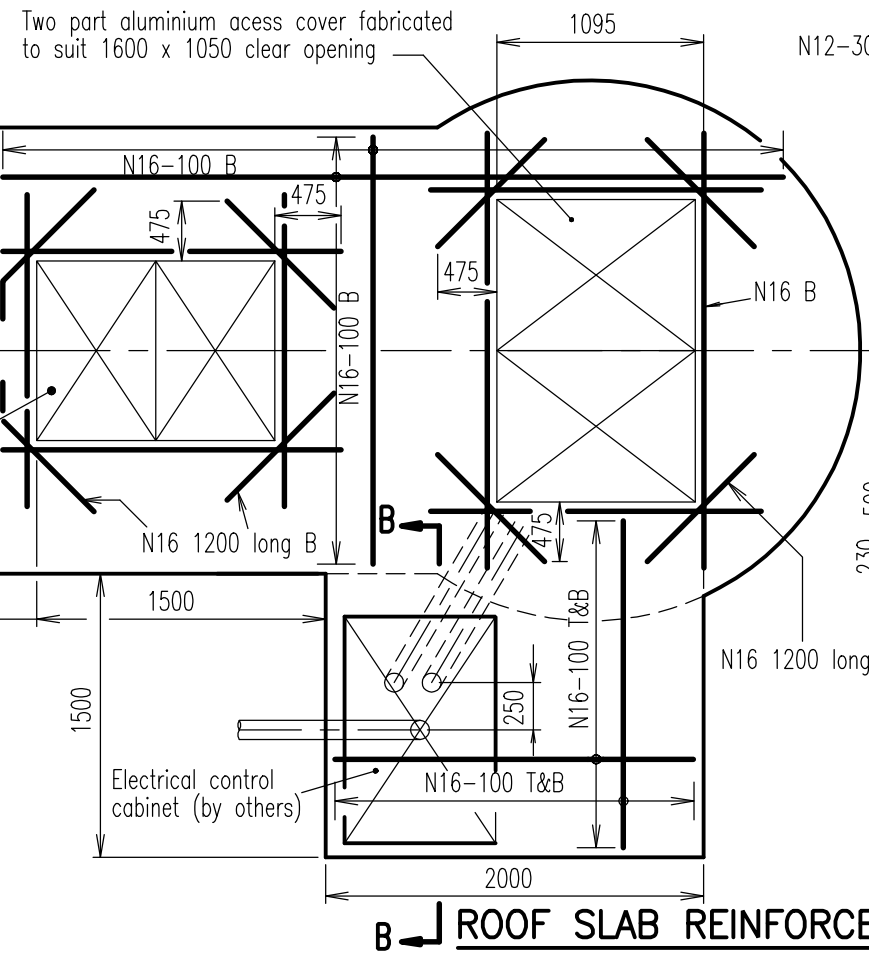
PIPE SCHEDULE

MARK	DESCRIPTION	DIA.	No. OFF
P1	Flange and plain pipe x 3600 - Length cut to suit	150	2
P2	Uniflange	150	2
P3	Flanged 90° bend with 25mm DIA. B.S.P. tapping	150	2
P4	Flanged pipe x 800 long with central thrust flange	150	2
P5	Flange and spigot connector	150	2
P6	Gibault joint (long type)	150	4
P7	Plain pipe x 900 long	150	2
P8	Socketed 45° D.I.C.L. bend	150	1
P9	Socketed 45° D.I.C.L. angle branch	150	1
P10	Socketed D.I.C.L. taper	150x225	1
V1	Flanged reflux valve with counter weight	150	2
V2	Flanged sluice valve with hardwheel	150	2

⊗ Epoxy coated as specified, refer project documentation.

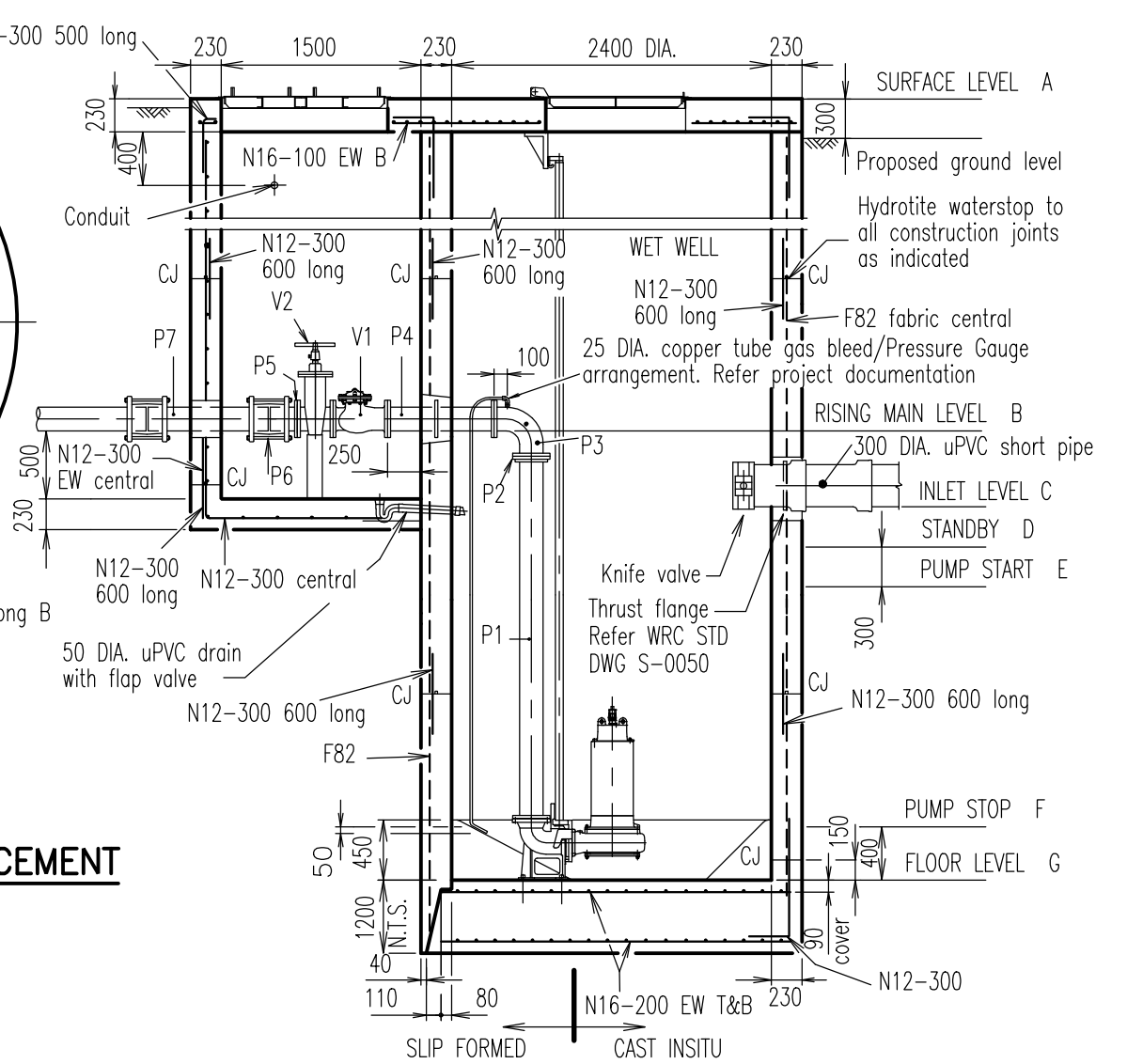
NOTES:

- Concrete S40 in accordance with AS 1379:2007 and AS 3600:2009.
- Cored holes in well for pipework shall be tapered, being 25 larger in diameter than the flange at the inside face and 50 larger at the outside face.
- Steel wire fabric to AS/NZS 4671:2001.
- Steel reinforcing bars Grade 400 to AS/NZS 4671:2001.
- Laps in reinforcing shall be 300 MIN. for bars and 1 (one) mesh spacing for fabric.
- Reinforcement cover 65 MIN except where noted otherwise.
- All internal surfaces of the pumpwell and valve pit shall be coated with Peerless Emulsion "Epigen 1311" or Wattyl "Sigmaguard CSF75". The concrete surface shall be smooth and free from holes and lightly sandblasted or acid-etched before painting. The concrete surface shall have cured for not less than 28 days. The paint shall be applied in two coats with a total dry film thickness of not less than 600 microns.
- Pumpwell concrete opening size shall be 1600 x 1050 and valve box concrete opening size shall be 1260 x 950 with aluminium covers, refer WRC STD DWG S-0060. (Consult Pump manufacturer)
- Location of conduits to be confirmed by Superintendent prior to construction of plinth.
- All dimensions in millimetres unless otherwise specified.

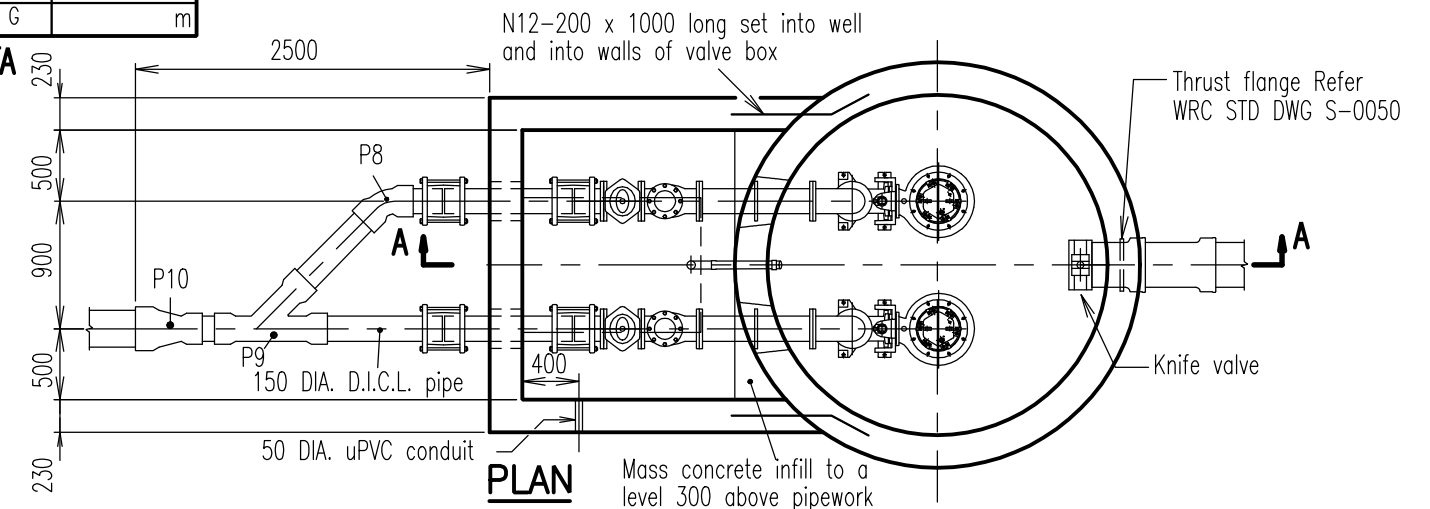


ROOF SLAB REINFORCEMENT

STATION DATA	
Make of pump	
Model number	
Duty flow / head	As specified
Surface Level	A
Rising Main Level	B
Inlet Level	C
Standby Level (300 below C)	D
Duty Start Level	E
Pump Stop Level	F
Floor Level (400 below F)	G



SECTION A - A



PLAN

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B KNIFE VALVES ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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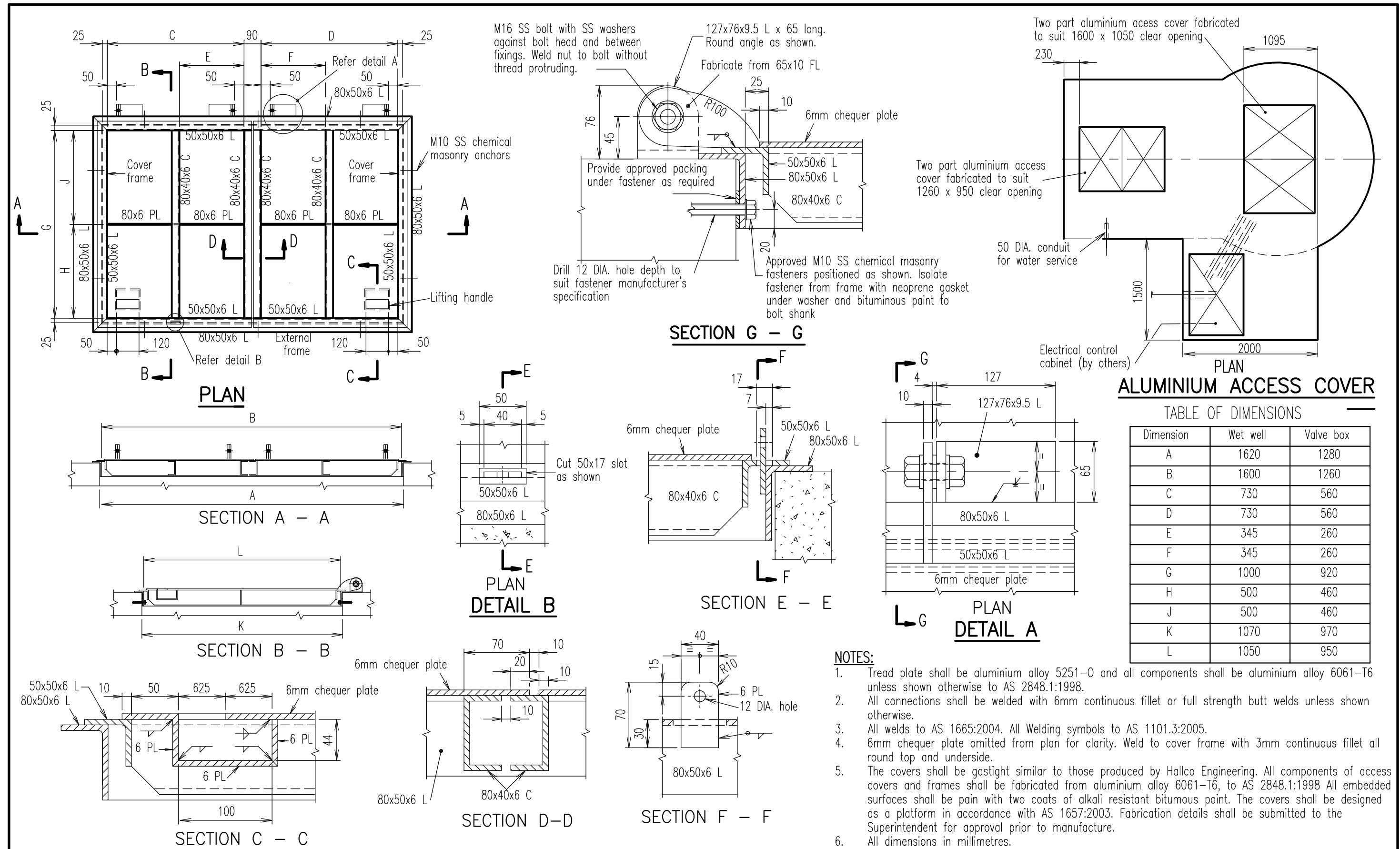
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**SUBMERSIBLE SEWAGE  
PUMPING STATION  
GENERAL ARRANGEMENT -  
REINFORCEMENT 2400mm DIA.**

**SEWERAGE  
Standard  
Drawing  
S-0059**

A B C



**ALUMINIUM ACCESS COVER**

TABLE OF DIMENSIONS

Dimension	Wet well	Valve box
A	1620	1280
B	1600	1260
C	730	560
D	730	560
E	345	260
F	345	260
G	1000	920
H	500	460
J	500	460
K	1070	970
L	1050	950

**NOTES:**

1. Tread plate shall be aluminium alloy 5251-0 and all components shall be aluminium alloy 6061-T6 unless shown otherwise to AS 2848.1:1998.
2. All connections shall be welded with 6mm continuous fillet or full strength butt welds unless shown otherwise.
3. All welds to AS 1665:2004. All Welding symbols to AS 1101.3:2005.
4. 6mm chequer plate omitted from plan for clarity. Weld to cover frame with 3mm continuous fillet all round top and underside.
5. The covers shall be gastight similar to those produced by Halco Engineering. All components of access covers and frames shall be fabricated from aluminium alloy 6061-T6, to AS 2848.1:1998 All embedded surfaces shall be pain with two coats of alkali resistant bituminous paint. The covers shall be designed as a platform in accordance with AS 1657:2003. Fabrication details shall be submitted to the Superintendent for approval prior to manufacture.
6. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B NOTE 5 ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97

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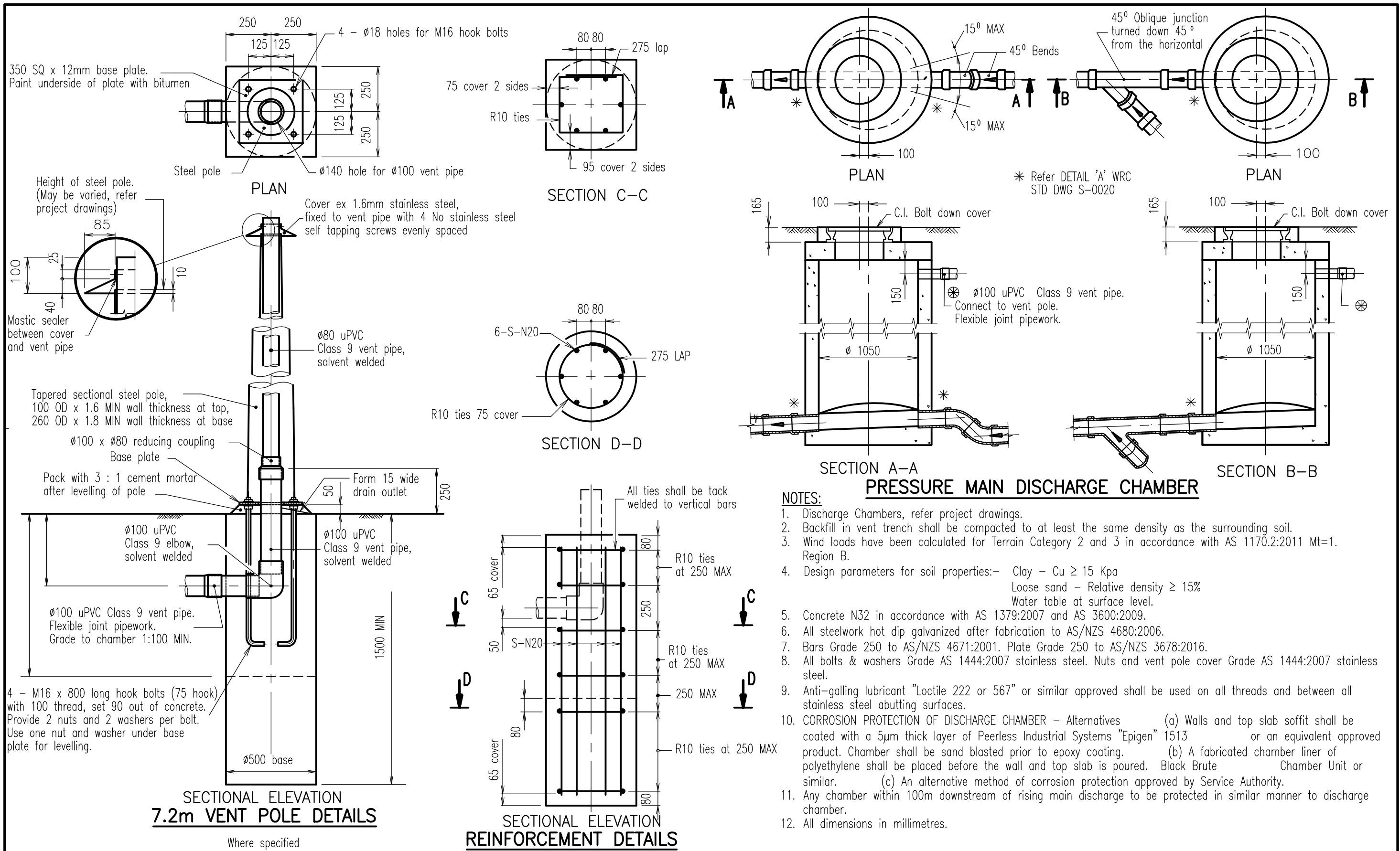
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**SUBMERSIBLE SEWAGE PUMPING STATION**  
**ALUMINIUM COVERS AND FRAMES**  
**2400mm DIA.**

**SEWERAGE Standard Drawing S-0060**

A B C



- NOTES:**
- Discharge Chambers, refer project drawings.
  - Backfill in vent trench shall be compacted to at least the same density as the surrounding soil.
  - Wind loads have been calculated for Terrain Category 2 and 3 in accordance with AS 1170.2:2011 Mt=1. Region B.
  - Design parameters for soil properties:- Clay -  $C_u \geq 15$  Kpa  
 Loose sand - Relative density  $\geq 15\%$   
 Water table at surface level.
  - Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
  - All steelwork hot dip galvanized after fabrication to AS/NZS 4680:2006.
  - Bars Grade 250 to AS/NZS 4671:2001. Plate Grade 250 to AS/NZS 3678:2016.
  - All bolts & washers Grade AS 1444:2007 stainless steel. Nuts and vent pole cover Grade AS 1444:2007 stainless steel.
  - Anti-galling lubricant "Loctite 222 or 567" or similar approved shall be used on all threads and between all stainless steel abutting surfaces.
  - CORROSION PROTECTION OF DISCHARGE CHAMBER - Alternatives**  
 (a) Walls and top slab soffit shall be coated with a 5µm thick layer of Peerless Industrial Systems "Epigen" 1513 or an equivalent approved product. Chamber shall be sand blasted prior to epoxy coating.  
 (b) A fabricated chamber liner of polyethylene shall be placed before the wall and top slab is poured. Black Brute Chamber Unit or similar.  
 (c) An alternative method of corrosion protection approved by Service Authority.
  - Any chamber within 100m downstream of rising main discharge to be protected in similar manner to discharge chamber.
  - All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97


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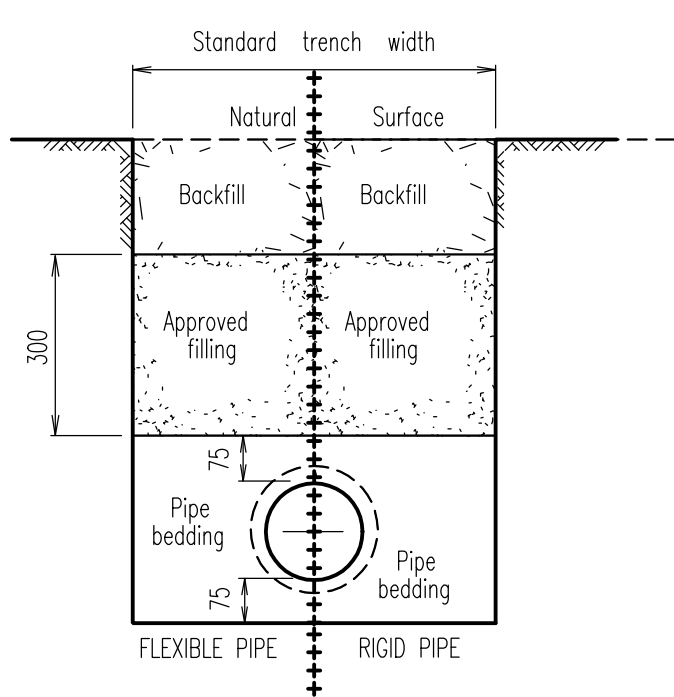
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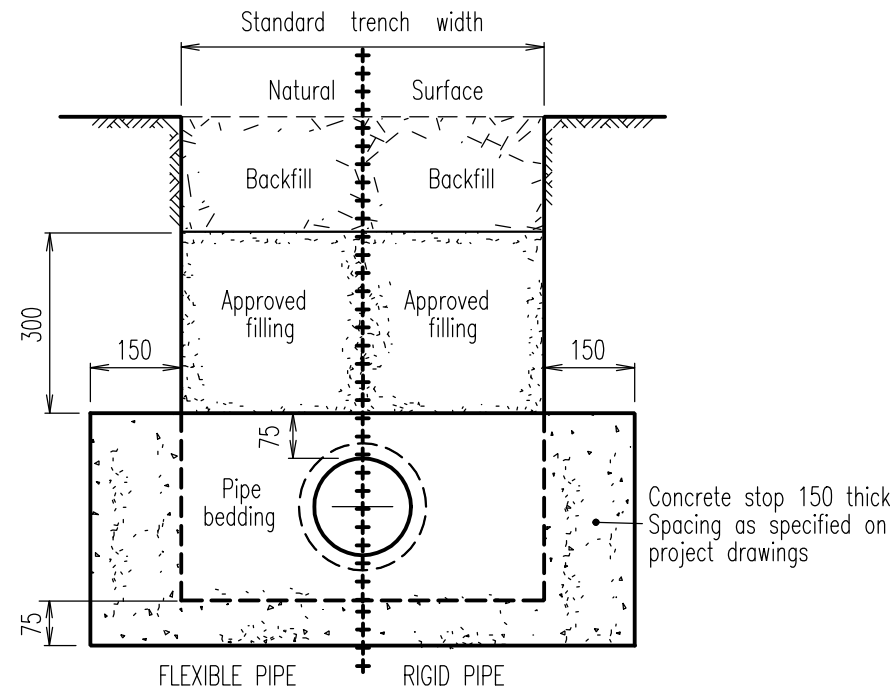
**PRESSURE MAIN DISCHARGE DETAILS**

**SEWERAGE Standard Drawing S-0070**

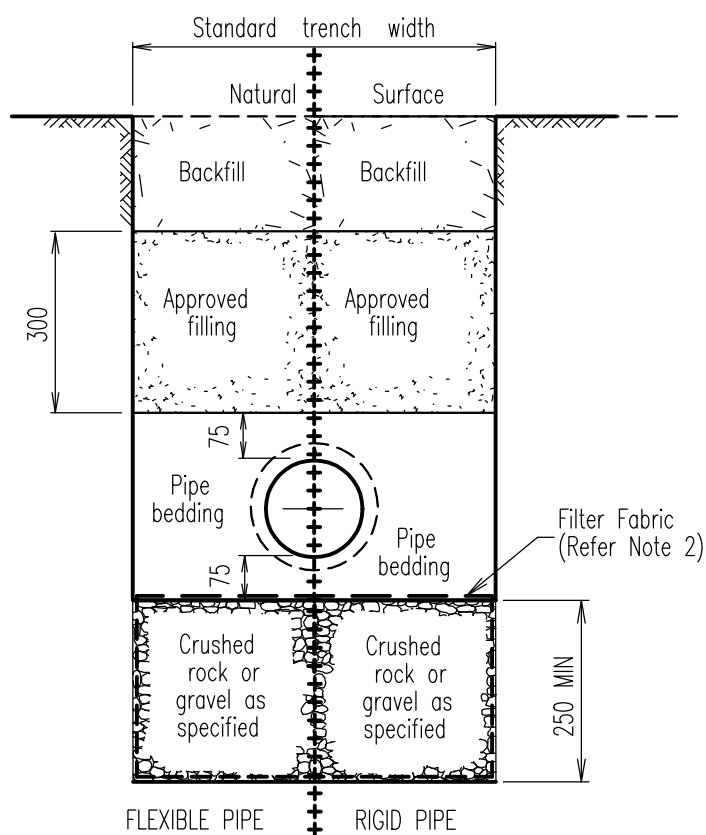
A B C



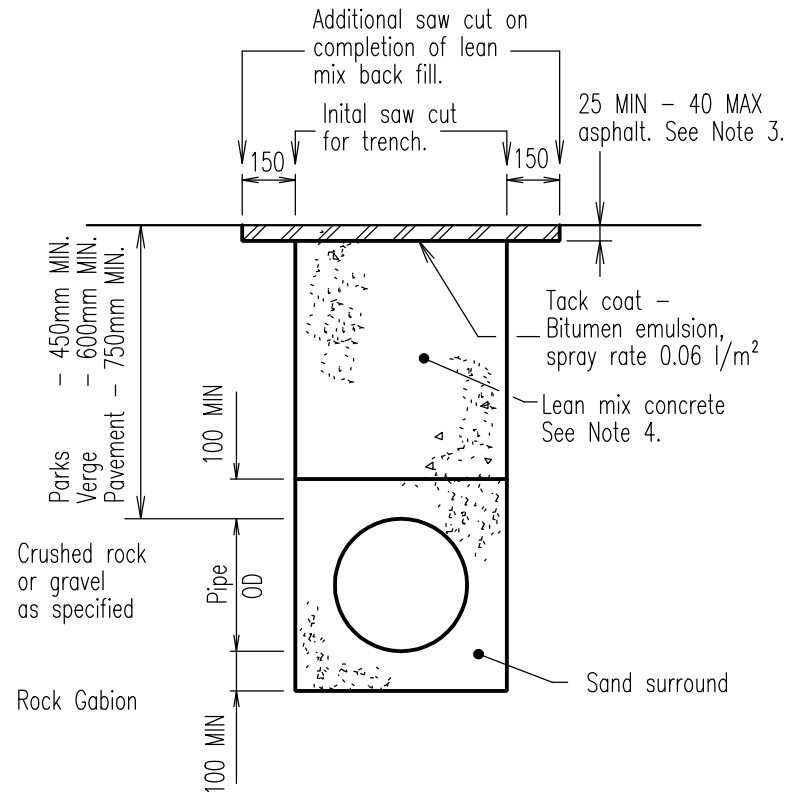
**TYPICAL BEDDING**



**TRENCH STOP/BULKHEAD**



**TYPICAL BEDDING IN POOR GROUND**



**TYPICAL BEDDING UNDER EXISTING ROADS**

Refer to WSA-02 for bedding and backfill details where conditions vary from these shown hereon.

**NOTES:**

- Pipe bedding classification
  - Rigid Pipes : Vitrified clay, steel, ductile iron, fibre cement and concrete.
  - Flexible Pipes : Unplasticised polyvinyl chloride, glass filament reinforced thermosetting plastics, acrylonitrile butadiene styrene and polyethylene.
- An approved geotextile fabric shall be used in all trenches around crushed rock pipe bedding.
- The road surface finish shall be asphaltic concrete or other surface specified in the project drawings or by the Superintendent.
- Backfilling under roads shall be lean mix (1:20) low slump concrete (or an approved equivalent) compacted in lifts of 125 to 150mm.
- Sand surround (compacted in 150mm layers) > 70% D.I. or 95% standard compaction in bedding and side support. Density index (D.I.) as per AS 1289.5.6.1:1998 Standard compaction as per AS 1289.5.1.1:2003.
- Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
- All dimensions in millimetres.

DIA of Pipe	100	150	225	300	375	450	525	600	675	750	825	900
Standard trench width	600	600	675	750	825	900	1000	1075	1150	1300	1375	1450

B	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
A	ORIGINAL ISSUE	1/3/97
REVISIONS		DATE



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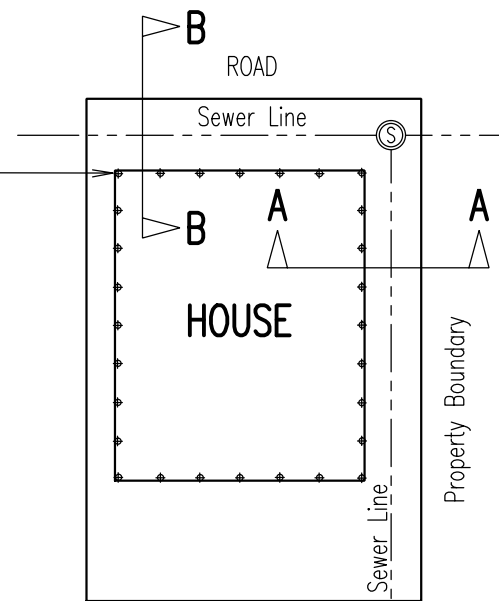
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**SEWER CONSTRUCTION  
PIPELINE CONSTRUCTION TYPES**

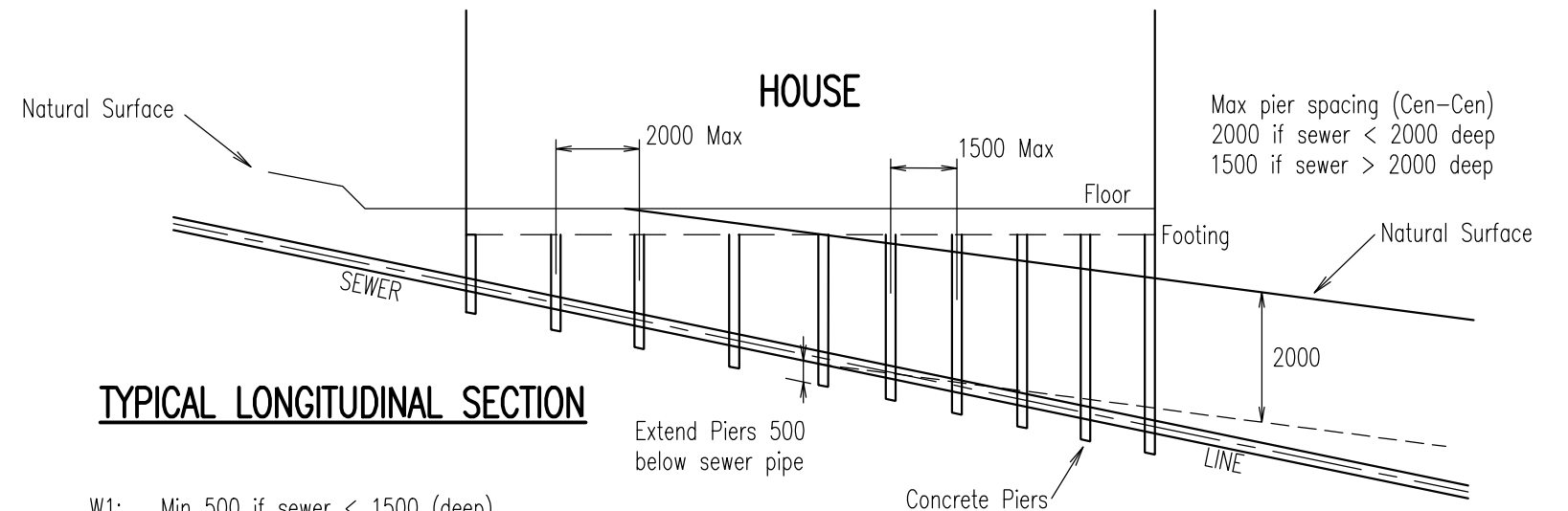
**SEWERAGE  
Standard  
Drawing  
S-0090**

A	B		
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Concrete Piers  
 Max pier spacing (Cen-Cen)  
 2000 if sewer < 2000 deep  
 1500 if sewer > 2000 deep



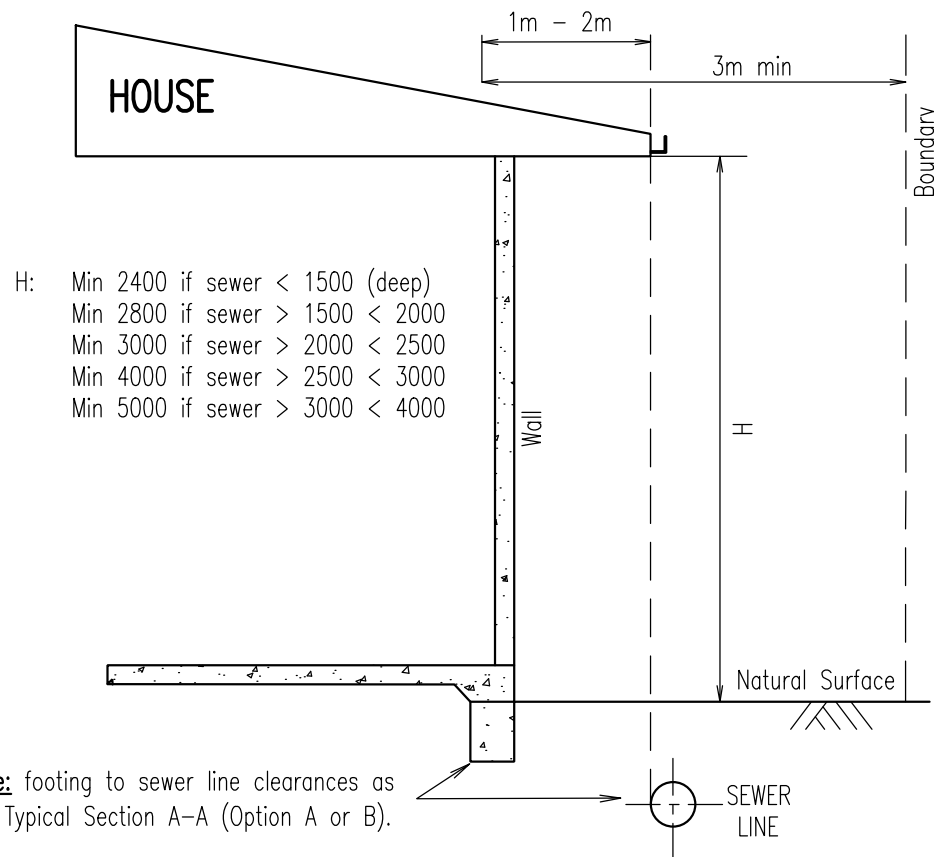
**TYPICAL SITE PLAN**



**TYPICAL LONGITUDINAL SECTION**

W1: Min 500 if sewer < 1500 (deep)  
 Min 800 if sewer > 1500 < 2000  
 Min 1000 if sewer > 2000 < 2500  
 Min 1200 if sewer > 2500

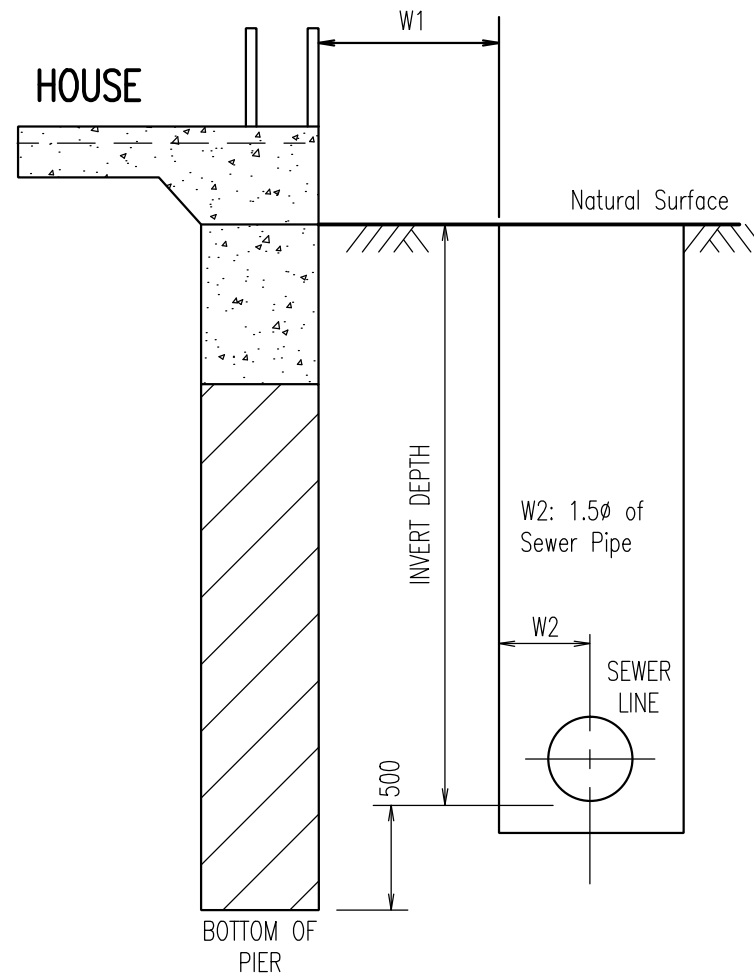
**Note:** Invert Depths of conc piers sewer pipe to be supplied with building plans



H: Min 2400 if sewer < 1500 (deep)  
 Min 2800 if sewer > 1500 < 2000  
 Min 3000 if sewer > 2000 < 2500  
 Min 4000 if sewer > 2500 < 3000  
 Min 5000 if sewer > 3000 < 4000

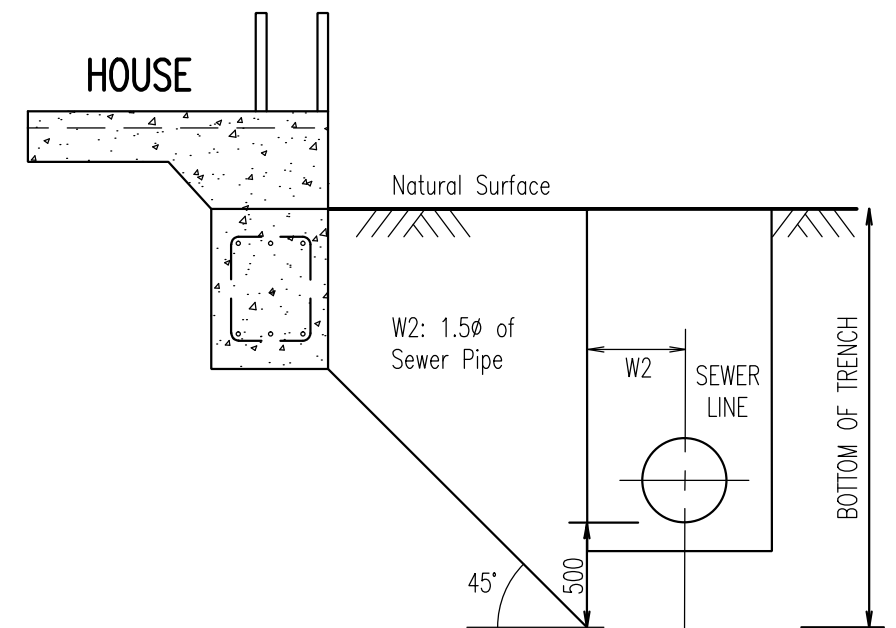
**Note:** footing to sewer line clearances as per Typical Section A-A (Option A or B).

**TYPICAL SECTION B-B ROOF EAVE CLEARANCE**



**TYPICAL SECTION A-A OPTION A (PIERS)**

Where line of influence cannot be achieved



**TYPICAL SECTION A-A OPTION B (RING BEAM)**

• Alternatively provide soil analysis, specifically pressure bulb testing.

**NOTES:**

- Design to be Certified as providing for adequate support to building in the event of maintenance excavation to adjacent sewer pipeline.
- All dimensions in millimetres.

REVISIONS	DATE
F GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	6/5/16
E DIMENSIONAL CHANGES, EAVE CLEARANCE ADDED	25/8/10
D MINOR DIMENSIONAL CHANGES	06/9/07
C 1500 MIN CHANGE	15/6/98
B DIMENSIONAL CHANGES	10/3/98
A ORIGINAL ISSUE	1/3/97



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**PIER DETAILS FOR BUILDINGS  
 IN CLOSE VICINITY TO SEWER LINE**

**SEWERAGE  
 Standard  
 Drawing  
 S-0091**

B C D E F

Std. Dwg. No.	Descriptions	Std. Dwg. No.	Descriptions
	<b>AIR VALVES</b>		<b>WATER CONNECTIONS AND METERING</b>
W-0010	AIR VALVE PIT, $\phi$ 50 AND $\phi$ 80 VALVES	W-0090	WATER CONNECTIONS SINGLE AND DOUBLE ABOVE GROUND METER
	<b>AS CONSTRUCTED</b>	W-0091	WATER CONNECTION SINGLE AND DOUBLE BELOW GROUND METER
W-0020	WATER RETICULATION, SAMPLE AS CONSTRUCTED PLAN	W-0092	WATER CONNECTION SINGLE AND DOUBLE ABOVE GROUND METER ALTERNATIVES
W-0021	WATER TRUNK MAIN, SAMPLE AS CONSTRUCTED PLAN	W-0093	SUPPLY WITH AND WITHOUT BYPASS
	<b>BACKFLOW</b>	W-0094	INDUSTRIAL WATER METERING COMBINED FIRE MAIN & DOMESTIC SUPPLY 80mm OR GREATER
W-0030	BACKFLOW PREVENTION DEVICE, SLAB AND POLE MOUNTED CUBICLE	W-0095	WATER SERVICE METERS MULTIPLE OFF-TAKE MANIFOLD WITH 50mm INPUT SUPPLY
W-0031	BACKFLOW PREVENTION, FIRE AND DOMESTIC SERVICE CONNECTION DETAILS, TYP. LAYOUT	W-0096	WATER SERVICE METERS MULTIPLE OFF-TAKE MANIFOLDS WITH 100mm INPUT SUPPLY
	<b>BEDDING AND THRUST BLOCKS</b>	W-0097	STANDARD WATER METER LOCATIONS
W-0040	BEDDING AND BACKFILL FOR WATER MAIN CONSTRUCTION	W-0100	DOMESTIC/COMMERCIAL SUPPLY 50mm METER
W-0041	WATER MAIN, THRUST BLOCK DETAILS		
W-0042	ROAD CONDUIT CROSSINGS FOR WATER AND IRRIGATION LINES (100mm TO 800mm $\phi$ )		
W-0043	WATER MAIN OFFSET CONNECTION NEW TO EXISTING		
	<b>HYDRANTS AND VALVES</b>		
W-0060	HYDRANT AND VALVE INSTALLATION		
W-0061	C.I. HYDRANT AND VALVE BOXES		
W-0062	TYPICAL VALVE BOX INSTALATION DETAILS TO SUIT 500 $\phi$ MAIN		
W-0063	TYPICAL VALVE AND HYDRANT TREATMENT WHEN LOCATED IN SEALED DRIVEWAYS AND FOOTPATHS		
	<b>SCOUR</b>		
W-0080	SCOUR DETAILS		

	REVISIONS	DATE
E	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D	W-0043b ADDED	27/9/10
C	STANDARD TEMPLATE, 92 TO 97 ADDED	8/7/08
B	W-0010,W-0020-21,W-0030-31,W-0041-42,W-0090-91	10/3/98
A	ORIGINAL ISSUE	1/3/97



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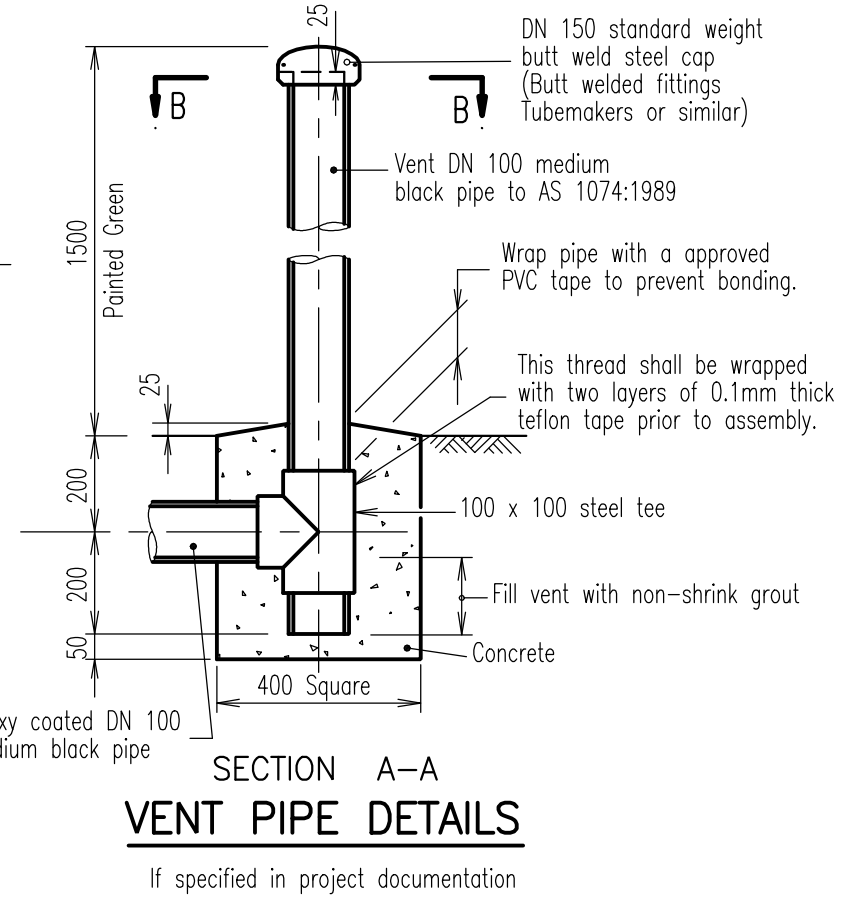
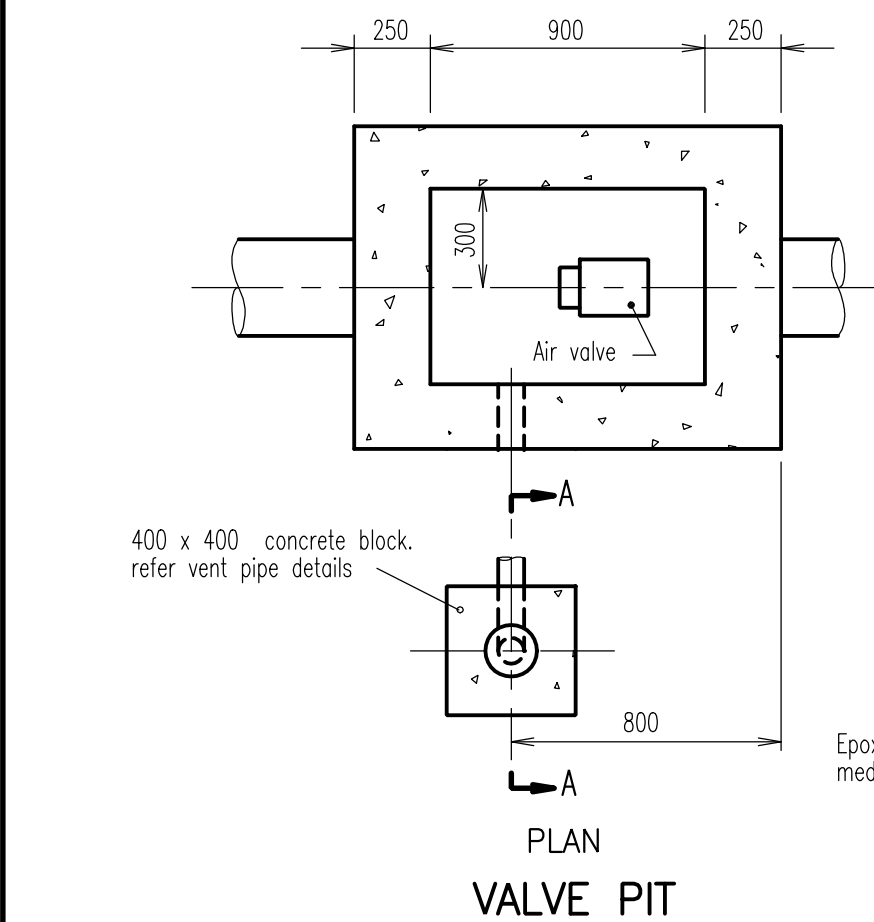
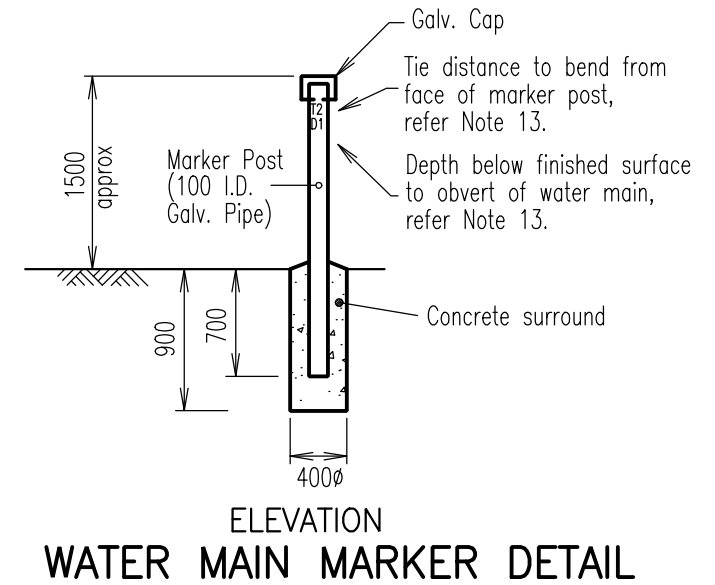
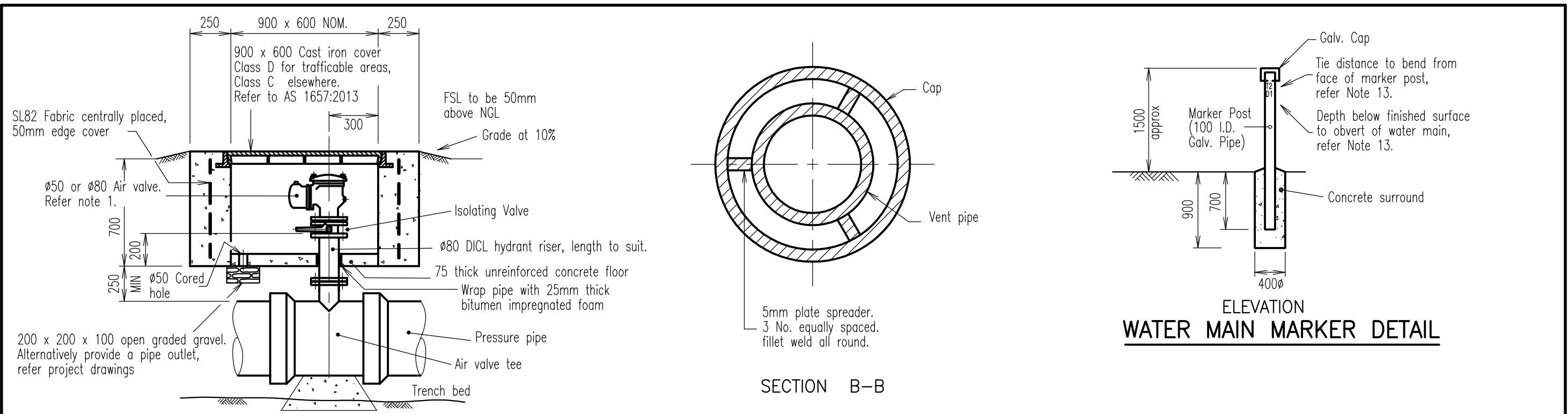
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<b>INDEX</b>
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<b>WATER</b>

<b>WATER</b>
<b>Standard</b>
<b>Drawing</b>
<b>W-0001</b>
A   B   C   D   E



- NOTES:**
- Approved Ø50 and Ø80 Air Valves, fitted with Ø80 butterfly valves for isolation purposes. The installation shall be such that the air valve can be removed while the butterfly valve remains in place.
  - Ø50 Air Valves shall be supplied with adaptor flange suitable for connection to the Ø80 DICL riser.
  - The full length of the DICL riser pipe including underground flanges shall be epoxy coated or wrapped with 'Denso' protective coating applied in accordance with the manufacturer's instructions:
    - Denso 360 primer to clean metal;
    - Wrap of cold applied Denso 760 tape;
    - Wrap of Denso 931 self adhesive PVC tape.
  - Water mains Ø250 and smaller:-  
Walls of pit to extend below pipe, provide 200mm space between water main and floor of pit.
  - Concrete N25 in accordance with AS 1379:2007 and AS 3600:2009.
  - Reinforcement fabric to AS 4671:2001.
  - Provide a fine non-slip surface with a wood float to the top surface of all walls.
  - Refer project drawing for Vent pipe location. Vent steelwork shall be painted with System Reference LP2-A to AS/NZS 2312:2014.
  - Compacted sand backfill shall be brought up to the underside of the air valve pit.
  - Air valves shall be placed on the high point of all trunk mains.
  - All flanges shall be in accordance with AS 2129:2000 - Table C unless noted otherwise on project drawings.
  - Position markers at changes of direction and all fence lines.
  - Lettering on side of marker shall be positioned directly on line between marker and water main bend. All lettering shall be painted yellow and shall be minimum 30 high x 20 wide.
  - All dimensions in millimetres.

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	15/3/12
B MINOR CHANGES TO ELEVATION DETAIL	24/8/10
A ORIGINAL ISSUE	1/3/97



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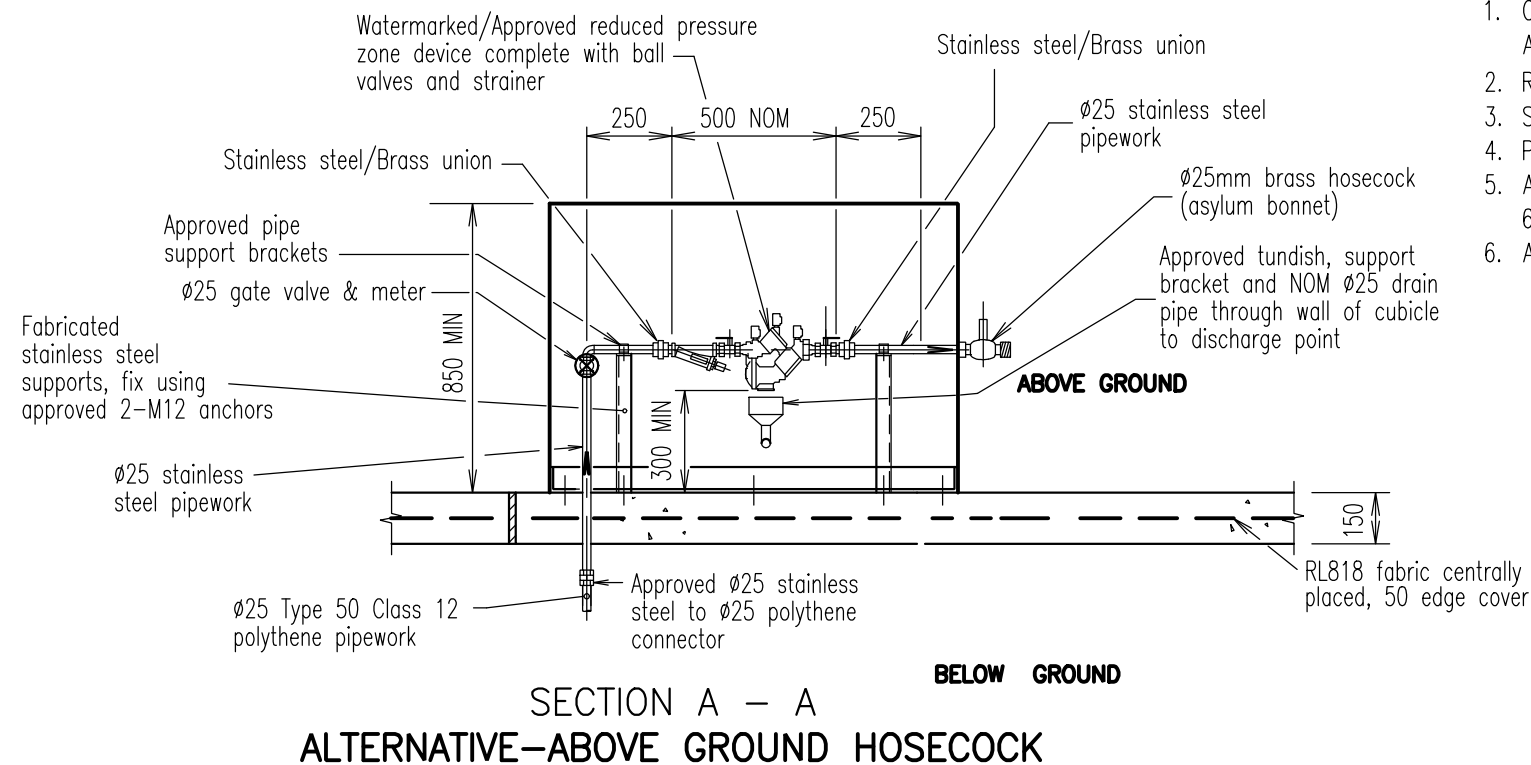
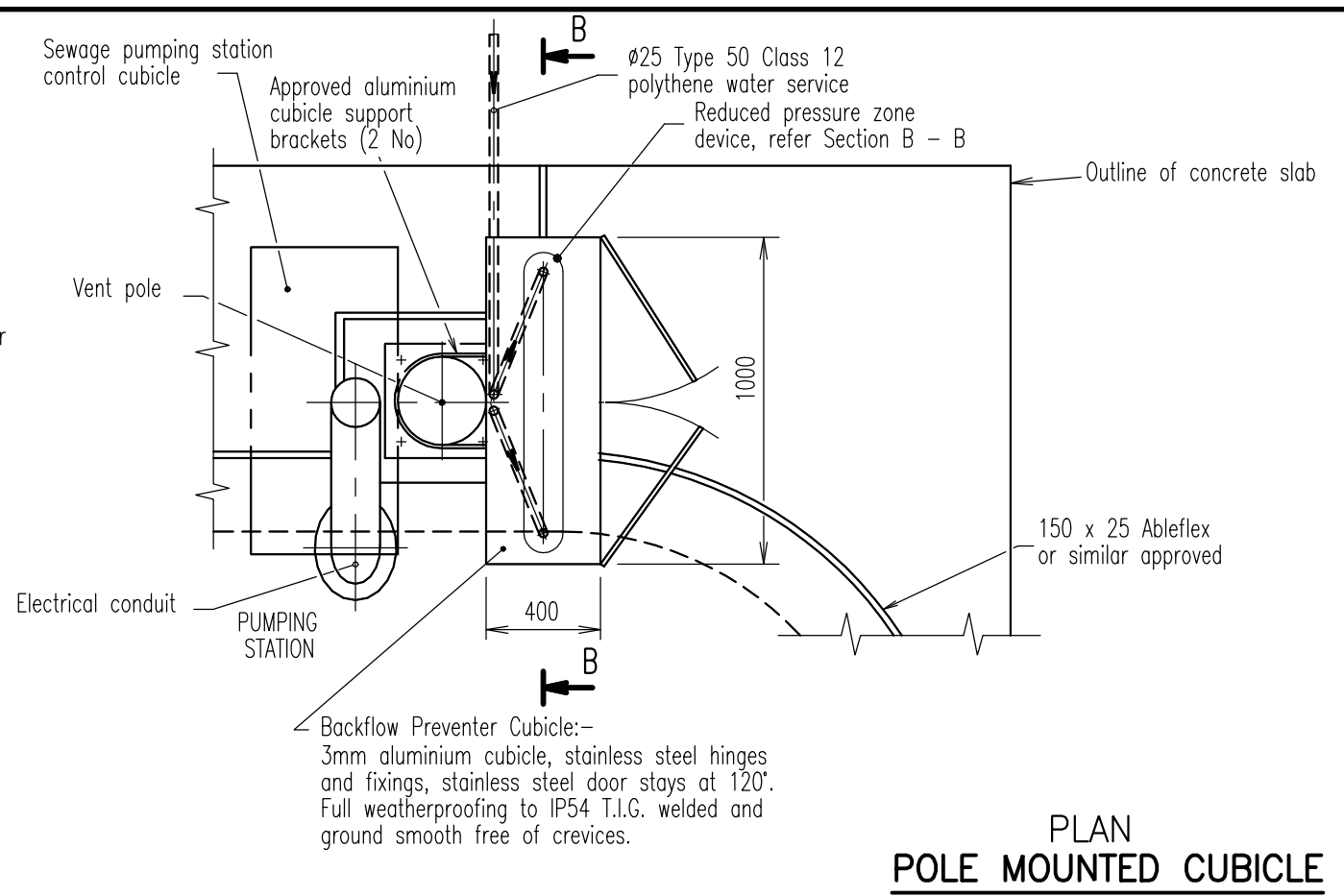
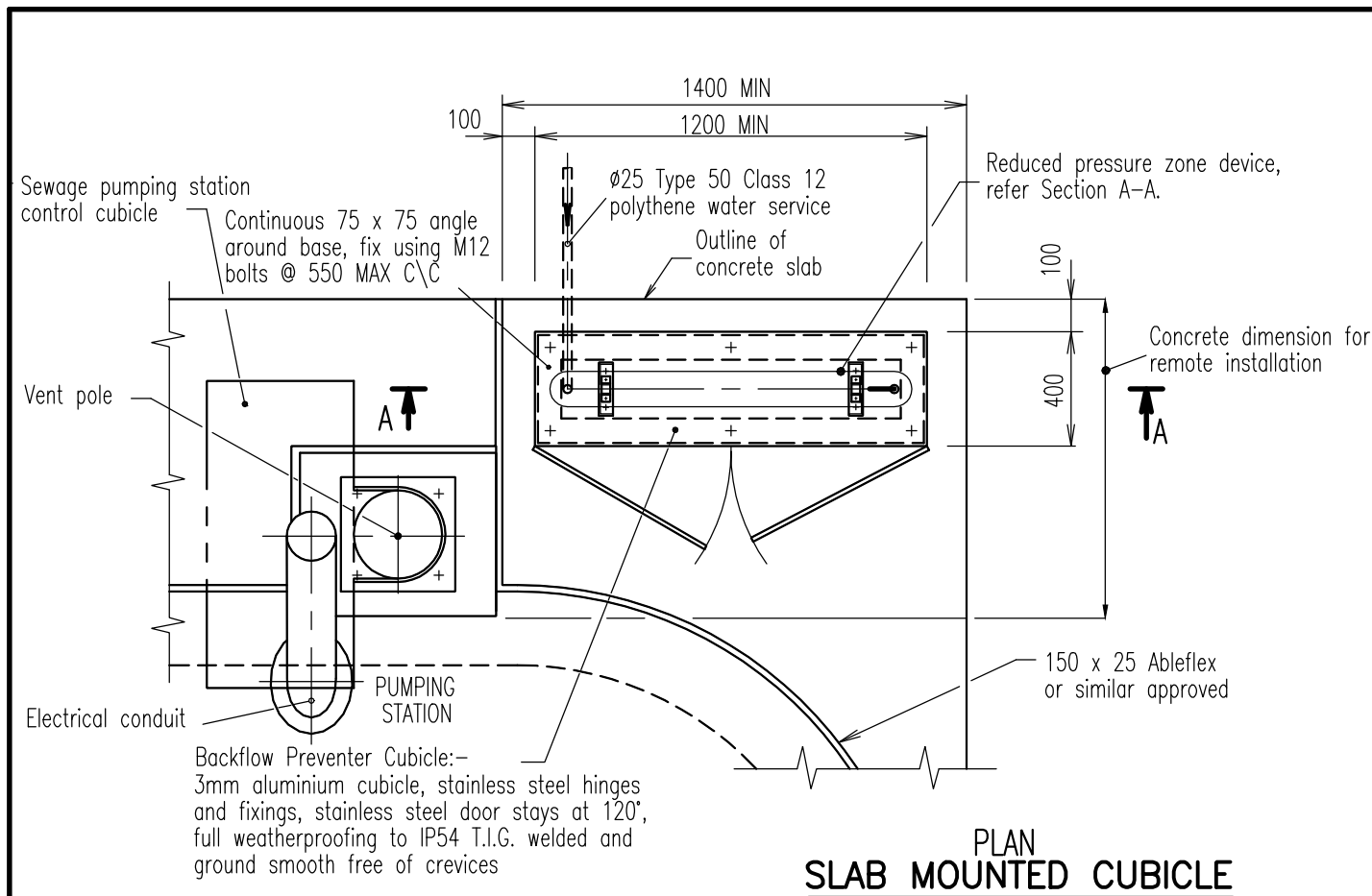
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Proserpine 4800 Q  
Ph 07 4945 0200

**AIR VALVE PIT**  
**Ø50 AND Ø80 AIR VALVES**

**WATER**  
Standard  
Drawing  
**W-0010**

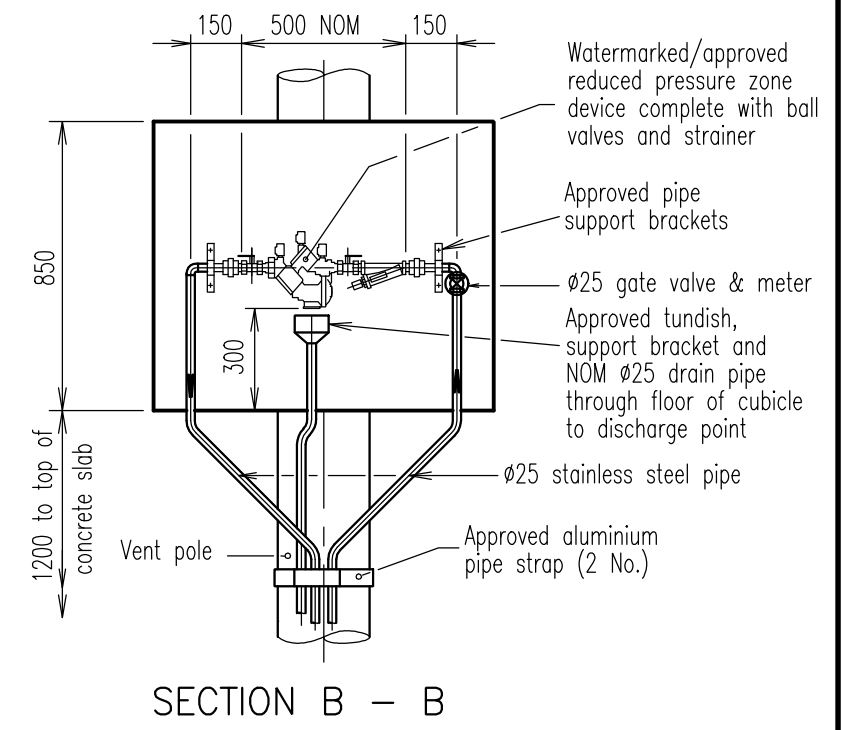
A | B | C | D





**NOTES:**

1. Concrete N32 in accordance with AS 1379:2007 and AS 3600:2009.
2. Reinforcement fabric to AS/NZS 4671:2001.
3. Stainless steel Grade AS 1444:2007.
4. Polythene pipework to AS 4130:2001.
5. Aluminium Sheet 5083-H321, Extruded sections 6061-T6, to AS 2848:1998.
6. All dimensions in millimetres.



REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D GENERAL UPDATES	26/3/12
C TEXT CHANGES	24/8/10
B MINOR AMENDMENT	1/3/97
A ORIGINAL ISSUE	1/3/97



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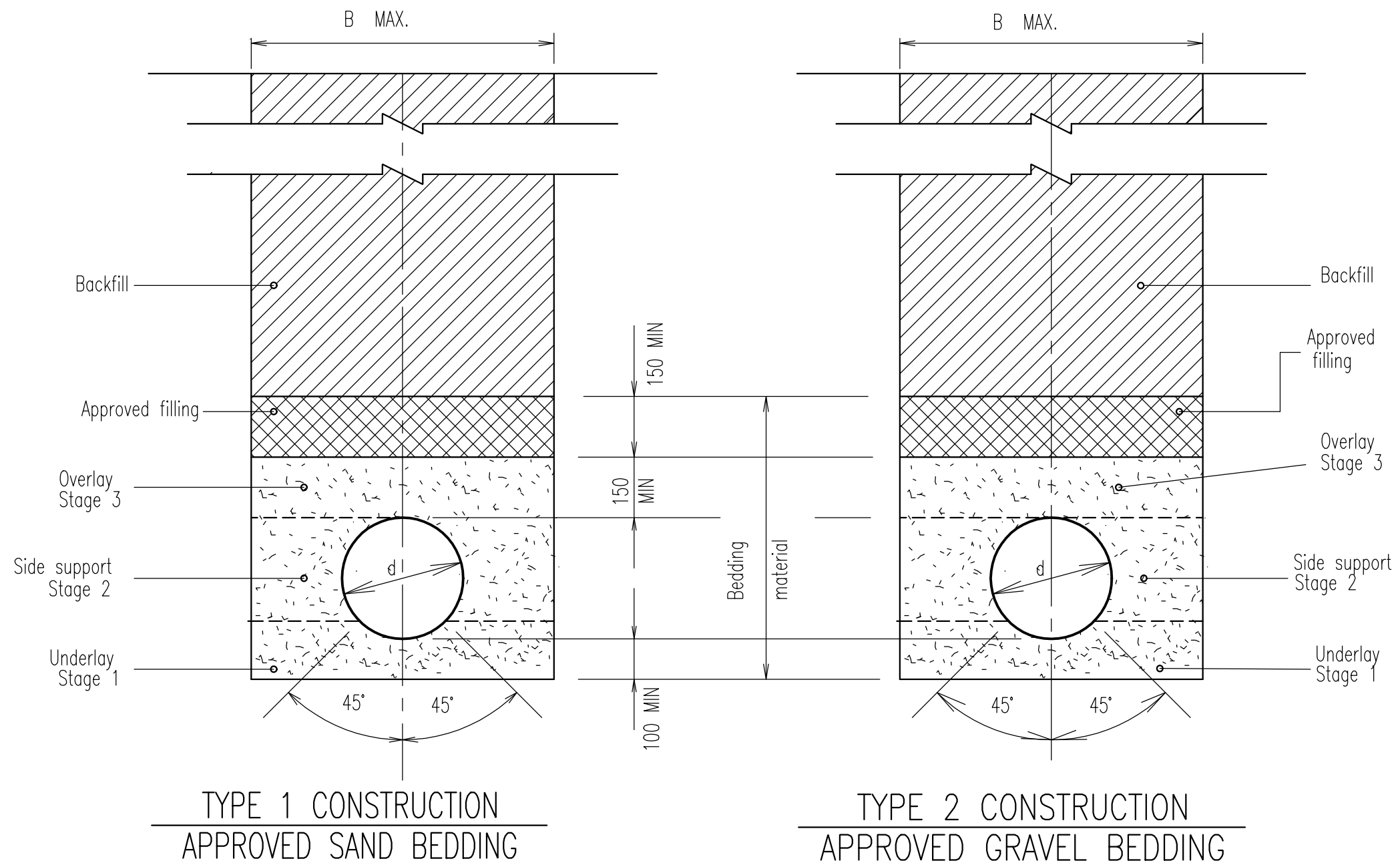
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**BACKFLOW PREVENTION DEVICE  
SLAB AND POLE MOUNTED CUBICLE**

**WATER  
Standard  
Drawing  
W-0030**

A B C D E



Refer to TMR standards for bedding and backfill details where conditions vary from those shown hereon, and when required under local & TMR roadways.

- NOTES:**
- Refer specification for definition of:
    - (a) Bedding material
    - (b) Approved filling
    - (c) Flexible pipe systems
    - (d) Geofabric
    - (e) Backfill
    - (f) Stabilized sand filling
    - (g) Lean mix concrete
    - (h) Pavement
  - Spacing of concrete anchor blocks
    - Slope 1 in 5 to 1 in 6 – every 4th pipe
    - Slope 1 in 4 to 1 in 5 – every 3rd pipe
    - Slope 1 in 3 to 1 in 4 – every 2nd pipe
    - Slope greater than 1 in 3 – every pipe.
  - Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
  - Refer project drawings for dimensions to be adopted where MIN's have been shown.
  - All dimensions in millimetres

**TYPE 1 CONSTRUCTION**  
**APPROVED SAND BEDDING**

**TYPE 2 CONSTRUCTION**  
**APPROVED GRAVEL BEDDING**

NOM DIA. PIPE	d	Ø100	Ø150	Ø225	Ø300	Ø375	Ø450	Ø525	Ø600	Ø675	Ø750	Ø825	Ø900
OPEN TRENCH	B	600	600	700	750	850	900	1000	1050	1150	1300	1300	1450
TUNNEL CONST.	B	750	750	750	900	900	1000	1050	1150	1220	1300	1350	1450
	H	1100	1100	1100	1200	1200	1400	1400	1400	1450	1500	1600	1650

NOTE:- d = NOMINAL DIAMETER OF PIPE

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	26/3/12
A ORIGINAL ISSUE	1/3/97



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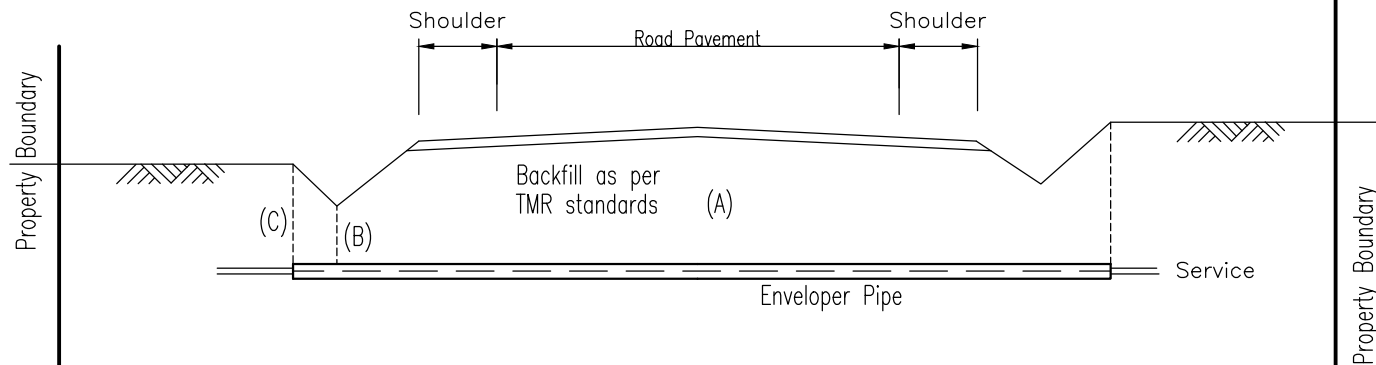
**BEDDING AND BACKFILL FOR WATER MAIN CONSTRUCTION**

**WATER Standard Drawing W-0040**

A	B	C	
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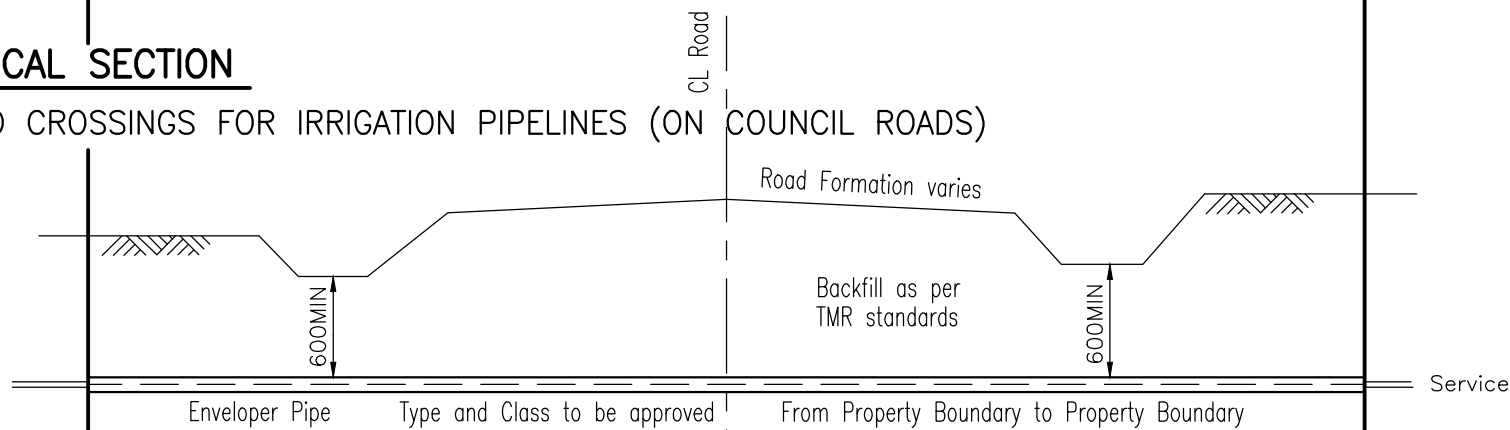
**TYPICAL SECTION**

**TMR ROAD CROSSINGS—TRENCHING**



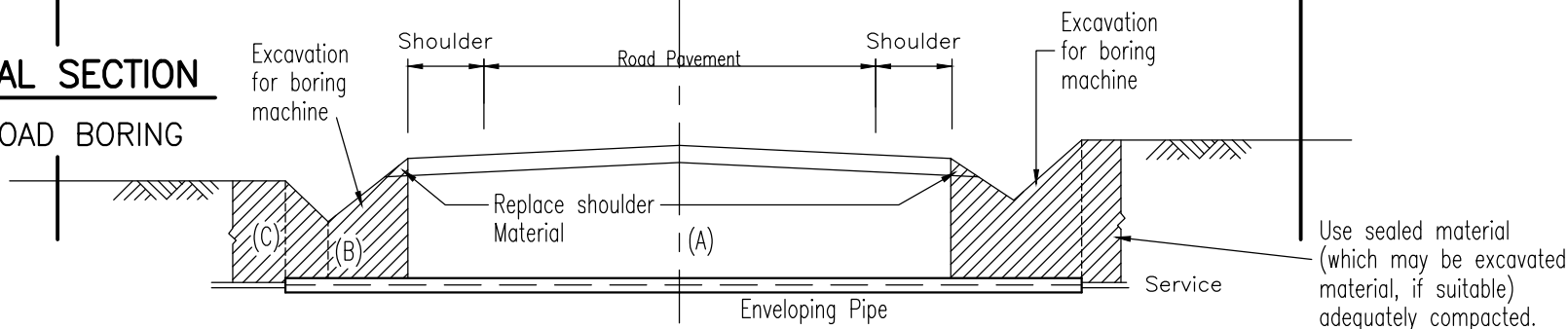
**TYPICAL SECTION**

**ROAD CROSSINGS FOR IRRIGATION PIPELINES (ON COUNCIL ROADS)**



**TYPICAL SECTION**

**TMR ROAD BORING**



**NOTES:**

1. Backfilling of trenching details as per TMR standards.
2. Enveloper pipe class details and treatments refer to Water Services Association of Australia (WSAA) drawings 1212 and 1214

**NOTES FOR TMR ROAD CROSSINGS:**

1. Minimum depth of service shall be (A) 750mm below road surface, (B) 450mm below lowest level of table drain, or (C) 600mm below natural Surface, whichever is the lowest.
2. Where there is no Bitumen seal, the Lean Mix Concrete is to be continued to 150mm below surface level of road.
3. All work shall be in accordance with TMR Standard Conditions.

REVISIONS	DATE
E GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
D GENERAL UPDATES	27/3/12
C "OUTSIDE DECLARED WATER AREA" BLOCK, STAR PKT. TO BOUNDRY	11/7/07
B QT ROAD BORING ADDED	10/3/98
A ORIGINAL ISSUE	1/3/97



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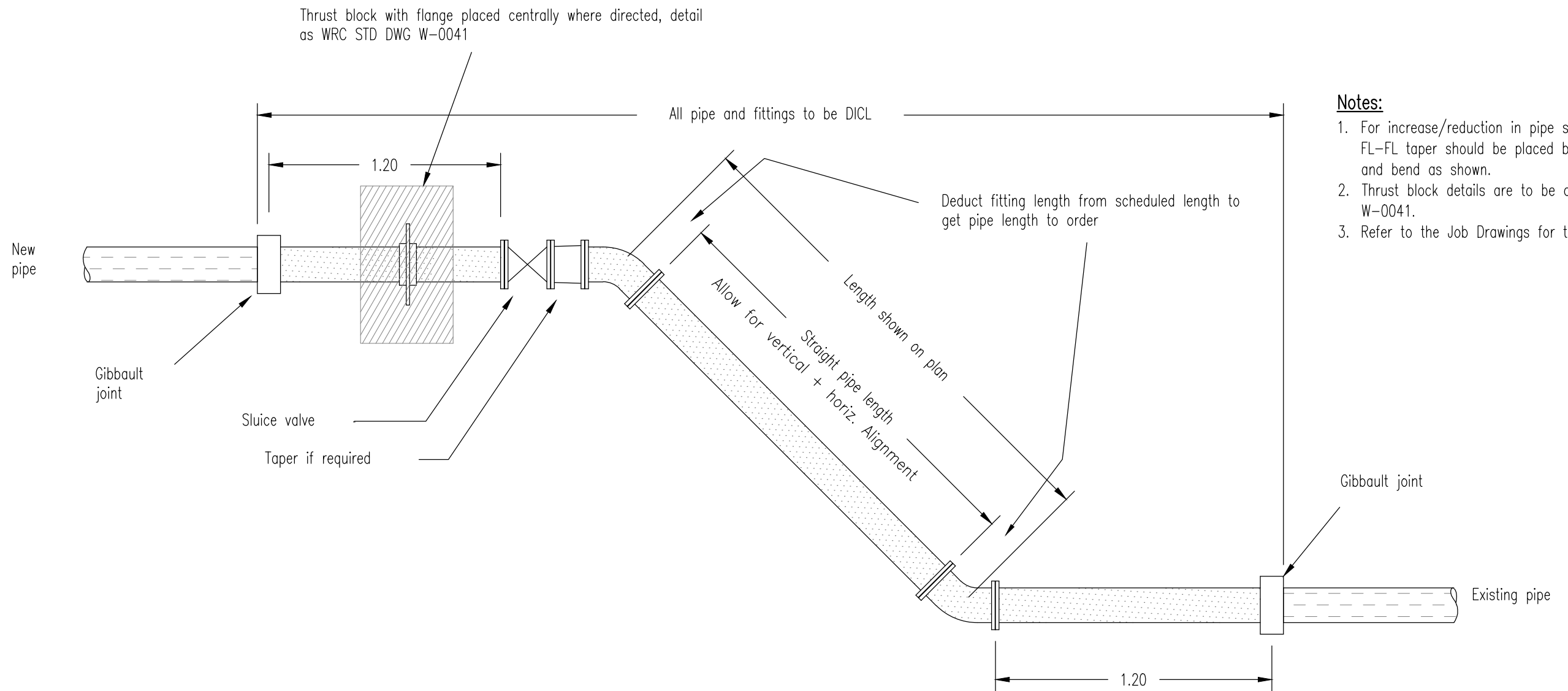
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**ROAD CONDUIT CROSSINGS FOR  
WATER AND IRRIGATION LINES  
(100mm TO 800mm  $\phi$ )**

**WATER**  
Standard  
Drawing  
**W-0042**

A | B | C | D | E



- Notes:**
1. For increase/reduction in pipe sizes a FL-FL taper should be placed between the SV and bend as shown.
  2. Thrust block details are to be as WRC STD DWG W-0041.
  3. Refer to the Job Drawings for the fitting list.

REVISIONS		DATE
D	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C	GENERAL UPDATES	27/3/12
B	CHANGES TO TEXT	25/8/10
A	ORIGINAL ISSUE	1/3/97



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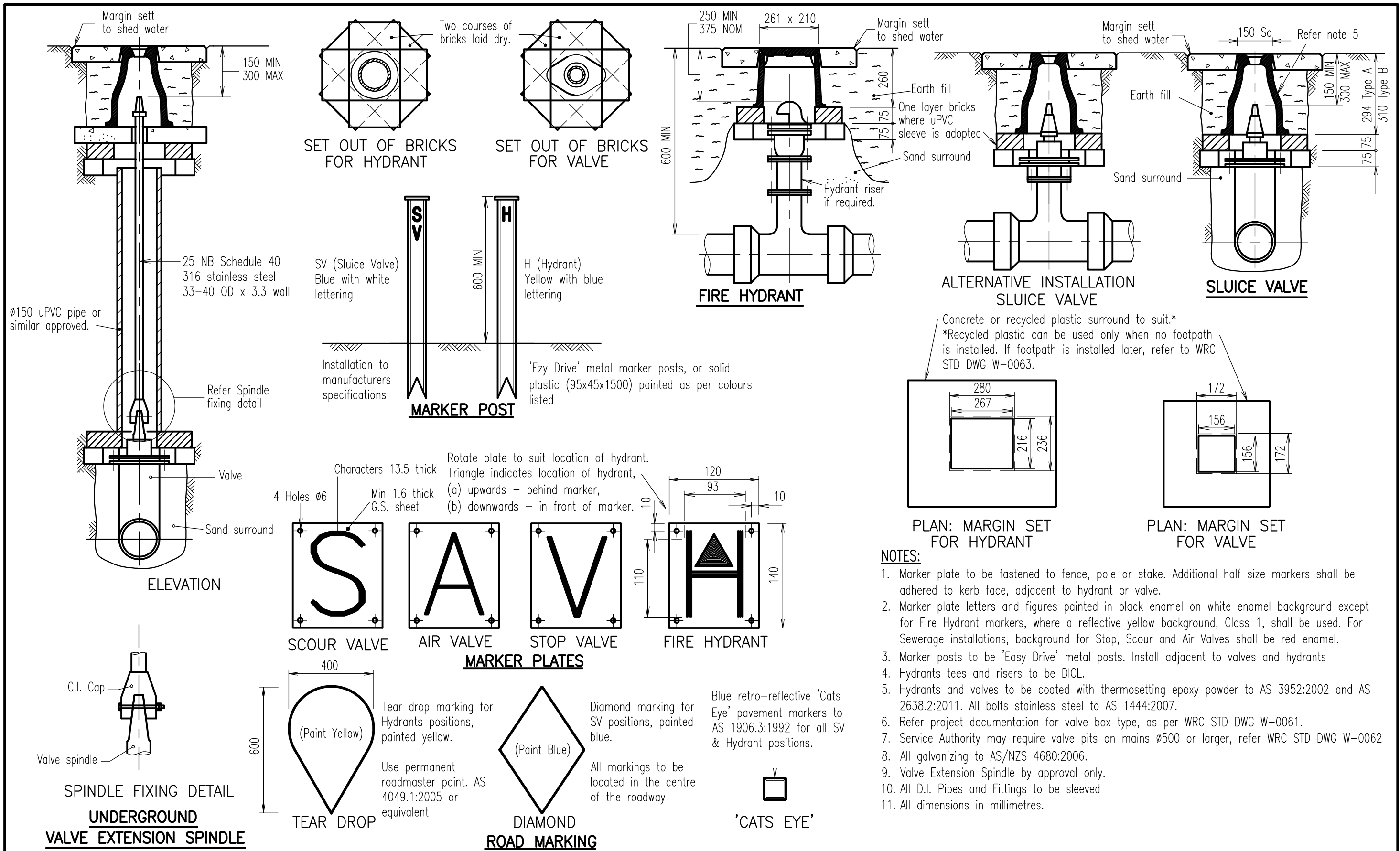
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**WATER MAIN  
OFFSET CONNECTION  
NEW TO EXISTING**

**WATER  
Standard  
Drawing  
W-0043**

A	B	C	D
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REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	28/3/12
B DETAILS ADDED AND MODIFIED	8/10
A ORIGINAL ISSUE	1/3/97

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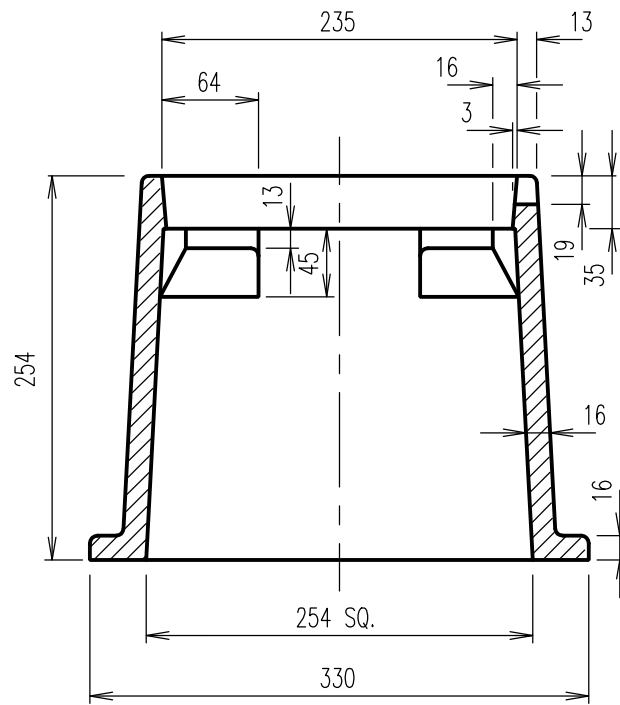
## HYDRANT AND VALVE INSTALLATION

**WATER Standard Drawing W-0060**

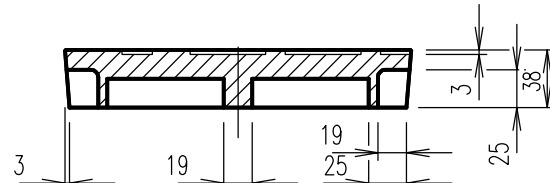
A B C D

**NOTES:**

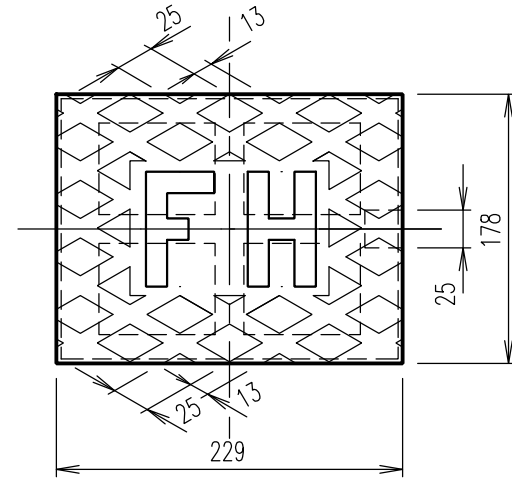
1. Rounding of 5mm NOM. RAD. at all corners.
2. Grey cast Iron, grade  $\geq$  T180 to AS 1830:2007.
3. Alternative valve boxes may be adopted where approved by the Service Authority.
4. Refer to WRC STD DWG W-0060 & W-0063 for other installation details.
5. All dimensions in millimetres.



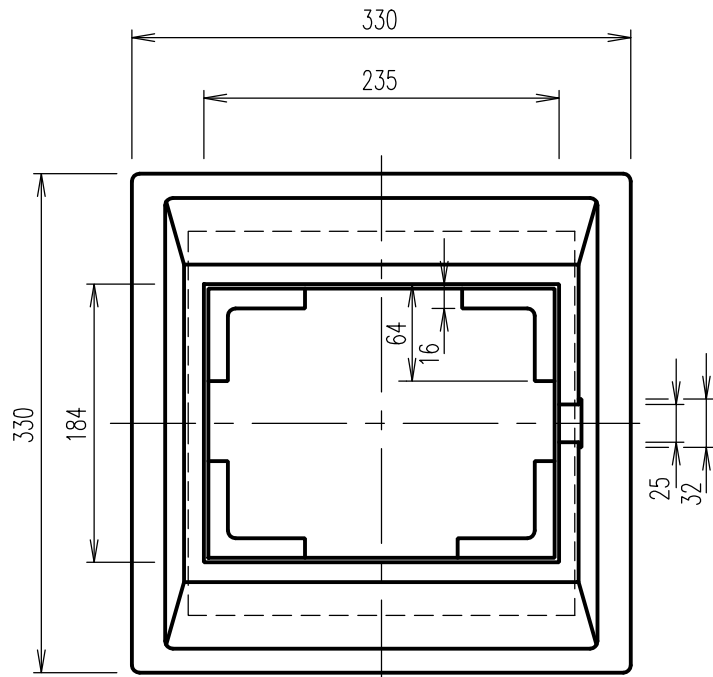
ELEVATION



SECTIONAL VIEW



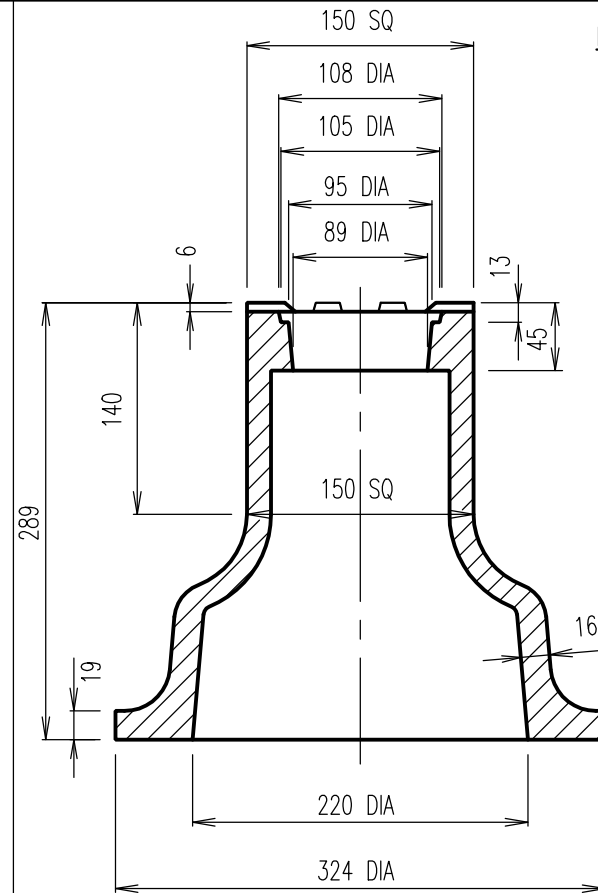
PLAN HYDRANT COVER



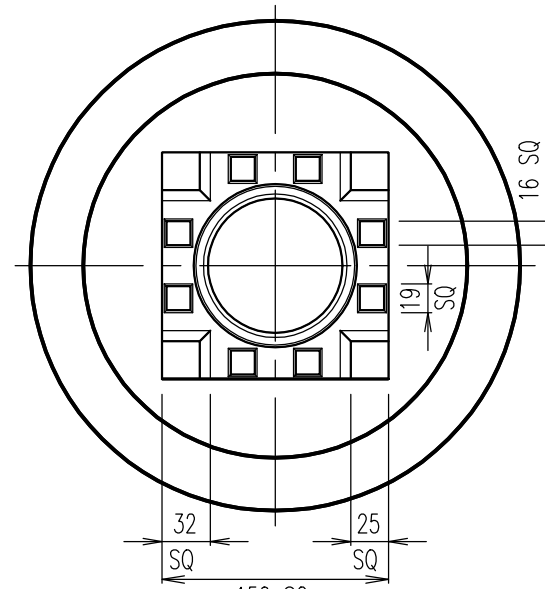
PLAN INSPECTION BOX – HYDRANT

**NOTES:**

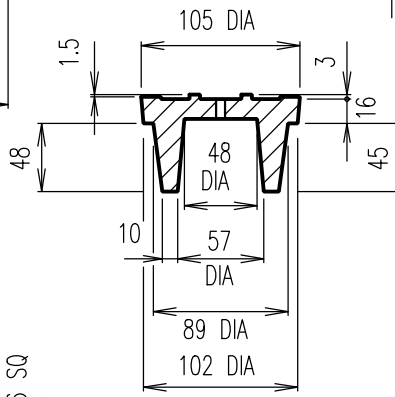
1. Grey cast Iron, grade  $\geq$  T180 to AS 1830:2007.
2. Alternative valve boxes may be adopted where approved by the Service Authority.
3. All dimensions in millimetres.



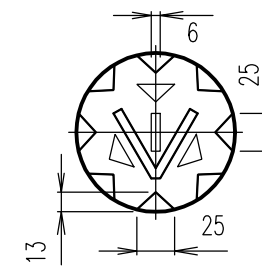
SECTIONAL ELEVATION



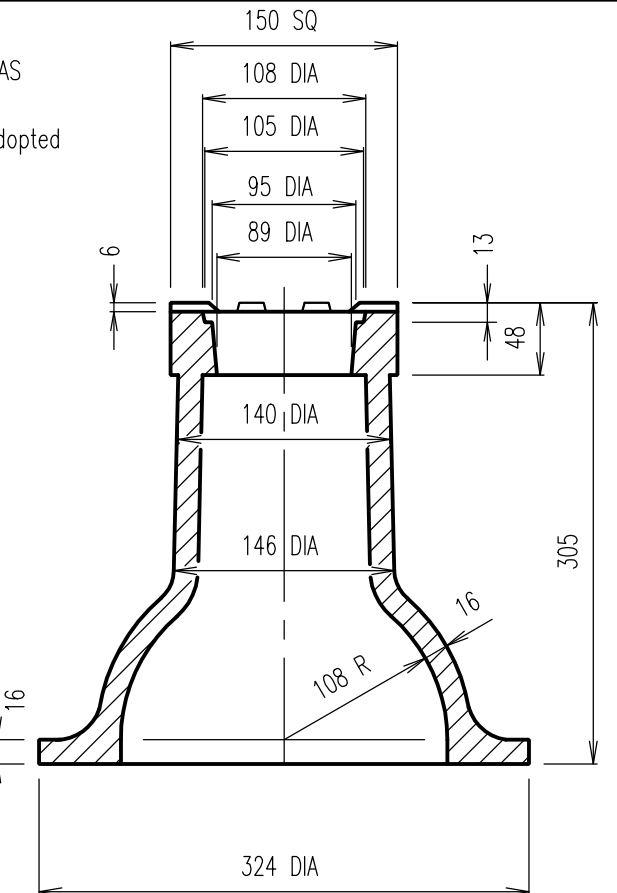
PLAN TYPE A



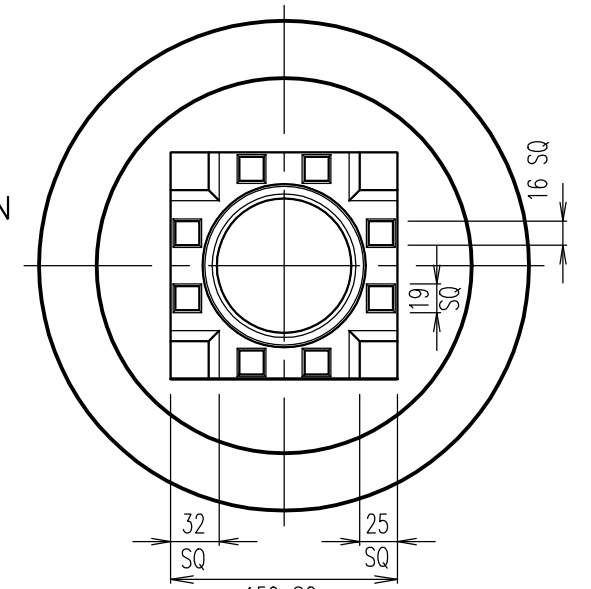
SECTIONAL ELEVATION



PLAN COVER



SECTIONAL ELEVATION



PLAN TYPE B

VALVE BOXES

REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	27/3/12
B DETAIL DELETED	9/8/10
A ORIGINAL ISSUE	1/3/97



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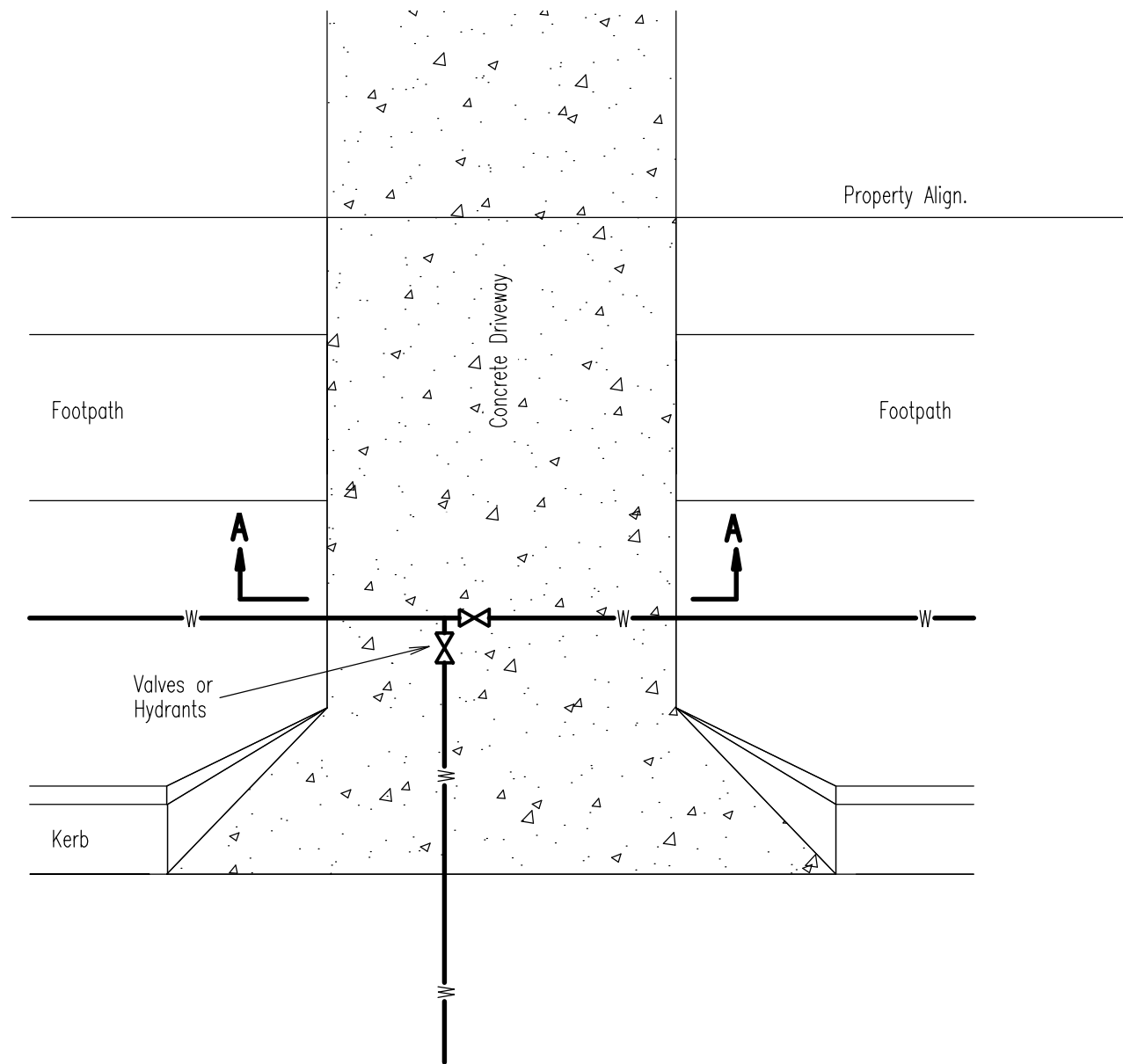
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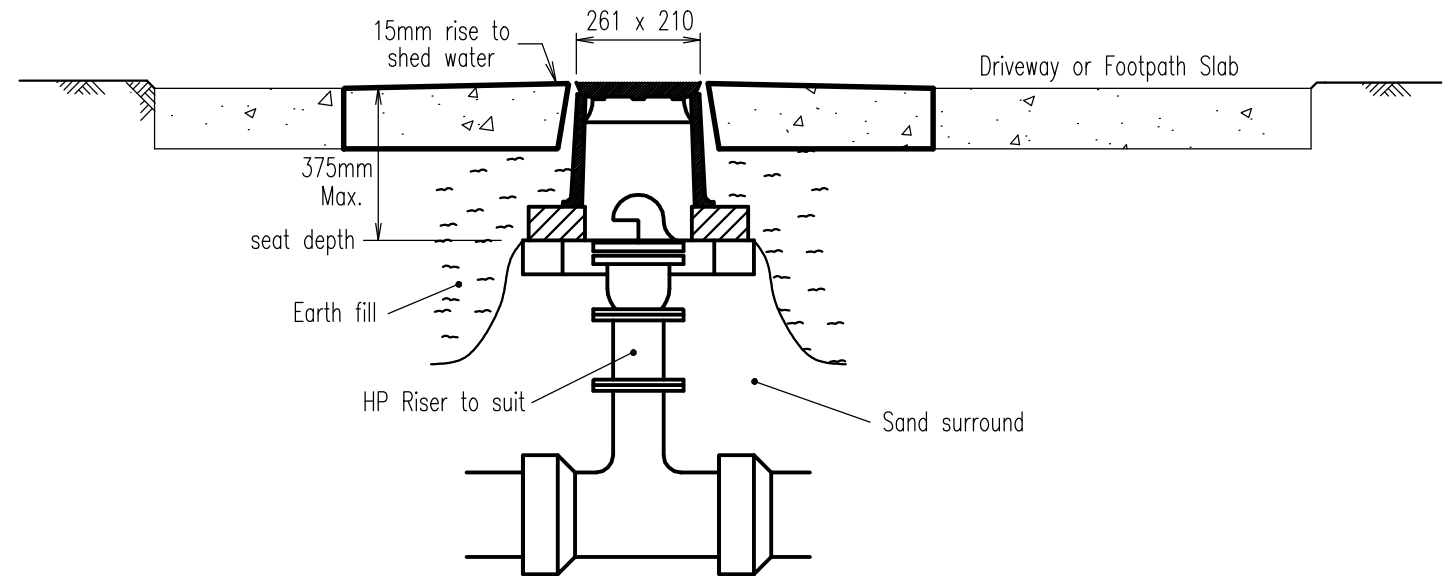
C.I. HYDRANT AND VALVE BOXES

WATER Standard Drawing W-0061

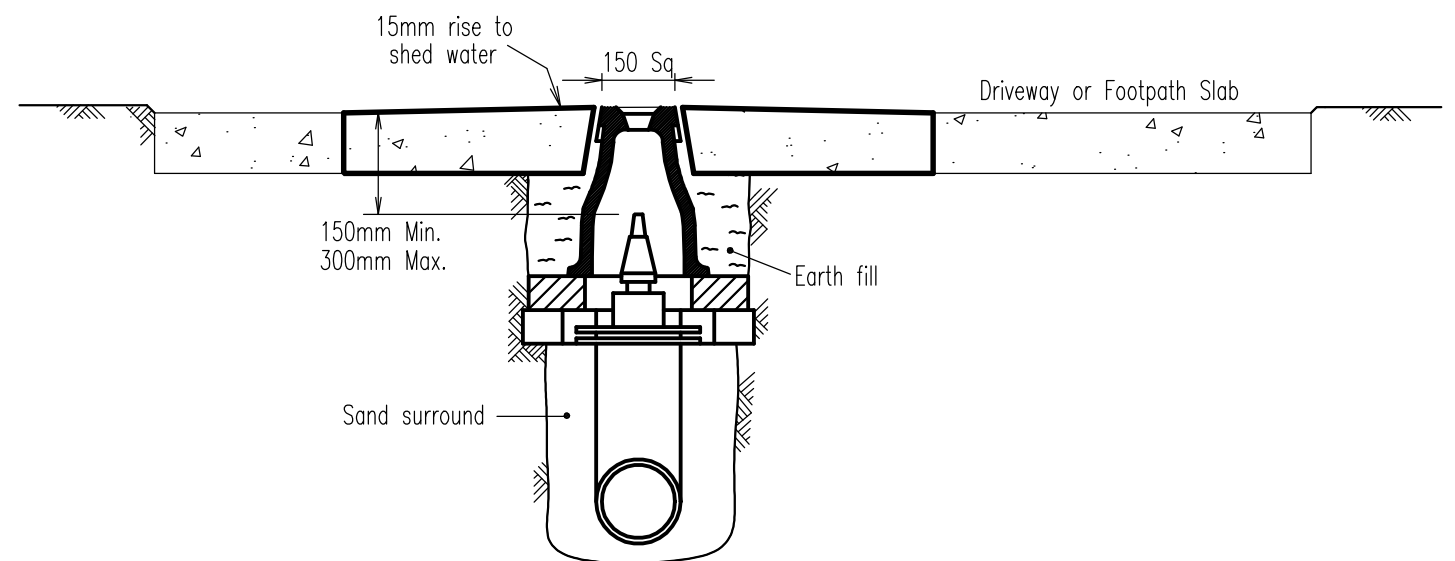
A B C D



**VALVES & HYDRANTS IN DRIVEWAYS & FOOTPATHS**  
 Repair method for concrete driveways and footpaths.



**SECTION A-A (HYDRANTS)**



**SECTION A-A (VALVES)**

**NOTES:**

1. Valve boxes are to be raised to new driveway height.
2. Works are to be inspected by Council.
3. SV marker to be removed from current position and relocated to a suitable position under the direction of council water officers.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	28/3/12
A ORIGINAL ISSUE	05/2009



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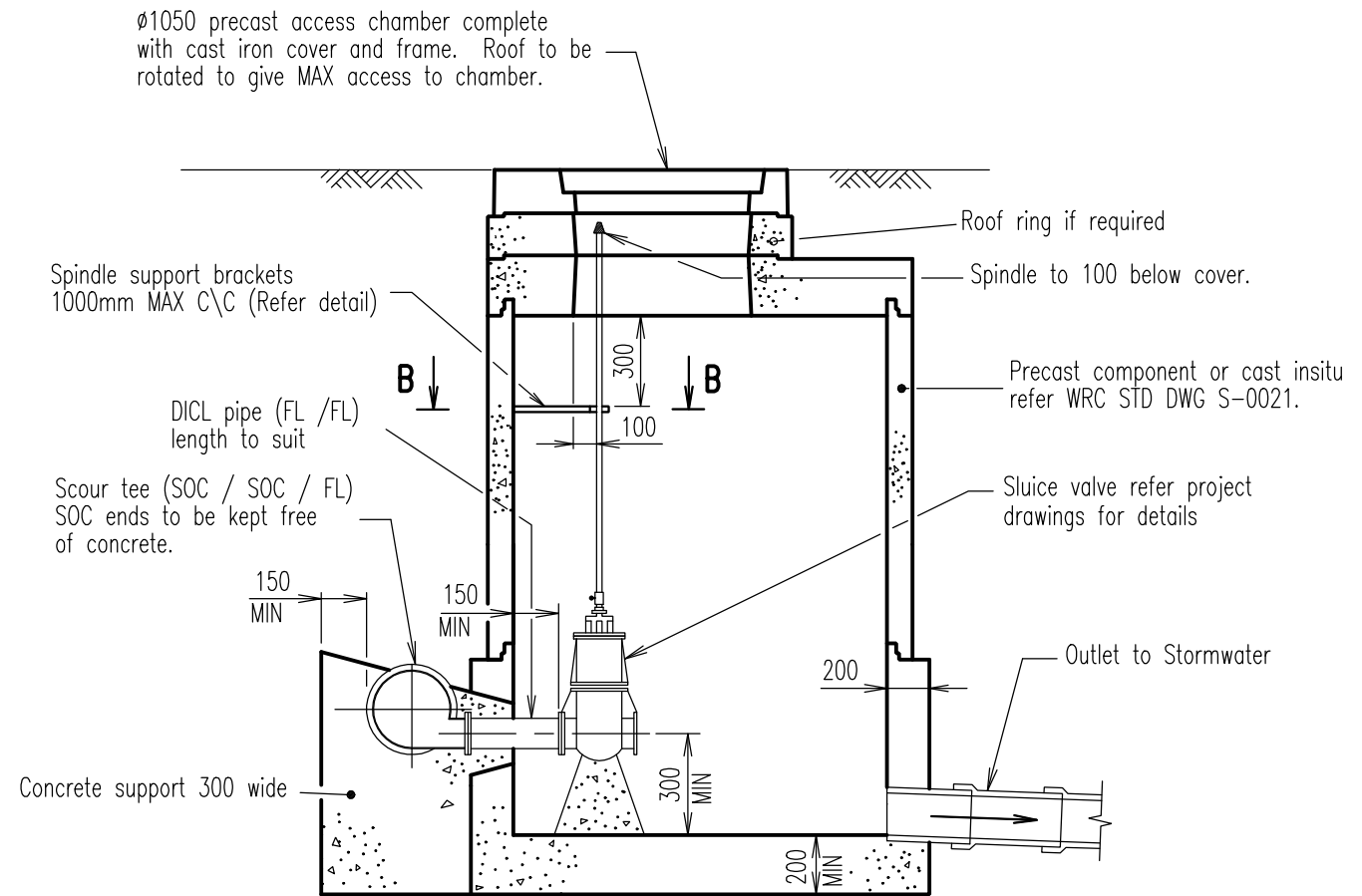
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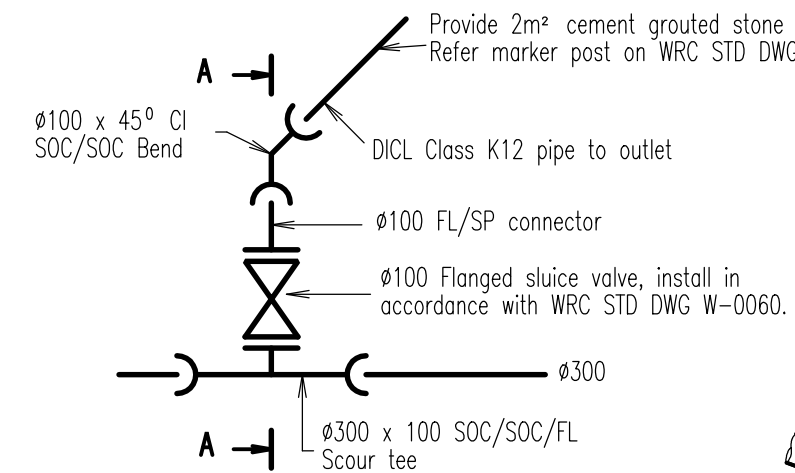
**TYPICAL VALVE & HYDRANT  
 TREATMENT WHEN LOCATED IN  
 SEALED DRIVEWAYS & FOOTPATHS**

**WATER  
 Standard  
 Drawing  
 W-0063**

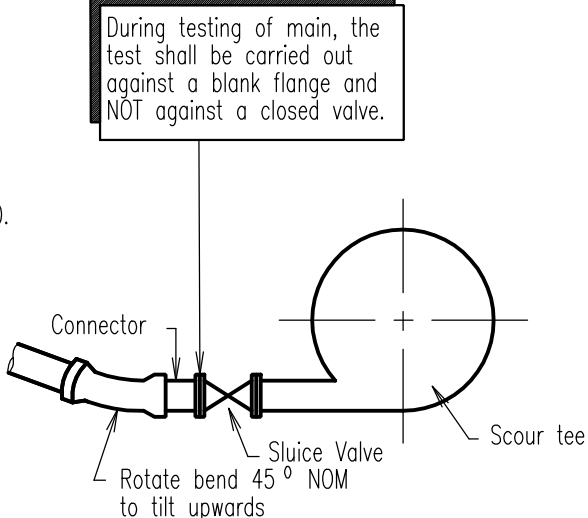
A B B



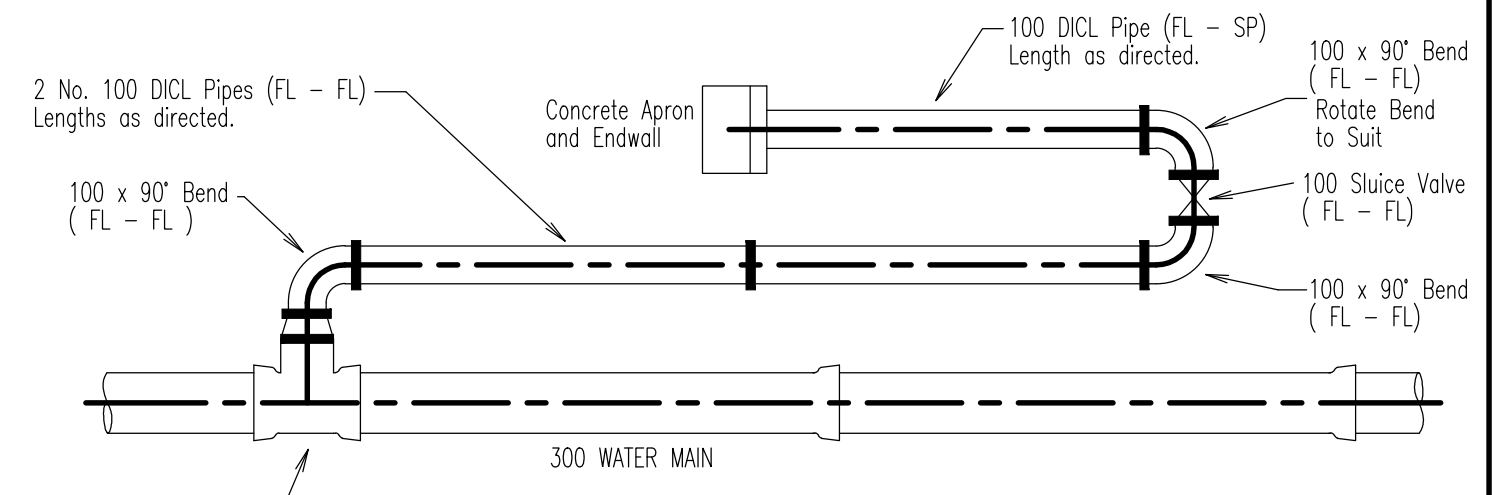
ELEVATION  
**SCOUR DETAIL AT ACCESS CHAMBER**



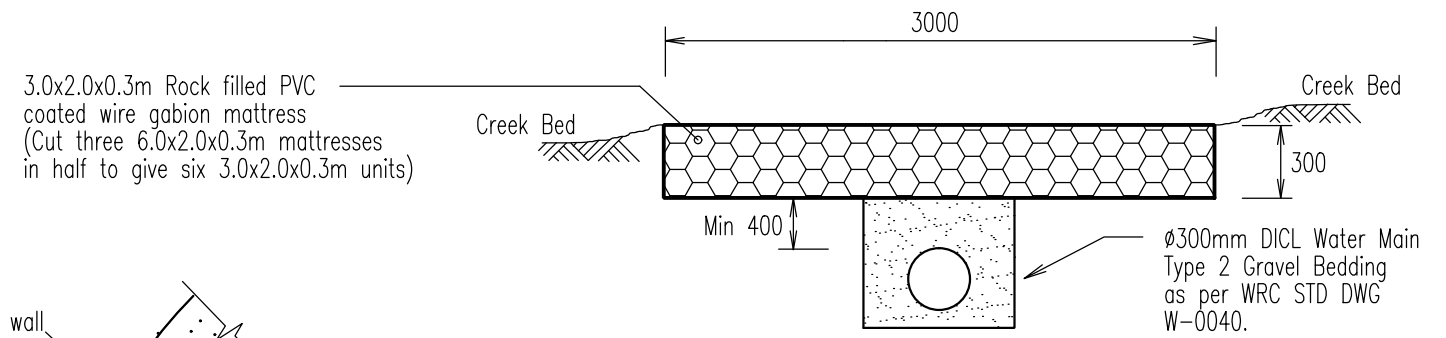
PLAN OF SCOUR



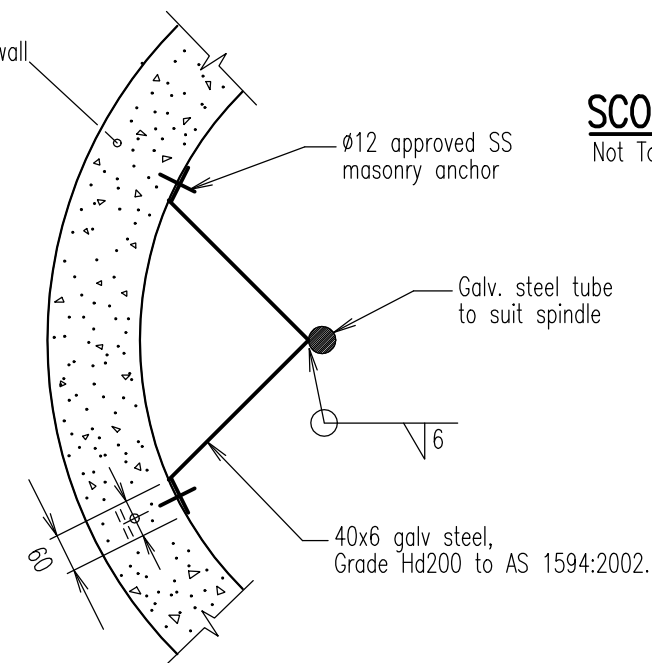
SECTIONAL ELEVATION  
OF SCOUR TEE AT A-A



**SCOUR DETAIL AT CREEK CROSSINGS**  
Not To Scale



**SCOUR PROTECTION DETAIL - CREEK CROSSINGS**  
Not To Scale



SECTION B-B  
**BRACKET DETAIL**

**NOTES:**

1. Refer WRC STD DWGS S-0020 and S-0025 for details of access chambers and covers.
2. Where foundation bearing pressure is less than 50kPa, excavate and replace unsatisfactory material with compacted CBR15 material to the depth ordered by the Superintendent.
3. Concrete N20 in accordance with AS 1379:2007 and AS 3600:2009.
4. All steelwork hot dip galvanized after fabrication to AS/NZS 4680:2006.
5. All welds to AS/NZS 1554:2014. All welding symbols to AS 1101.3:2005.
6. The location of the scour valve and extent of scour discharge pipe are indicated on project drawings.
7. All dimensions in millimetres.

REVISIONS	DATE
C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	9/4/12
A ORIGINAL ISSUE	1/3/97



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**SCOUR DETAILS**

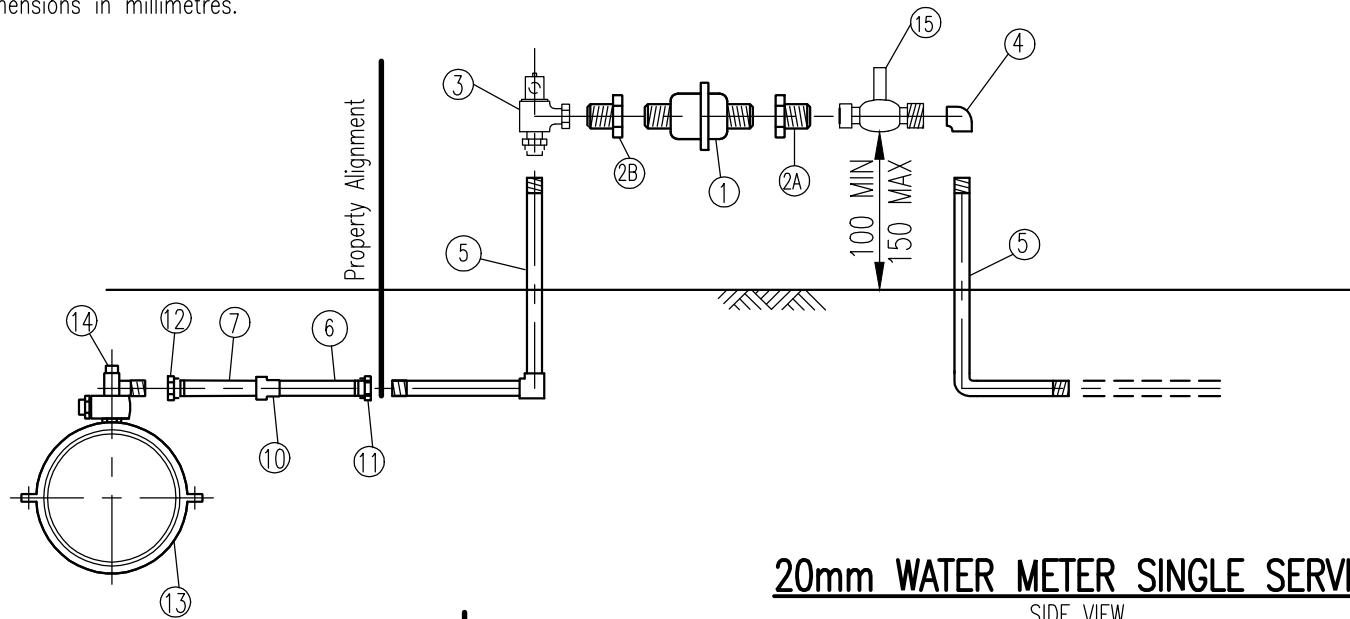
**WATER**  
Standard  
Drawing  
**W-0080**

A	B	C
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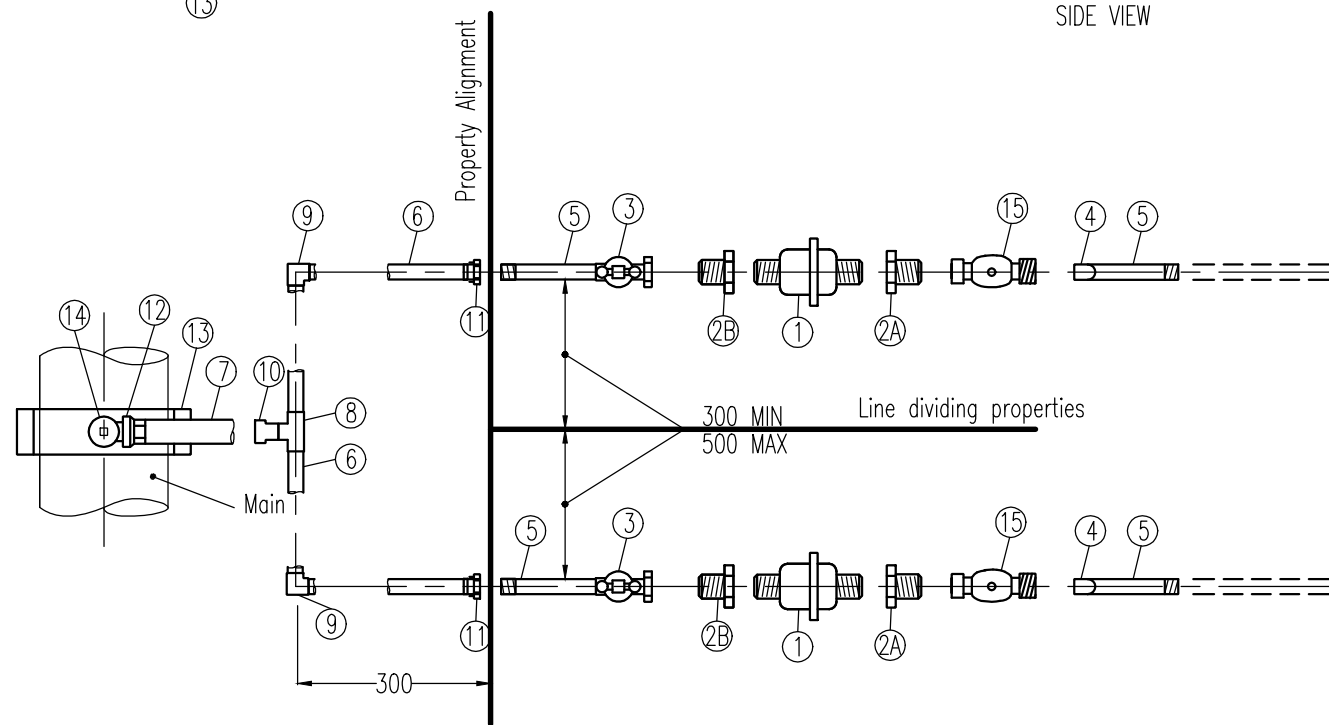


**NOTES:**

1. Polythene pipe and connectors:
  - (a) All polythene pipe shall be MDPE Class 12 in accordance with AS 4130:2009
  - (b) All mechanical joint fittings shall be in accordance with AS 4129:2008.
2. Cross road services shall be located 500mm downhill from dividing allotments so as not to conflict with electrical supply authority poles.
3. Service pipes to lots other than a single dwelling shall have the service connection pipes upgraded to suit the use. These sizes should be sized to comply with AS3500.1:2003.
4. All dimensions in millimetres.

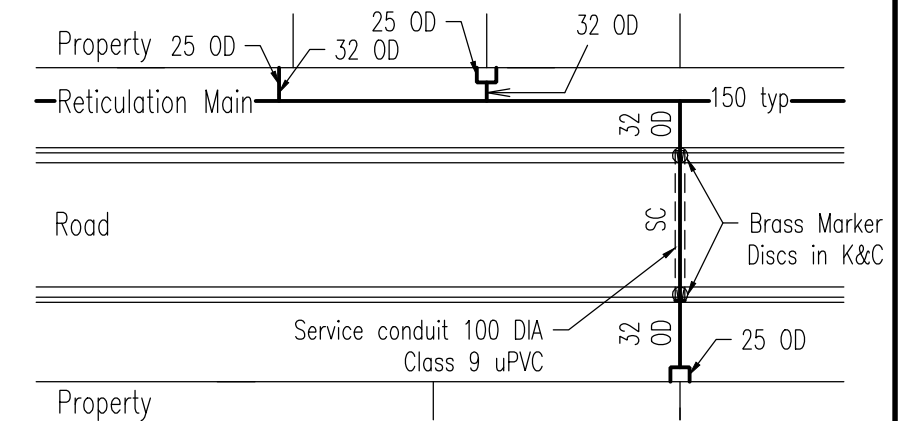


**20mm WATER METER SINGLE SERVICE**  
SIDE VIEW



**20mm WATER METER 2 LOT SERVICE**  
PLAN VIEW

MARK NO	DESCRIPTION
1.	Water Meter. Complete with Backflow to comply with AS 2845.1:2010
2A.	Meter tail piece with BSP-MI end, supplied with meter
2B.	As above except pre-drilled to suit wire seal.
3.	Rt. angled ball valve F-F
4.	Std'nless Steel FL Elbow
5.	316 stainless steel pipe (20 NB) pre-bent fixed length pipe to be purchased from council.
6.	Polyethylene 25 OD Class 12
7.	Polyethylene 32 OD Class 12
8.	Poly 25 tee fitting
9.	Poly 25 elbow fitting
10.	Poly reducing fitting 32-25
11.	25 FI-Poly end connector
12.	32 FI-Poly end connector
13.	Gunmetal tapping brand or Ready Tap Connection
14.	25x32 OD Poly TPR bonnet poly ferrule stop cock
15.	House hold isolating valve FM Ball



**TYPICAL MAIN CONNECTIONS**  
PLAN VIEW

REVISIONS	DATE
F GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
E GENERAL UPDATES	9/4/12
D FITTINGS AND DETAILS AMENDED	9/8/10
C MINOR AMENDMENTS	11/7/07
B MINOR AMENDMENTS	10/3/98
A ORIGINAL ISSUE	1/3/97



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**WATER CONNECTIONS  
SINGLE AND DOUBLE  
ABOVE GROUND METER**

**WATER  
Standard  
Drawing  
W-0090**

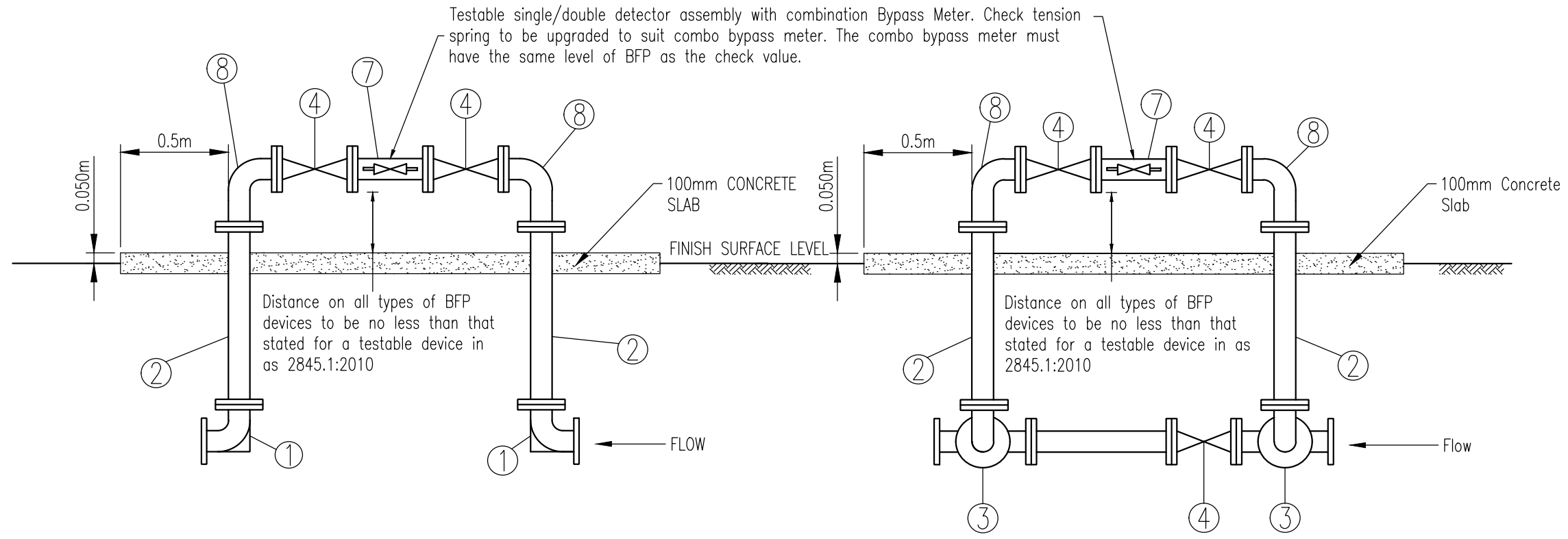
B C D E F



**NOTES:**

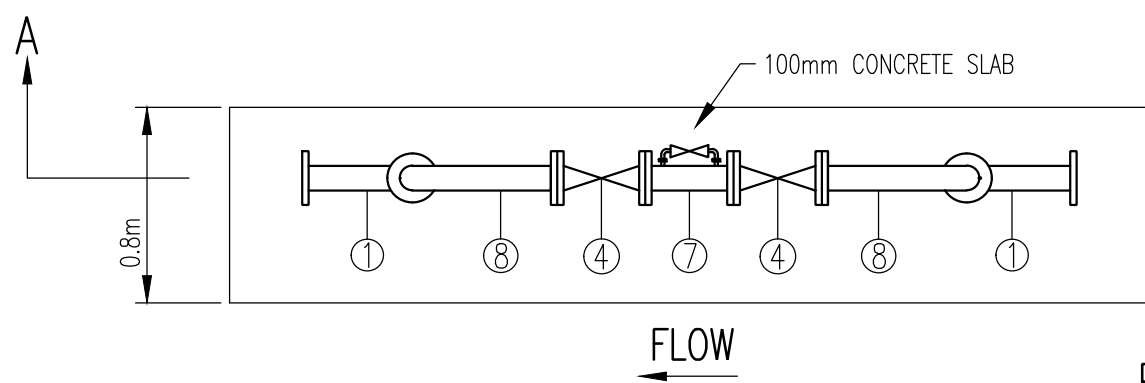
1. Flanged DICL pipe to suit or as otherwise noted.
2. Combination Bypass Meter (Size of meters to be determined for use.). Refer to AS/NZS 3500.1:2003.
3. Bypass Meter must be able to be isolated independently to rest of service.
4. The Isolating Valves must be able to be locked in open position.
5. Council's preferred supplier to BFP devices are TYCO flow control.
6. Check valve for low hazard application shall be used. Isolating valves shall either be gear operated butterfly valves for fire services or resilient sluice valves to suit fire services
7. All works are to comply with AS 3500.1:2003, water supply
  - (a) AS 24.1:2005, fire hydrant installation
  - (b) AS 2845.1:2010, back flow prevention devices
  - (c) Materials, design and performance requirements. Council policy, sewerage water
  - (d) Supply act.
8. Sizing to be indicated on plans as required.
9. Class of pipe
  - (a) mPVC class 16 series 2 (Diod compatible)
  - (b) DI PN20

Testable single/double detector assembly with combination Bypass Meter. Check tension spring to be upgraded to suit combo bypass meter. The combo bypass meter must have the same level of BFP as the check value.

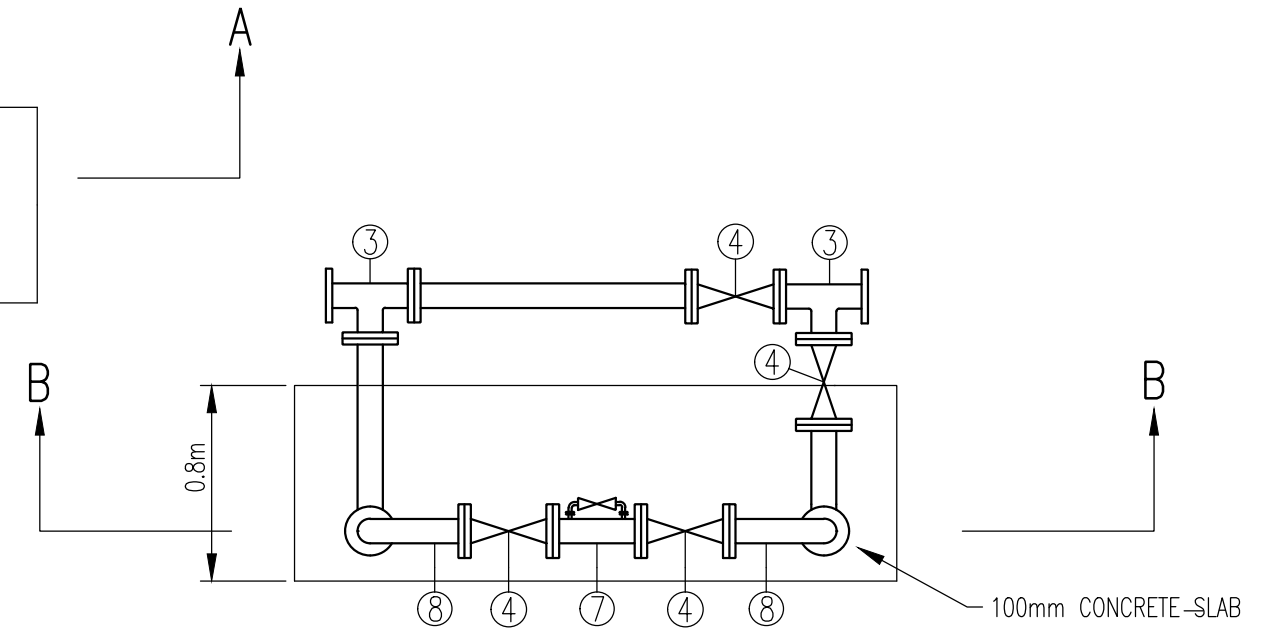


**SECTION A-A**

**SECTION B-B**



**PLAN WITHOUT BYPASS**



**PLAN WITH BYPASS**

FITTING LIST	
①	Duckfoot bend FL-FL
②	FL-FL DICL K16 pipe-length to suit.
③	FL-FL-FL Tee
④	FL-FL Sluice Valve
⑦	Testable (Single/Double) check detector assembly with combination bypass meter (Size of meters to be determined by applicant). Refer to AS/NZS 3500.1:2003
⑧	FL-FL 90° Bend

REVISIONS	DATE
D	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS 27/4/16
C	GENERAL UPDATES 9/4/12
B	MINOR CHANGES TO ELEVATION DETAIL 03/10
A	ORIGINAL ISSUE 06/09



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**WATER TRUNK MAIN COMBINED  
FIRE MAIN AND DOMESTIC SUPPLY  
WITH AND WITHOUT A BYPASS**

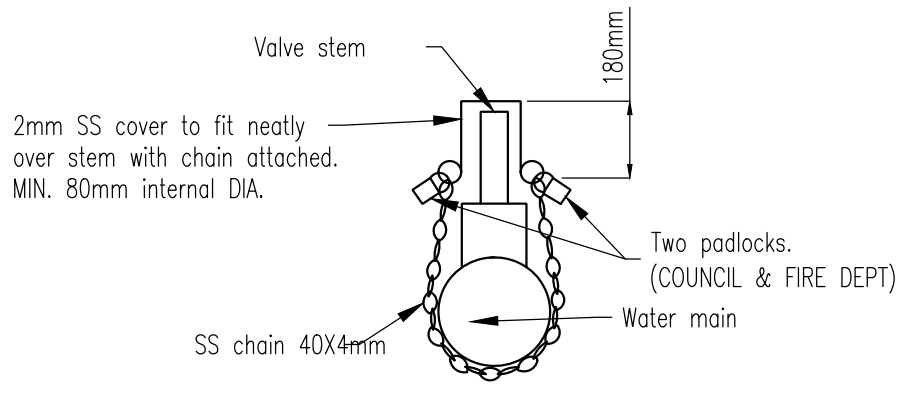
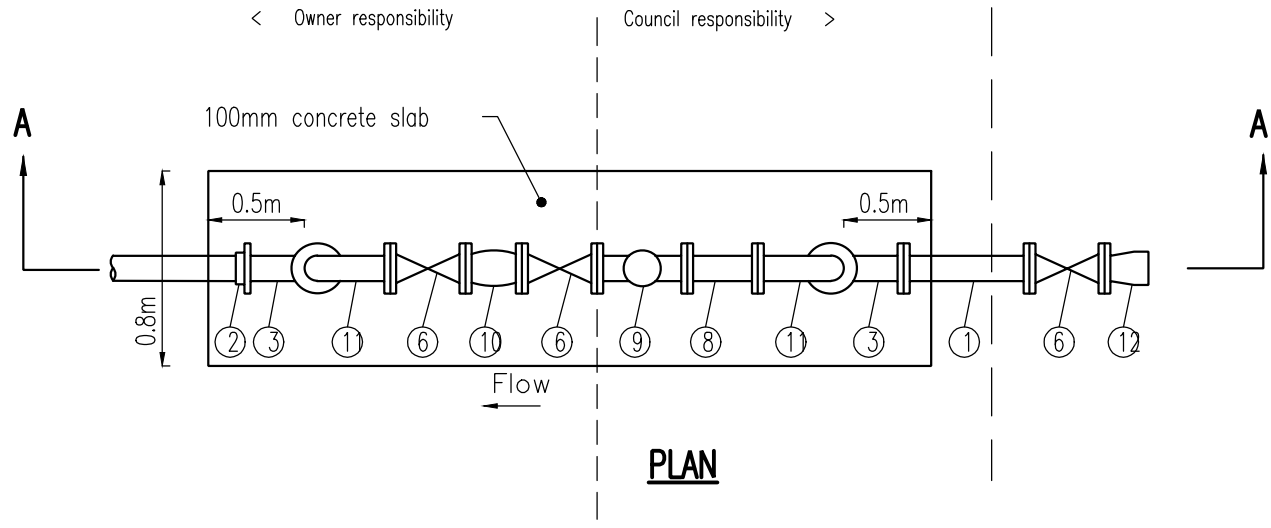
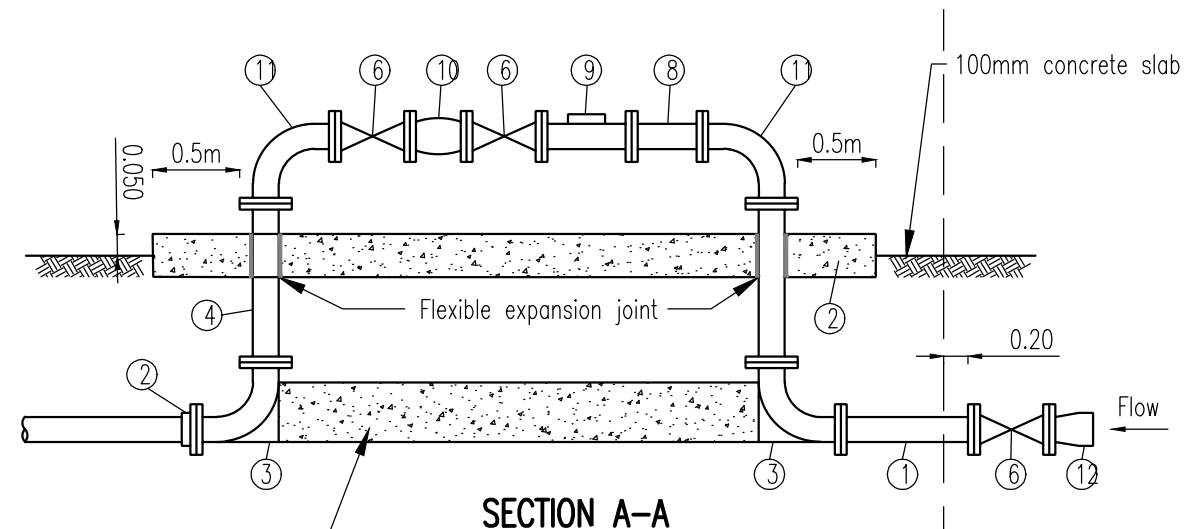
**WATER  
Standard  
Drawing  
W-0093**

A	B	C	D
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**NOTES:**

1. Flanged DICL pipe to suit or as otherwise noted.
2. Combination Bypass Meter (Size of meters to be determined for use). refer to AS/NZS 3500.1:2003.
3. The Isolating Valves must be able to be locked in open position.
4. Council's preferred supplier to BFP devices are TYCO flow control.
5. Check valve for low hazard application shall be used. Isolating valves shall either be gear operated butterfly valves for fire services or resilient sluice valves to suit fire services.
6. All works are to comply with AS 3500 water supply
  - (a) AS 2419-1, fire hydrant installation
  - (b) AS 2845-1, back flow prevention devices
  - (c) Materials, design and performance requirements. council policy, sewerage and water.
  - (d) Supply act.
7. Sizing to be indicated on plans as required
8. Class of pipe
  - (a) mPVC class 16 series 2 (DIOD compatible)
  - (b) DI PN20

FITTING LIST	
①	DI FL-FL Pipe length 800mm
②	DI SP-FL Connector
③	Duckfoot bend FL-FL
④	FL-FL DICL K16 Pipe-length to suit
⑤	FL-FL-FL Tee
⑥	FL-FL Sluice Valve.
⑧	Flanged DICL Length = 5X $\phi$ of pipe
⑨	Combo meter
⑩	FL-FL BFP Device to suit the use
⑪	FL-FL 90° Bend
⑫	DI SO-FL Connection



REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	10/4/12
B MINOR CHANGES TO ELEVATION DETAIL	06/09
A ORIGINAL ISSUE	07/08



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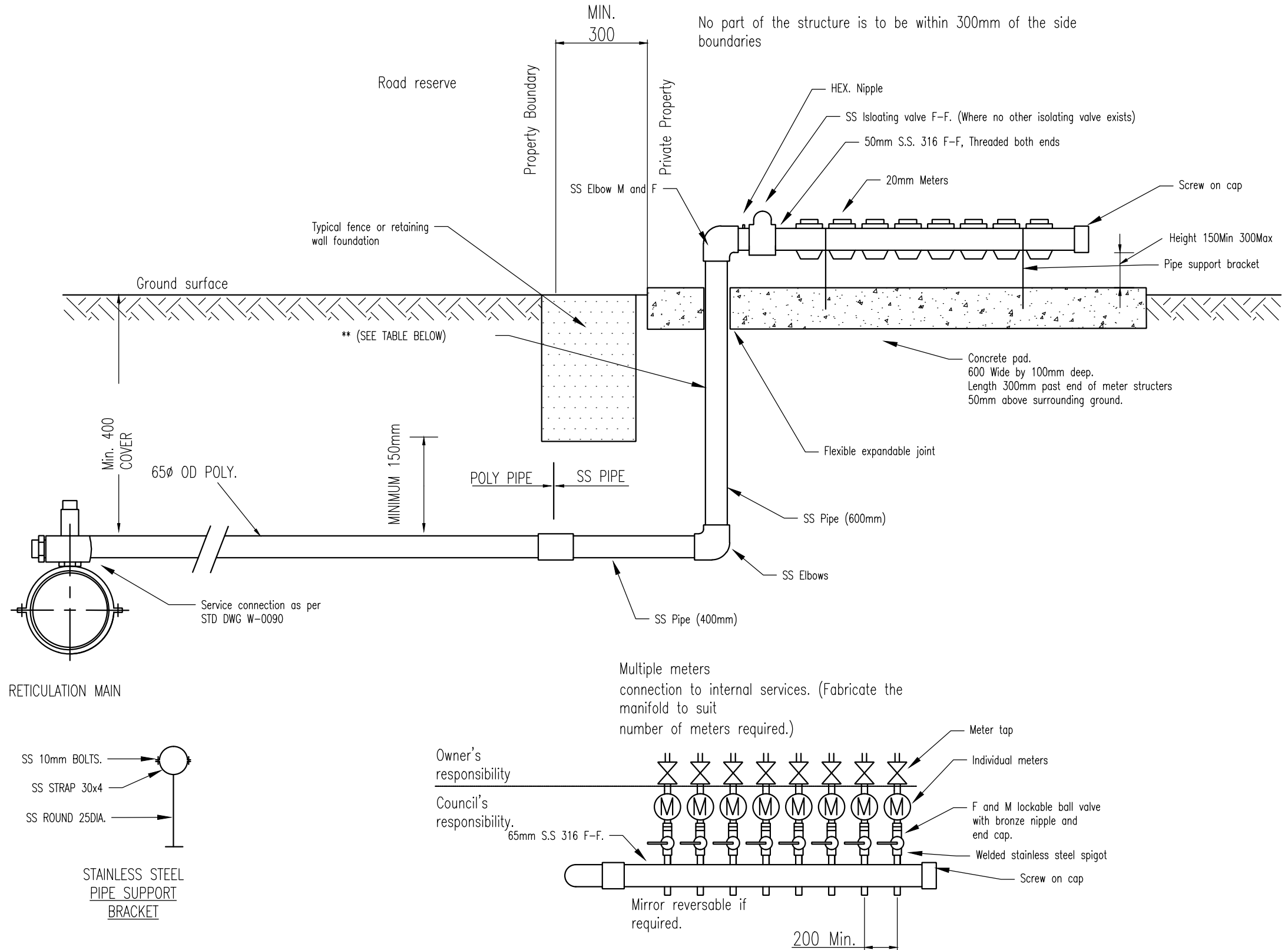
**INDUSTRIAL WATER METERING  
COMBINED FIRE MAIN AND DOMESTIC  
SUPPLY 80mm OR GREATER**

**WATER  
Standard  
Drawing  
W-0094**

A B C D

**NOTES:**

1. A maximum of 10 meters may be connected to any particular manifold before a sub meter is required.
2. The minimum meter size is 20mm, but each installation must be individually sized to suit the usage proposed.
3. Each installation is to be sized to suit the installation proposed by a hydro engineer.
4. The location of the manifold is to be approved by the council in writing before installation.
5. Council may require an approved vehicle proof buffer placed 500mm clear on any side exposed to vehicular traffic.
6. Each offtake is to be clearly engraved with the number of the unit to be served by that meter.
7. Any proposed manifold is to be designed and submitted to council for approval prior to any construction being carried out and no work is to start until council's written approval is received.
8. Meters must be able to be read from the road reserve and if a fence is constructed, an appropriate gate system is to be provided to allow unhindered access by the meter reader.



REVISIONS	DATE
E	GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS 27/4/16
D	GENERAL UPDATES 11/4/12
C	EXTRA DETAILS ADDED 06/09
B	EXTRA DETAILS ADDED 09/08
A	ORIGINAL ISSUE 07/08



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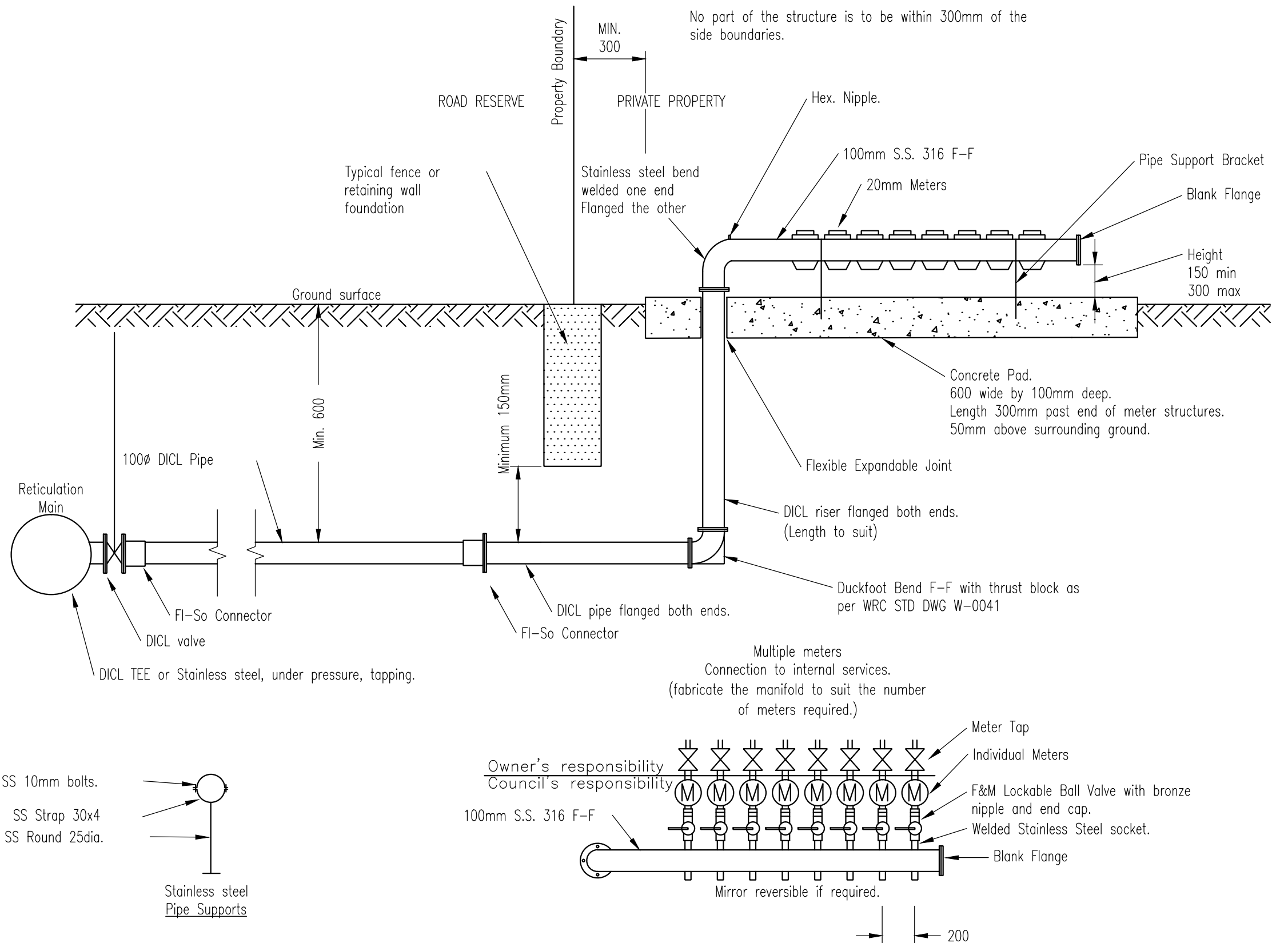
**WATER SERVICE METERS MULTIPLE OFF-TAKE MANIFOLDS 50mmø INPUT SUPPLY**

**WATER Standard Drawing W-0095**

A B C D E

**NOTES:**

1. A maximum of 20 meters may be connected to any particular manifold before a sub meter is required.
2. The minimum meter size is 20mm, but each installation must be individually sized to suit the usage proposed.
3. Each installation is to be sized to suit the installation proposed by a Hyrdo Engineer.
4. The location of the manifold is to be approved by the Council in writing before installation.
5. Council may require an approved vehicle proof buffer placed 500mm clear on any side exposed to vehicular traffic.
6. Each offtake is to be clearly engraved with the number of the unit to be served by that meter.
7. Any proposed manifold is to be designed and submitted to Council for approval prior to any construction being carried out and no work is to start until Council's written approval is received.
8. Meters must be able to be read from the road reserve and if a fence is constructed, an appropriate gate system is to be provided to allow unhindered access by the meter reader.



REVISIONS	DATE
D GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
C GENERAL UPDATES	11/4/12
B EXTRA DETAILS ADDED	06/09
A ORIGINAL ISSUE	07/08



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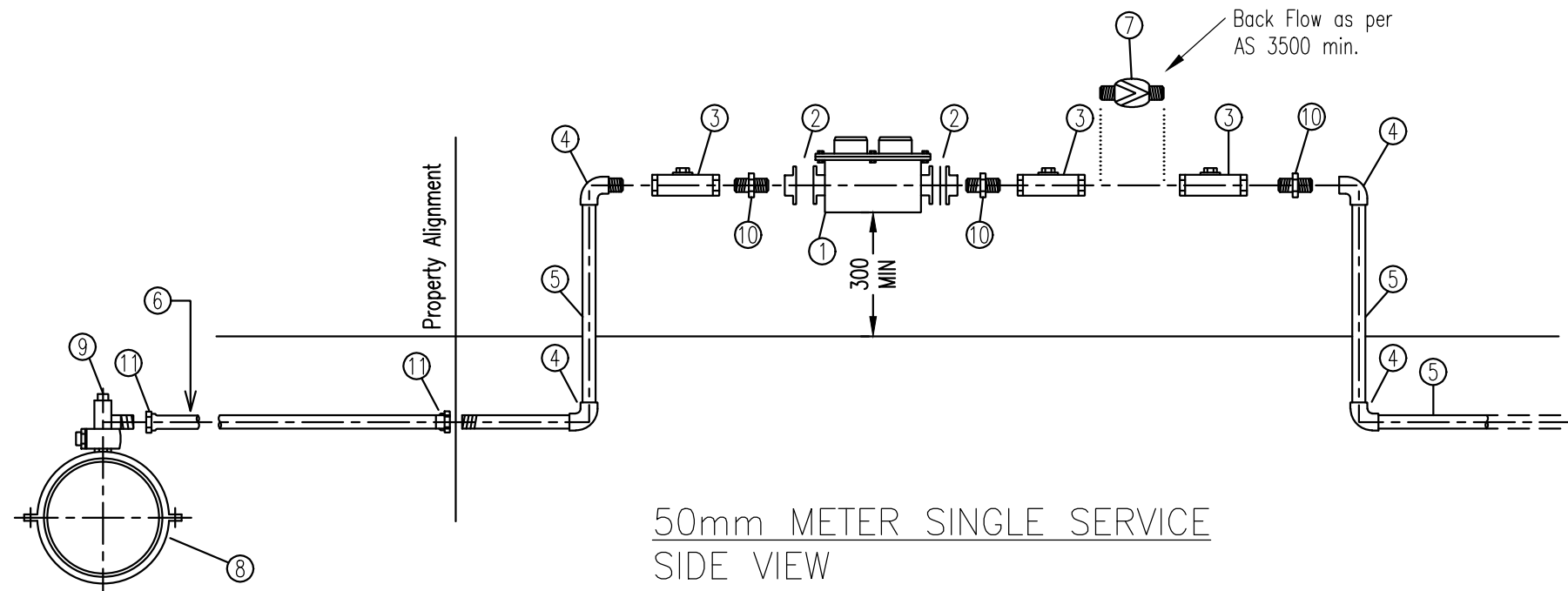
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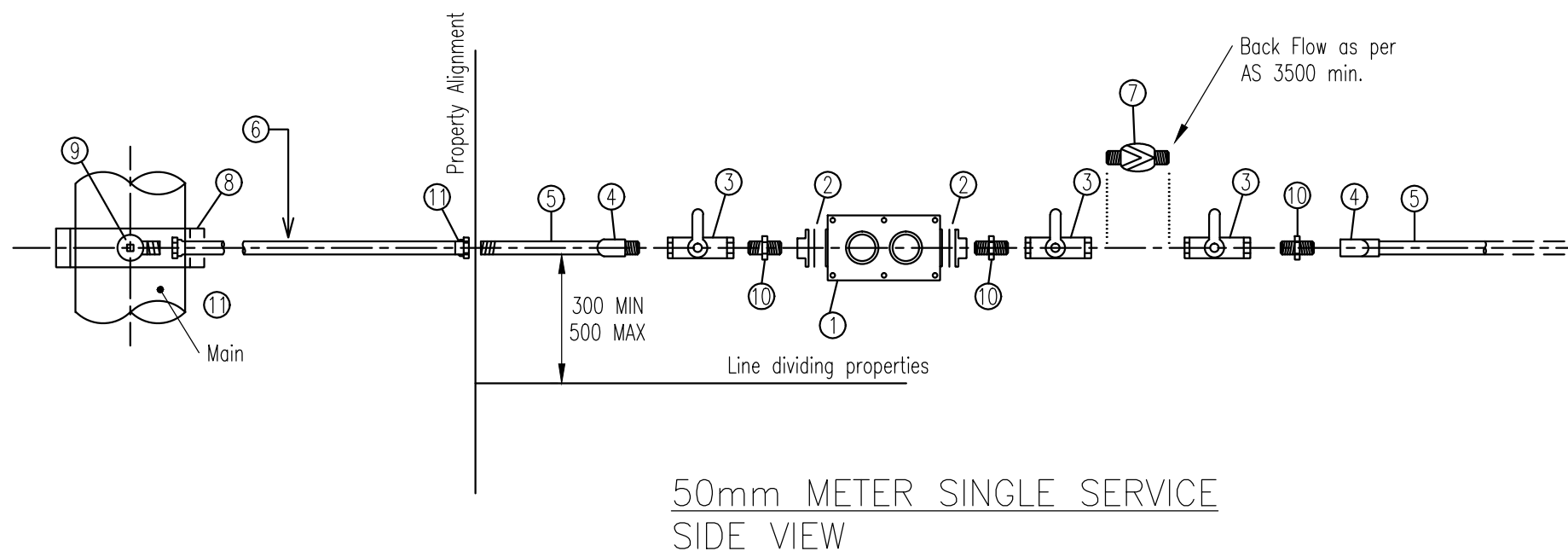
**PROSERPINE**  
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**WATER SERVICE METERS  
MULTIPLE OFF-TAKE MANIFOLDS  
WITH 100mmØ INPUT SUPPLY.**

<b>WATER Standard Drawing W-0096</b>			
A	B	C	D

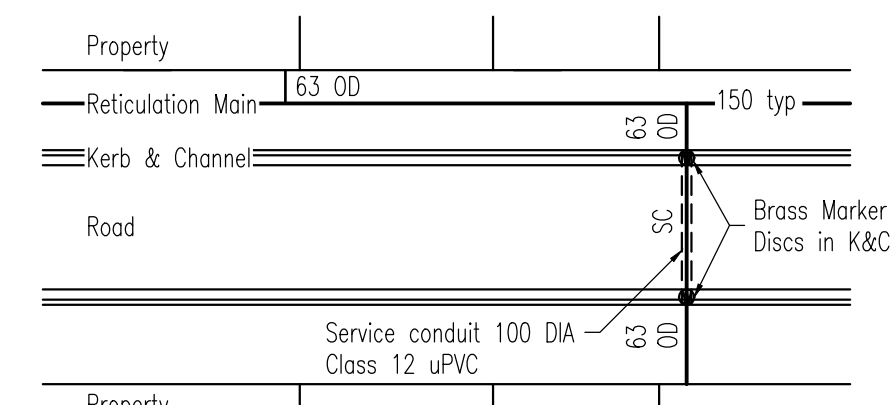


50mm METER SINGLE SERVICE  
SIDE VIEW



50mm METER SINGLE SERVICE  
SIDE VIEW

MARK NO.	DESCRIPTION
①	Water Meter. 50mm Combo Meter with flange adaptor purchased from council
②	Flange adaptor purchased from Council
③	S/Steel quarter turn ball valve F-F
④	Stainless Steel Elbow
⑤	316 Stainless Steel 50 NB fixed length pipe to be purchased from Council
⑥	Polyethylene 63 OD Class 12
⑦	Approved back flow prevention device to suit specific internal hazard, as per AS 3500
⑧	Gunmetal tapping band or Ready Tap Connection
⑨	50x63mm OD Poly TPR bonnet poly ferrule stop cock
⑩	50mm stainless steel nipple adaptor
⑪	Fl-Poly end connector



TYPICAL MAIN CONNECTIONS  
PLAN VIEW

- NOTES:**
- Polythene pipe and connectors:
    - All polythene pipe shall be MDPE Class 12 in accordance with AS 4130 (interim) - 1993
    - All mechanical joint fittings shall be in accordance with AS 4129:2008.
  - Cross road services shall be located 500mm downhill from dividing allotments so as not to conflict with electrical supply authority poles.
  - Service pipes to lots other than a single dwelling shall have the service connection pipes upgraded to suit the use. These sizes should be sized to comply with AS3500
  - All dimensions in millimetres.

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C GENERAL UPDATES AND STANDARD REFERENCING AMENDMENTS	27/4/16
B GENERAL UPDATES	11/4/12
A ORIGINAL ISSUE	08/10



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**DOMESTIC/COMMERCIAL  
SUPPLY 50mm METER**

**WATER  
Standard  
Drawing  
W-0100**

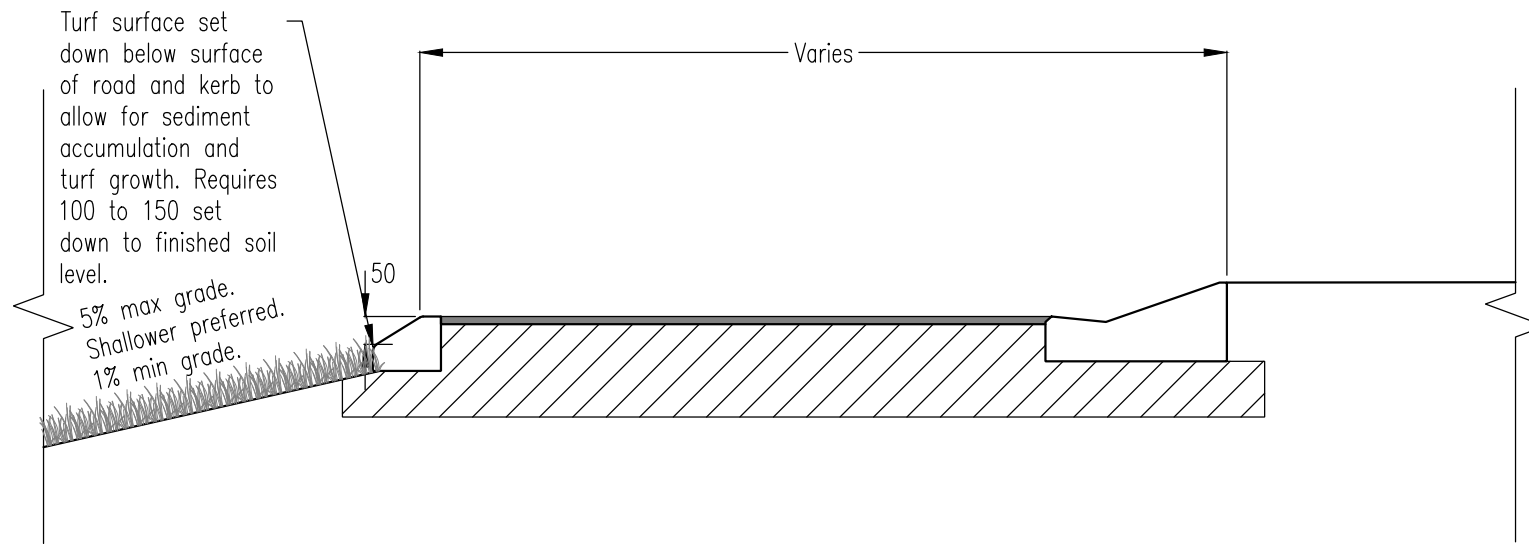
A	B	C
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**NOTES:**

1. Engineering works to be in accordance with councils engineering guidelines, standards and specifications.
2. All dimensions in millimetres unless specified otherwise.
3. Ensure appropriate drainage downstream of buffer. Design to suit context (eg. open space, swale).



TYPICAL SECTION

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE



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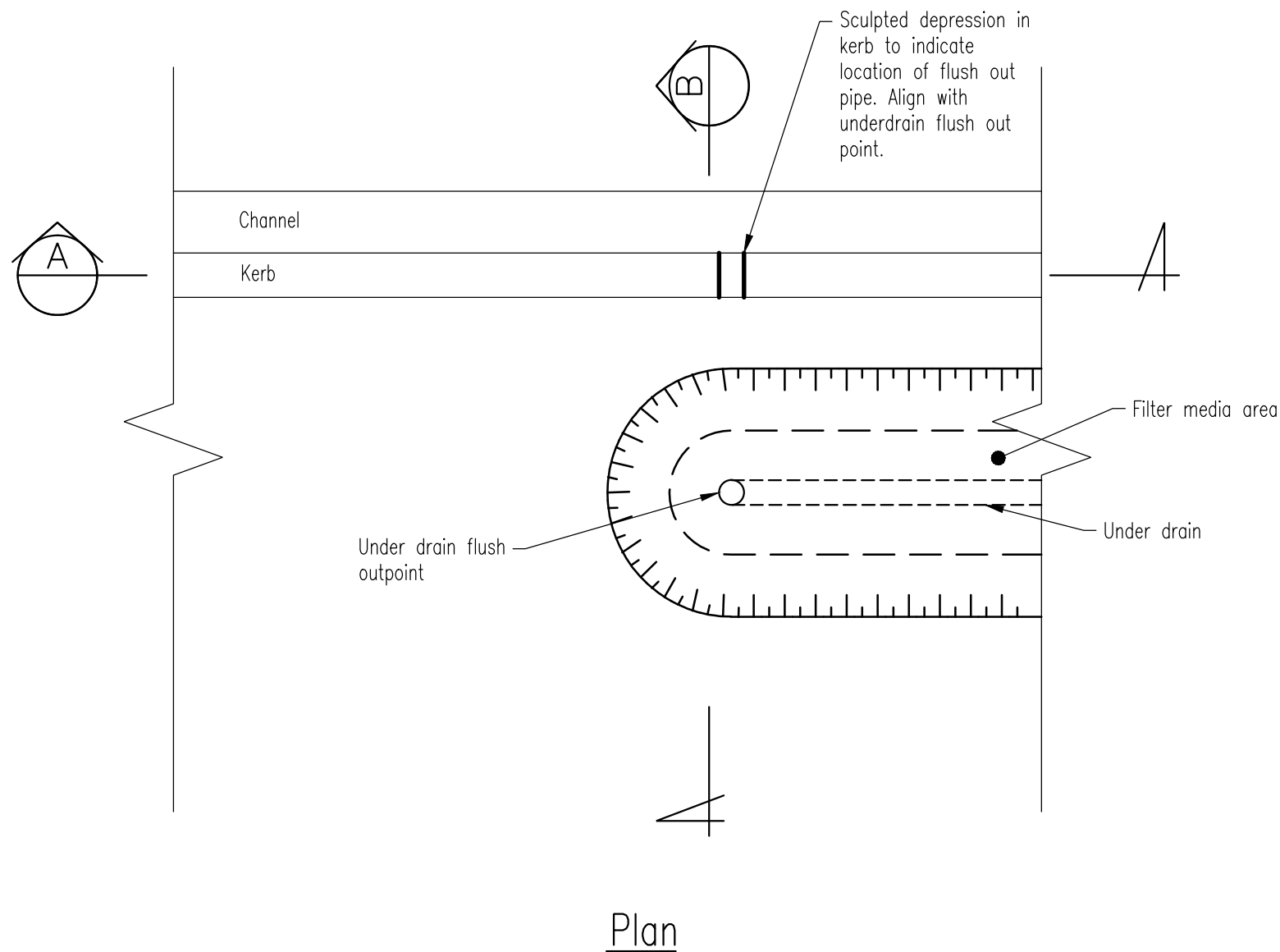
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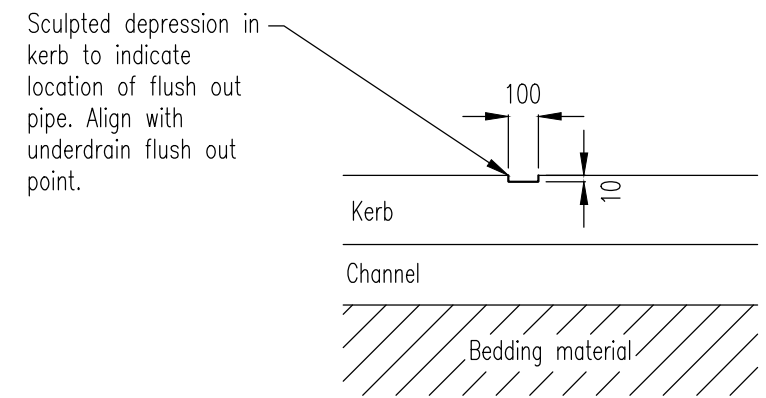
**FLUSH KERBING AND  
GRASS BUFFER STRIP**

SW QUALITY  
Standard  
Drawing  
**Q-0002**

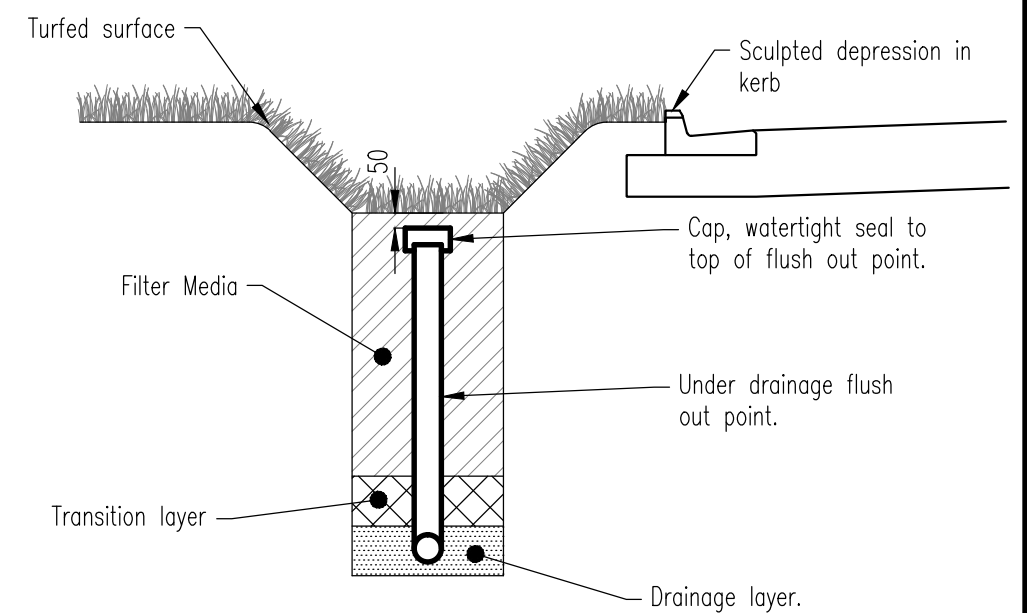
A | | | | |



Plan



Section A



Section B

**NOTES:**

1. For specific bioretention details see drawings DS-070, DS-071, DS-076, DS-077 & DS-078.
2. All measurements in millimetres.

REVISIONS	DATE
A ORIGINAL ISSUE	8/6/16



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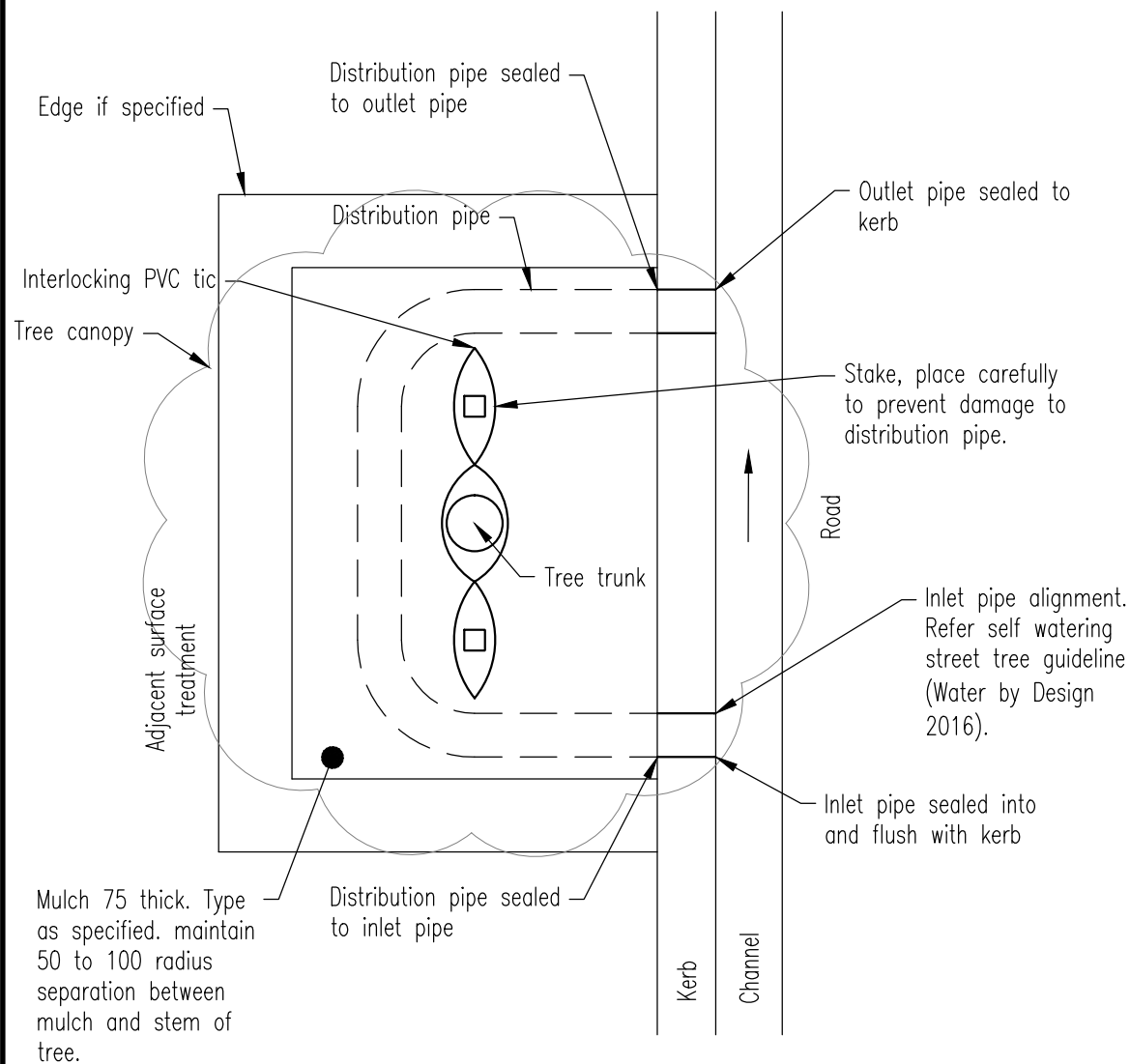
**UNDERDRAINAGE FLUSH OUT  
PIPE IN STREETSCAPE**

**SW QUALITY  
Standard  
Drawing  
Q-0003**

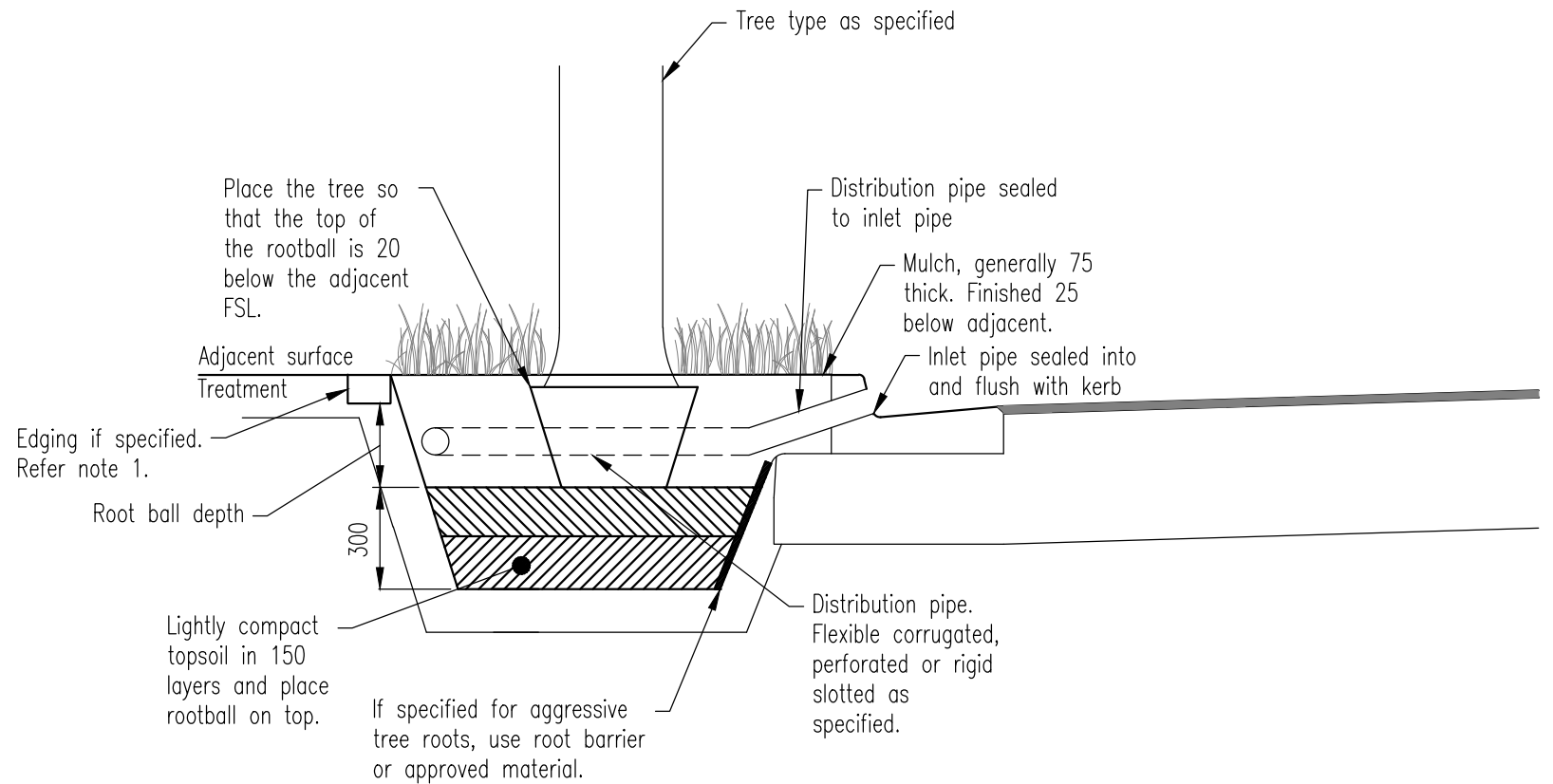
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**NOTES:**

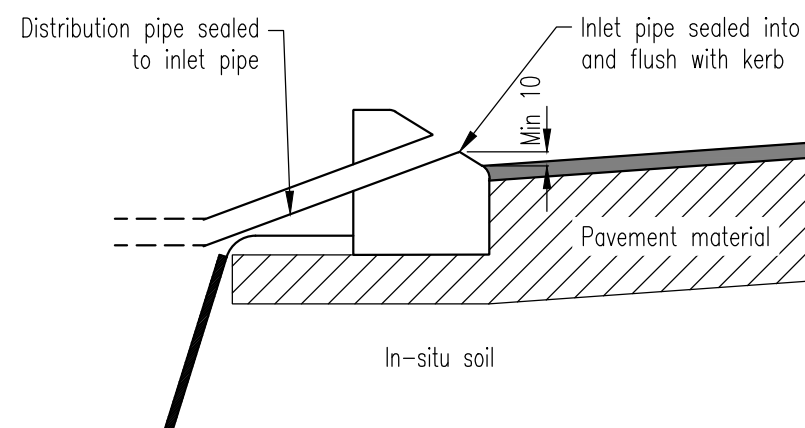
1. Use standard fittings for all connections including joining lengths of pipe.
2. All dimensions in millimetres



Plan



Inlet and kerb detail



Alternate inlet and kerb detail

A	ORIGINAL ISSUE	8/6/16
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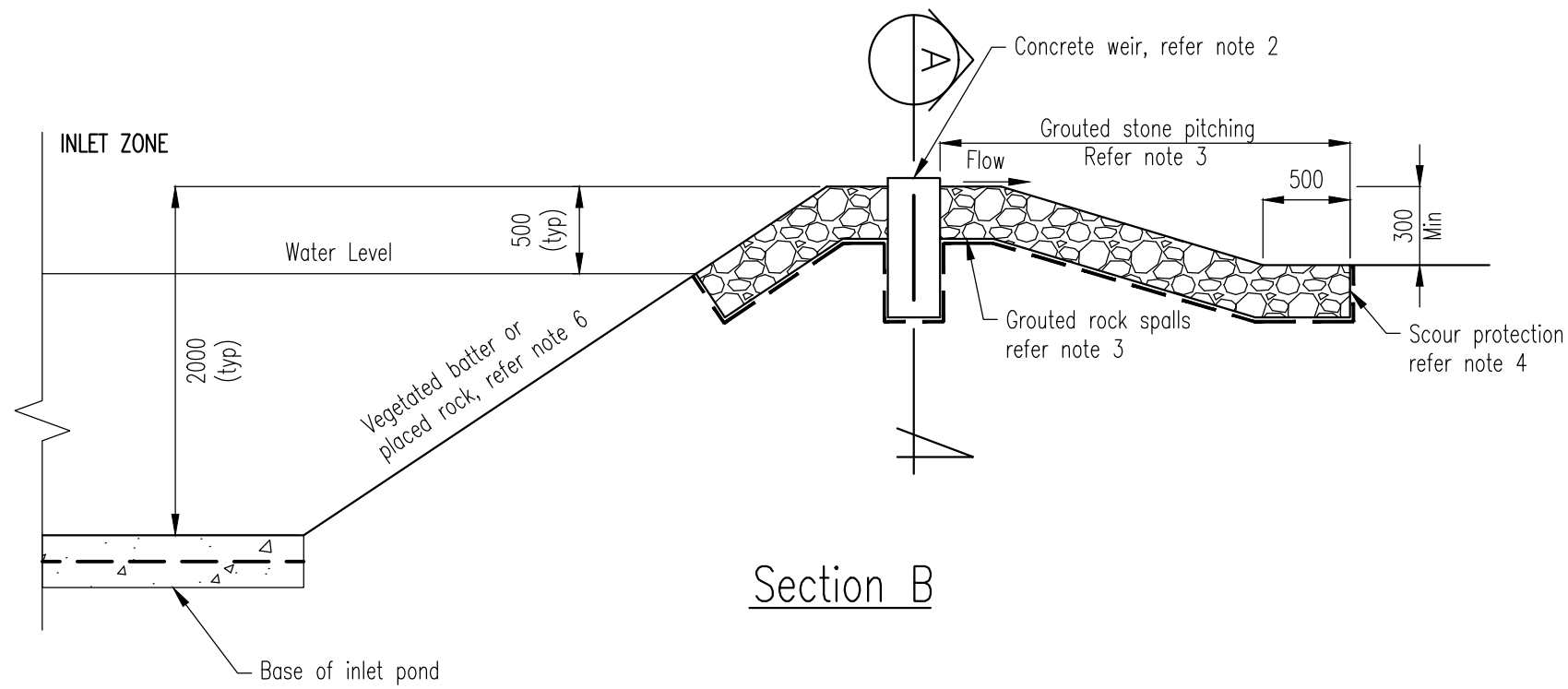
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**SELF WATERING STREET TREE**

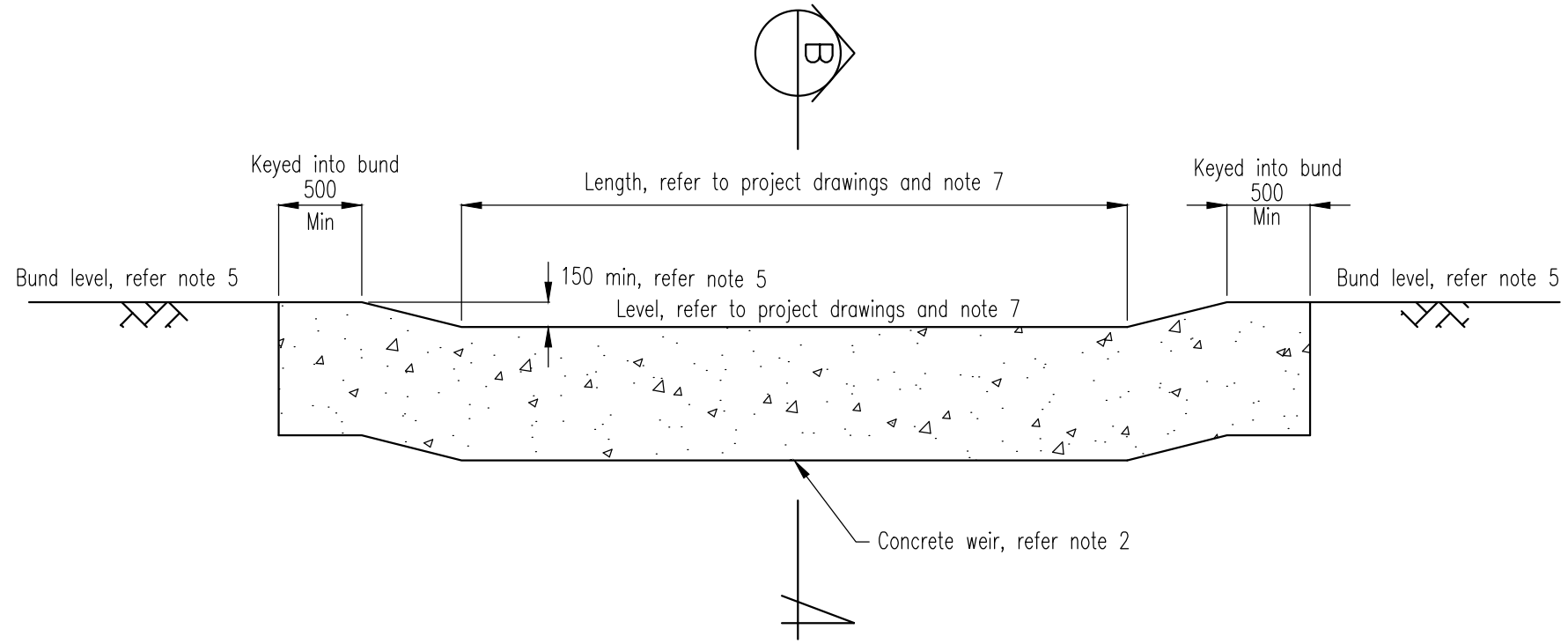
**SW QUALITY**  
Standard  
Drawing  
**Q-0004**

A



Section B

These drawings have been developed in consultation between participating councils. BEFORE USE, the user shall confirm that the drawing has been adopted by the appropriate council.



Section A

- NOTES:**
1. In situ material to be tested and approved by geotechnical engineer prior to weir construction.
  2. Concrete weir – 300 wide x 800 high concrete (N32) with SL81 mesh placed centrally.
  3. Grouted stone pitching – stones 75–100, 300 thick on filter cloth, non-woven geotextile. Refer landscape drawings and project drawings for plant specification and details. Geotechnical engineer to confirm compaction requirements for bund subsoil. Option to drill 100 cores through to subsoil to provide voids for planting (Subject to flow velocities and local government requirements). Option to use placed rock with void plantings subject to approval by hydraulic engineer and local authority.
  4. For extent and details of scour protection refer to project drawings. Bund levels must be noted on project drawings.
  5. Bund level, refer to project drawings for minimum freeboard requirements.
  6. Refer to project drawings for vegetated batter slope. Batters must be in accordance with local authority safety requirements.
  7. Construction tolerances as documented in the "Water Sensitive Design Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands" (Water by Design) must be achieved. Construction tolerances must be noted on project plans. Invert levels of pits, pipes and base levels must be noted on project drawings.
  8. All dimensions are in millimetres unless noted otherwise.

A	ORIGINAL ISSUE	8/6/16
	REVISIONS	DATE



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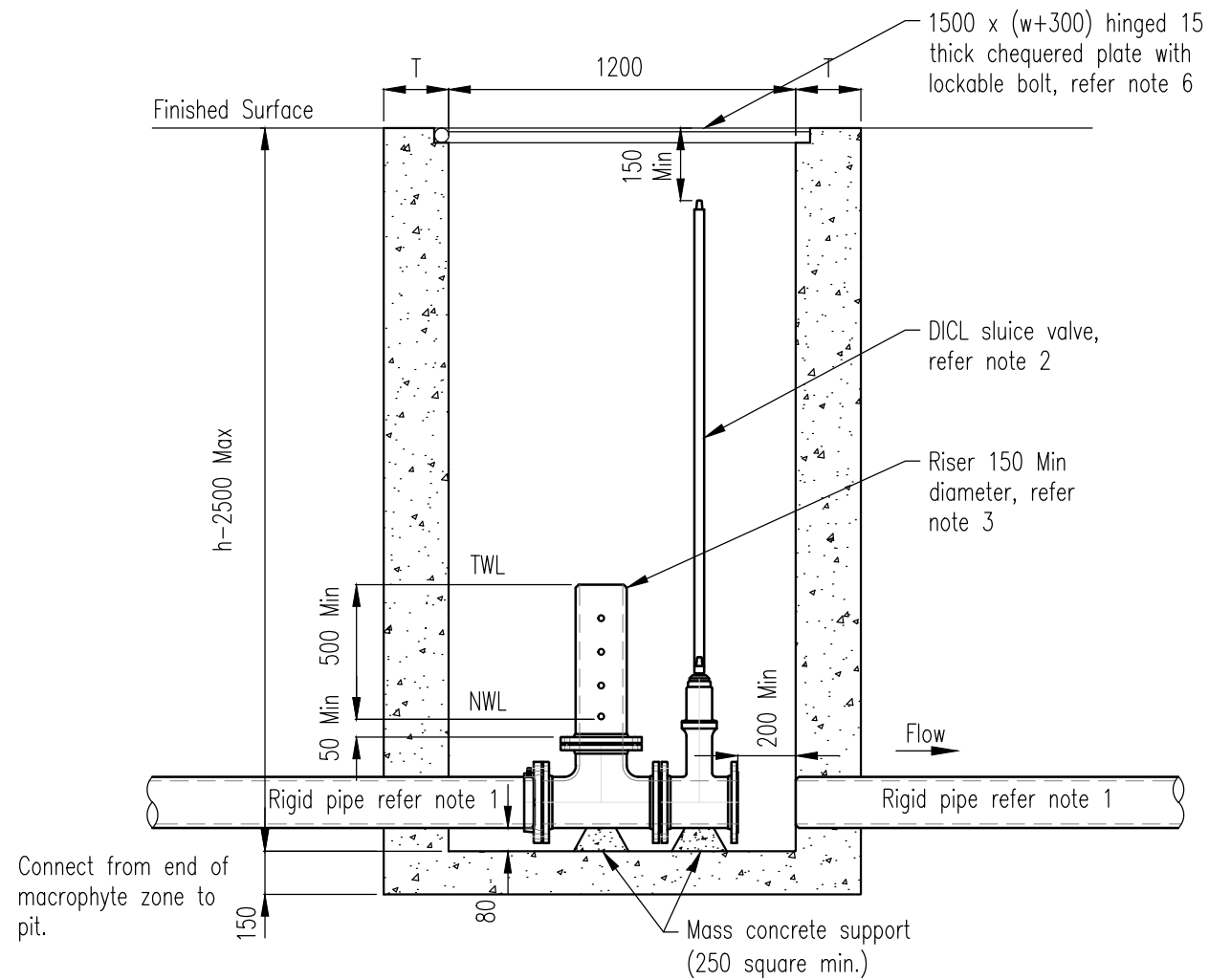
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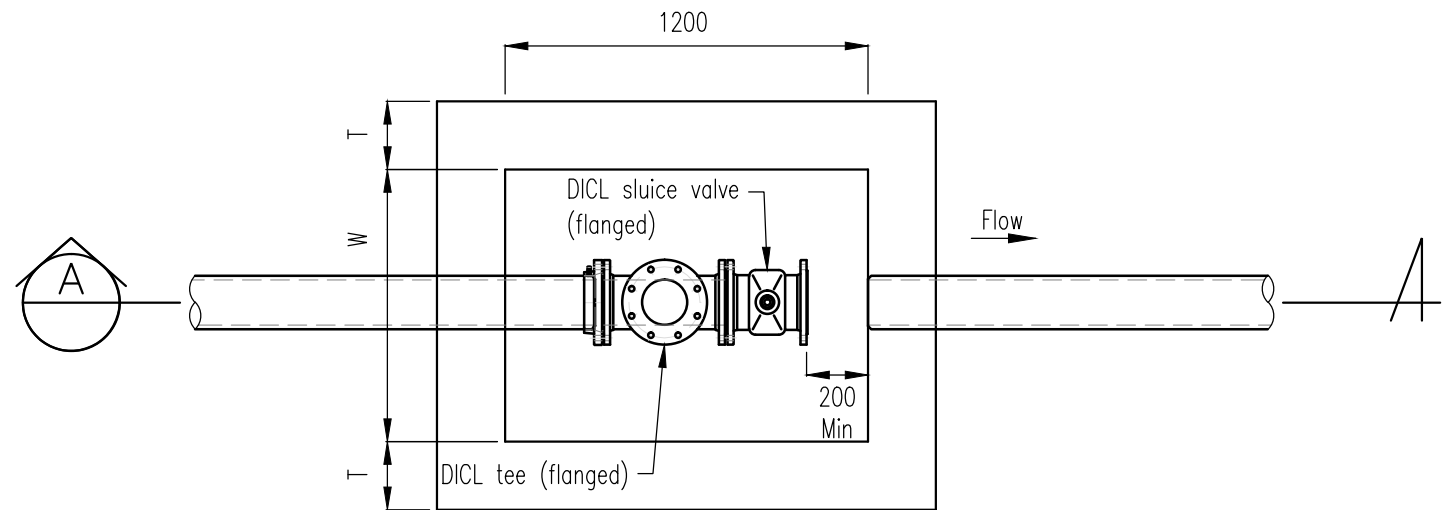
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**CONSTRUCTED WETLAND  
INLET ZONE  
WEIR DETAILS**

**SW QUALITY  
Standard  
Drawing  
Q-0005**



Section A



Plan

**NOTES:**

1. Refer to project drawings for rigid pipe diameter and invert level.
2. DICL sluice valve, refer project drawings for valve size. Valve to remain in closed position for normal operation. Valve to be opened to lower the water level for maintenance of the wetland.
3. Riser rigid pipe CL16, refer to project drawings for holes sizes and locations. Hole size and number as per relevant section of "Water Sensitive Urban Design Technical Design Guidelines" (Water by Design).
4. For pits over 2500 in depth refer project drawings for pit dimensions and reinforcing details.
5. Concrete N25 in accordance with AS 1379:2007 AS 3600:2009
6. Lid and frame to be hot dip Galvanised after fabrication to AS 1650:1989.
7. Construction tolerances as documented in the "Water Sensitive Urban Design Construction and Establishment Guidelines – Swales, Bioretention Systems and Wetlands" (Water by Design) must be achieved. Construction tolerances must be noted on project plans. Invert levels of pits, pipes and base levels must be noted on project drawings.
8. All dimensions in millimetres unless noted otherwise.

Pit Dimensions		
Height (h)	Width (w)	Wall thickness
0-1500	600	150
1500-2500	900	225

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A ORIGINAL ISSUE	8/6/16



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**CONSTRUCTED WETLAND  
OUTLET RISER PIT**

**SW QUALITY  
Standard  
Drawing  
Q-0006**

A



# Tables of Appendix 1

Table AP 1.1 Abbreviations and acronyms

## Appendix 1 Index and glossary of abbreviations and acronyms

Table AP 1.1 Abbreviations and acronyms

Abbreviation/ acronym	Description
AEP	Annual exceedance probability
AHD	Australian height datum
ARI	Average recurrence interval
ASS	Acid sulfate soils
AS	Australian Standard
AO	Acceptable outcomes
AV	Articulated vehicle
BCA	Building Code of Australia
CO	Compliance outcomes
CPTED	Crime prevention through environmental design
DEHP	Department of environment and heritage protection
DFE	Defined flood event
DFL	Defined flood level
DNRM	Department of natural resources and mines
DSDIP	Department of state development, infrastructure and planning
DSTE	Defined storm tide event
DTMR	Department of transport and main roads
EP Act	<i>Environmental Protection Act 1994</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ESCP	Erosion and sediment control plan
GFA	Gross floor area
GLFA	Gross leasable floor area
GIS	Geographic information systems
GPS	Global positioning system
HAT	Highest astronomical tide
HRV	Heavy ridged vehicle
ICOMOS	International council on monuments and sites
km	Kilometre
LGIP	Local government infrastructure plan
LP Gas	Liquid petroleum gas
m	Meter
MCU	Material change of use
MLES	Matters of local environmental significance
MNES	Matters of national environmental significance

Abbreviation/ acronym	Description
MSES	Matters of state environmental significance
MU	Mixed use
PMF	Probable maximum flood
PMVA	Property map of assessable vegetation
PO	Performance outcomes
PSP	Planning scheme policy
QDC	Queensland Development Code
ROL	Reconfiguring of a lot
RPEQ	Registered professional engineer Queensland
SC	Schedule
SPA	<i>Sustainable Planning Act 2009 (repealed)</i>
SPP	State planning policy
SQMP	Stormwater quality management plan
SRV	Small rigid vehicle
the Act	<i>Planning Act 2016</i>
the Regulation	Planning Regulation 2017
WQO	Water quality objectives
WRC	Whitsunday Regional Council
WWMP	Wastewater management plan





## Tables of Appendix 2

Table AP 2.1 Table of amendments

## Appendix 2 Table of amendments

Table AP 2.1 Table of amendments

Adoption date	Planning scheme version	Amendment type	Amendment description