ADAC XML 5.0.1

DATA CAPTURE GUIDELINES

ADAC XML Files to be included as an accompaniment to the "As-Constructed" bundle submitted to Council

Ver 3.0 (19th June 2019)

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VERSION NO	DISTRIBUTION	DATE	COMMENTS
1.0	INTERNAL WRC STAKEHOLDERS	25/03/2019	DRAFT
2.0	INTERNAL WRC STAKEHOLDERS	12/06/2019	DRAFT
3.0	INTERNAL WRC STAKEHOLDERS	19/06/2019	FINAL

1. PURPOSE

The purpose of this document is to provide practical guidelines and general assistance with respect to the survey, creation and provision of compliant ADAC XML files for Water & Sewerage, Transport, Stormwater and Open Space/ Parks assets. ADAC XML files are required to accompany the usual bundle of "As-Constructed" (As-Built) plans, drawings, schedules and associated information reflecting all details of new civil infrastructure and associated assets.

On completion of physical works and prior to asset handover, "As-Constructed" (also known "Works-as-Executed" or "As-Built") information is prepared. "As-Constructed" information clearly indicates relevant details, locations, levels and alignments (survey) and other approved variations in assets or construction methods that may have been carried out during the operational works as compared to the original approved design.

While the summary "As-Constructed" Plans accurately reflect all details including material types, specifications and other asset-specific information, the accompanying ADAC xml digital file compiles this "As-Constructed" information in a standardised (XML) format.

2. INTRODUCTION TO ADAC XML

ADAC XML files are a compulsory accompaniment to the "As-Constructed" bundle of information required by council as a part of the handover of nominated works and associated civil assets and infrastructure.

The ADAC XML format (schema) is a non-propriety data specification and file transfer tool written in XML language. The schema is managed by the ADAC Consortium of Subscribers principally made up of local authorities and water utilities from across Australia. The schema and associated xml files are used to facilitate the collection and translation of data related to both new and existing infrastructure.

Compliant ADAC XML files contain a structured and precise digital record of the assets described in the As-Constructed (clean as-constructed) Plans and other associated engineering documentation. Details include survey-accurate cadastral and boundary references, geometries and relative levels as well as detailed asset records and accompanying attributes including material types and approved pavement specifications.

More specifically, the XML files are used to check the completeness of the "As-Constructed" information provided. The files afford further confirmation of compliance with approval conditions as well as helping to verify specifications and other design-related requirements.

Depending on the tools[1] (ADAC XML generator) being used to produce the ADAC XML output, compliant files may initially be created during survey capture and then finalised in conjunction with the creation of the "As-Constructed" drawings.

Alternatively the XML files may be generated after the "As-Constructed" CAD drawings have been finalised. It is however essential that the "As-Constructed" drawings and ADAC XML files are created using complete and survey-accurate information to identify both the assets and the precise locations being represented and that the details in the XML file and drawings match exactly.

[1] Various software tools (purpose-built ADAC XML generators) are available to capture necessary details and asset attributes required to produce a compliant ADAC XML file. Advice can be sort from providers of most civil engineering design suites (CAD) and survey tools.

Please also note that when preparing the ADAC XML file, some assets are common to multiple asset classes e.g. “Lighting” assets may be related to either transport or open space. In those cases recording assets under a different asset class (when preparing the digital ADAC XML file) than to the actual asset use is valid and appropriate.

On receiving the “As-Constructed” bundle, council will undertake a data format and conformance check on both the AS-CON drawings and ADAC XML file to confirm the completeness and validity of the details. **Please note that if significant anomalies, errors or missing information are identified during these comparison checks, the As-Constructed Plans and/or the ADAC XML file may be returned to the provider for correction and resubmission which can potentially delay the progress of asset handover, release of bonds or other related approvals**.

Once the ADAC XML data file(s) are accepted by council they are uploaded to various internal systems and used to assist in the maintenance planning and long-term management of the new infrastructure and other related assets.

3. GENERAL REQUIREMENTS

The ADAC XML file is to be produced using the specified ADAC XML schema release and should be checked for compliance before being submitted to council. Details on the preparation of As-Constructed plans and the ADAC capture process can be found at https://www.whitsunday.qld.gov.au/662/Whitsunday-Development-Manual-Standard-D

The ADAC XML files are to be provided via the nominated council email address at:

info@whitsundayrc.qld.gov.au

4. DATUM INFORMATION

Data contained in the ADAC XML file(s) must reflect the survey details exactly and all asset details are to be as shown on the Summary "As-Constructed" Plan(s).

The following shall also apply:

- survey details must be derived from at least two (2) relatively well spaced permanent survey marks (PMs);

Survey details to be derived from existing and/or newly placed permanent survey marks (PSMs) with Map Grid of Australia (MGA) GDA94 - UTM Zone 55 coordinates for the survey area. All AHD levels to be to fourth (4^{th}) order standard or better as defined by the current ICSM[2] Standard.

[2] Intergovernmental Committee on Surveying & Mapping – http://www.icsm.gov.au

5. CREATION OF ADAC XML FILE(S)

In producing compliant ADAC XML files, information on the following asset classes will need to be captured according to the approved ADAC data schema. Vendors of ADAC XML generators are provided with any updates to the ADAC schema free of charge and routinely have these updates incorporated into their various products for release to customers in a timely manner.

Further information on the ADAC process, data schema, available tools and supporting agencies can be found on the ADAC website at: http://www.ipweaq.com/adac

While the ADAC XML files are created from the survey-accurate "As-Constructed" information, particular attention must be given to how council wishes to have particular details captured and recorded for each particular asset class.

The following sections are provided to assist with the capture of ADAC data when using proprietary ADAC XML generators either during the "As-Con" survey pickup or when capturing the ADAC asset information as a part of the creation of the As-Constructed Plans and drawings in civil design (software) suites.

The physical nature of assets will determine where/if assets are captured separately within the ADAC XML file. For example, a footpath or a pathway would be captured as individual and separate sections (segments) to accurately reflect any changes such as width or material type.

Note: It is not within the scope of this document to provide detailed advice on how to operate the various specialist products and tools (ADAC XML generators) used in the creation and provision of the compliant ADAC XML files. Assistance and advice on the use of any particular tool should be sourced from the provider of the product who would necessarily be familiar with general ADAC requirements, processes and the current data model (ADAC XML schema).

Asset Capture Guidelines

In order to capture and record all necessary asset information the following details are intended to provide guidance in the creation of a compliant ADAC xml file.

Broadly, the physical nature of the individual assets will determine where/if assets are captured separately within the digital ADAC xml. For example, a footpath or pathway would be captured as individual and separate features to reflect any changes in properties such as widths or material type. Likewise for road pavement and seals where there is physical change in the dimensions and/or materials.

Please refer to the various photos, diagrams and images that are presented under the different sections that are intended to illustrate and guide on the appropriate capture requirements. Details on attribution (mandatory and non-mandatory) are presented in the relevant tables included with each of the asset classes. Guidance on 'project" and "global" attribution is included below.

ADAC Schema Version Details

This document is in-line with the approved ADAC schema version 5.0.1 (January 2018). As such only XML files meeting the v5.0.1 schema will be accepted by Whitsunday Regional Council. Information regarding the approved ADAC schema is available at the IPWEAQ ADAC website.

Project Attribution

The following attribution is included within the header-level information and is to be completed in all ADAC xml files submitted:

ATTRIBUTE	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)	NOTES
ExportDateTime	Y		Should be auto-populated from the xml generating software
Name	Y		Should be populated with a description of the project (and stage number for subdivisions)
Owner	Y		To be recorded as one of the following, as applicable: ○ Council ○ Private ○ State ○ Others
Receiver	Y		To be noted as: **Whitsunday Regional Council**
WorksApprovalID	N		○ Operational Works Project Number; **or** ○ Contact/Project Identification Number; **or** ○ *Internal Project Number*.
DrawingNumber	Y		None
DrawingRevision	N	Y	None
ConstructionDate	Y		At *Project Level,* "Construction Date" **must be populated** with Surveyor's As-Constructed (AS-CON) date
HorizontalCoordinateSystem	Y		At *Project Level,* "Horizontal Coordinate System" field must be populated with "**MGA55**"
HorizontalDatum	Y		At *Project Level,* "Horizontal Datum" field must be populated with "**GDA94**"
VerticalDatum	Y		At *Project Level,* "Vertical Datum" field must be populated with "**AHD**"
IsApproximate	Y		Must be required as "False"
OriginMark	N		Will be "Nil"
Notes*	N		As Required (See Below)
DrawingExtents-SouthWest	Y		Should never extend beyond: X: 455,000 Y: 7,595,000
DrawingExtents-NorthEast	Y		Should never extend beyond: X: 740,000 Y: 7,835,000
Description	Y		None
ProjectStatus	Y		None

ATTRIBUTE	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)	NOTES
Software.Product	Y		Auto-populated from the xml generating software
Software.Version	Y		Auto-populated from the xml generating software
Surveyor.Name	Y		None
Surveyor.DateFinalSurvey	Y		None
Surveyor.DateApproved	Y		None
Engineer.Name	Y		None
Engineer.DateApproved	Y		None

* At the individual *Asset Level*, the "*Notes*" field should be used to record any additional information regarding the asset, or to record relevant attribute information/asset description which isn't available within defined values/enumerations in the ADAC xml schema.

Global Attribution

Global Asset Attribution relates to attributes that are common on all feature types in the ADAC schema.

Mandatory Attribution: The following attributes related to Global Types are to be considered mandatory for all asset types:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
ADACId	Y	
Infrastructure Code	N	
Owner	N	Y
DrawingNumber	N	Y *(if different to Project level)*
DrawingRevision	N	Y *(if different to Project level)*
ConstructionDate	N	Y
Department	N	
Surveyor	N	Y *(if different to Project level)*

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Engineer	N	**Y** *(if different to Project level)*
Status*	**Y**	
DataQuality	N	
Notes	N	
SupportingFiles	N	

* At the individual *Asset Level,* the "Status" field is both critical and mandatory with the following applicable values only to be used. Please note the description for each of the permissible "Status" types:

- Newly Constructed (Newly constructed asset passed to Council)
- Existing (Existing asset that is recorded as it is currently situated)
- Designed (Future asset that is recorded as it is "designed" for the future)
- Planned (Future asset that is known but prior is to design)
- Removed (Previously existing asset - described as it was prior to removal)
- Retired (Pre-existing asset no longer in operation, but left in-situ. Enumeration also means "Abandoned".)
- Rehabilitated (Existing asset that has been refurbished for ongoing use)

The ADACId is as it is used to identify assets/features that are considered non-compliant when the xml file is processed. There is no defined naming convention required in creating the ADAC xml other than all features within the file should be uniquely identified by the naming convention chosen.

Cadastral Information

Cadastral Connection

Asset Capture: Simple linear feature capturing the cadastral boundary connections as determined by survey methods and the acknowledged "PSM"s.

Spatial Relationship: Must be coincident to the vertices that define the Cadastre Lot Boundary features and relevant.

Mandatory Attribution: The following attribution is mandatory for *Cadastral Connections*:

Element Name	ADAC Mandatory (Y/N)
Bearing	Y
Distance_m	Y

Easement

Asset Capture: Multi-patched area feature representing a new or existing Easement.

Spatial Relationship: May share boundaries Lot Parcels, Road Reserve or Water Course Reserve. Node points between shared boundaries must be coincident (i.e. no overlaps or "slithers").

Mandatory Attribution: The following attribution is mandatory for *Easements*:

Element Name	ADAC Mandatory (Y/N)
LotNo	Y
PlanNo	Y

Lot Parcel

Asset Capture: Area feature representing the boundary of a titled or proposed Cadastral Lot.

Spatial Relationship: May share boundaries with RoadReserves or WaterCourses. Node points between shared boundaries must be coincident. (i.e. no overlaps or "slithers").

Mandatory Attribution: The following attribution is mandatory for *Lot Parcels*.

Element Name	ADAC Mandatory (Y/N)
LotNo	Y
PlanNo	Y
CancelledLotPlan	N
TitledArea_sqm	Y

Road Reserve

Asset Capture: Multi-patched area feature representing a gazetted road reserve boundary.

Spatial Relationship: May share boundaries with WaterCourseReserve, LotParcels, other RoadReserve areas or Easements.

Mandatory Attribution: The following attribution is mandatory for *Road Reserves*:

Element Name	ADAC Mandatory (Y/N)
Name	Y

Survey Mark

Asset Capture: Simple point feature representing a Permanent Survey Mark.

Spatial Relationship: May be used in a Cadastral Connection (to lot parcels)

Mandatory Attribution: The following attribution is mandatory for *Survey Marks*.

Element Name	ADAC Mandatory (Y/N)
MarkName	Y

Water Course Reserve

Asset Capture: Multi-patched area feature representing a boundary of a Water Course reserve.

Spatial Relationship: May share boundaries with RoadReserves, LotParcels and Easements. Node points between shared boundaries must be coincident (i.e. no overlaps or "slithers").

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Name	Y

Open Space Assets

Open Space Functional Area

General Information: Examples include public parks, recreational and environmental reserves.

Asset Capture: Multi-patched area featuring representing the complete "footprint" of the Open Space area which may enclose other associated Open Space Assets. Refer to the Red dashed polyline in **Figure 1 below**.

Spatial Relationship: Not Applicable

Mandatory Attribution: The following attribution is mandatory for Open Space Areas:

Element Name	ADAC Mandatory (Y/N)
Name	Y
Type	Y

Figure 1 - Typical example of Open Space ADAC data capture.

Activity Area

To be captured as a closed polyline/object within the "Open Space Functional Area" table structure as represented by the dashed yellow line in Figure 1 (e.g. playground softfall, recreational space, hardstand play area, landscaped areas).

General Information: This would include defined playgrounds, courts, sports fields or animal free run/agility enclosures.

Asset Capture: Multi-patched area representing differing activities. Playgrounds will often align with soft-fall boundaries. Other courts or fields are donated by the practical extents of the playing or dedicated spectator area. Refer examples in **Figure 1 above**.

Spatial Relationship: Feature is to be totally within the parent Open Space area.

Mandatory Attribution: The following attribution is required for Activity Areas:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Type	Y
Material	Y
Thickness_mm	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metres

Activity Point

General Information: Includes individual pieces of playground or fitness equipment.

Asset Capture: Simple point feature identifying the individual asset such as an item of playground equipment. Objects may be located within defined activity areas such as a playground. Asset is located by

the approximately centre point. Key dimensions are to be included in the "notes" areas of the individual asset record. Refer examples as shown in **Figure 1 above**.

Spatial Relationship: Point to be shown within the parent Open Space polygon or an individual defined Activity Area.

Mandatory Attribution: The following attribution is required for Activity Points:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
Type	Y	
Material	Y	
Theme	N	Y
Units	N	Y
Manufacturer	N	Y
ModelNumber	N	

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Artwork

General Information: Includes Entry Statements, Memorials, Plaques and Sculptures.

Asset Capture: Simple Point Feature representing the centre of the asset.

Mandatory Attribution: The following attribution is mandatory for Artwork.

Element Name	ADAC Mandatory (Y/N)
Type	Y
Material	Y

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Barbeque

General Information: Public Barbeque which may be a single or multi-plate unit.

Asset Capture: Simple Point Feature representing the centre of the asset.

Mandatory Attribution: The following attribution is mandatory for Barbeques.

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
EnergySource	Y	
Plates	Y	
SurroundingMaterial	Y	
TopMaterial	Y	
Manufacturer	N	Y
ModelNumber	N	Y

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Barrier Continuous

General Information: Includes fences, bollard runs, gates and handrails.

Asset Capture: Complex linear feature of polylines with straight line segments (read: No curves) representing a barrier type asset. It is recommended, but not mandatory, that each vertex represents an upright, particularly for bollard runs. This allows the geometry to be exploited to identify the individual features if necessary. Refer dashed Yellow line in **Figure 2 below**.

Mandatory Attribution: The following attribution is mandatory for Barrier Continuous

Element Name	ADAC Mandatory (Y/N)
Type	Y
UprightMaterial	Y
LInkMaterial	Y
TopMaterial	Y
Length_m	Y
Height_m	Y
UprightNumber	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metre

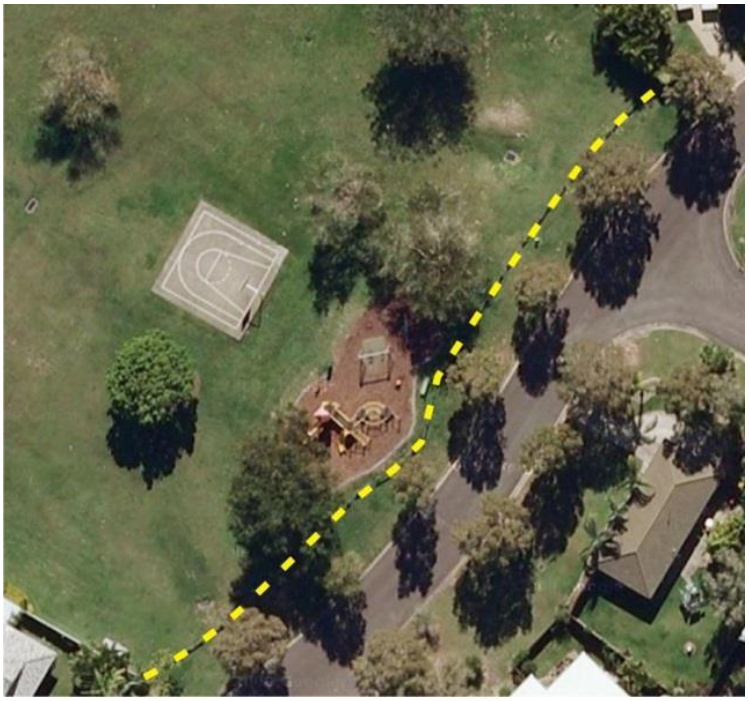

Figure 2

Barrier Point

General Information: Includes bollards and locking posts (but not guide posts).

Asset Capture: Single Point Feature representing the centre of the asset.

Mandatory Attribution: The following attribution is mandatory for

Element Name	ADAC Mandatory (Y/N)
Type	Y
UprightMaterial	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metres

Bicycle Fitting

Asset Capture: Simple Point Feature representing the centre of the fitting.

Mandatory Attribution: The following attribution is mandatory for Bicycle Fittings

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material	Y	
Manufacturer	N	Y
ModelNumber	N	

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Boating & Waterside Facility

General Information: Refers to assets that have an association with boating such as Pontoons, ramps and jetties.

Asset Capture: All Waterside and Boating Assets to be captured as a single point.

Mandatory Attribution: The following attribution is mandatory for Boating and Waterside Facilities:

Element Name	ADAC Mandatory (Y/N)
Type	Y
Material	Y

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Building

General Information: Any built structure used for occupation or storage.

Asset Capture: Area feature to recorded (closed polygon) representing the vertical Building footprint for a structure other than a shelter.

Mandatory Attribution: The following attribution is mandatory for Buildings:

Element Name	ADAC Mandatory (Y/N)
Type	Y
Material	Y

Positional Accuracy: Horizontal Accuracy of +/- 2 metres

Edging

General Information: Landscape or Activity Area edging.

Asset Capture: Complex linear feature (polylines and including curves but not Bezier curves) representing the edging material.

Spatial Relationship: Edging to be shown as a polyline encompassing an Activity or Landscaping Area feature.

Mandatory Attribution: The following attribution is mandatory for

Element Name	ADAC Mandatory (Y/N)
Material	Y
Length_m	Y
Width_mm	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metres

Electrical Conduit

General Information: Electrical and Communication Services

Asset Capture: Complex linear feature (polylines and including curves but not Bezier curves) representing a conduit run.

Spatial Relationship: Conduit to be shown as a polyline starting and finishing at coincident points with terminating fittings.

Mandatory Attribution: The following attribution is mandatory for

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material	Y	
Diameter_mm	Y	
Length_m	Y	
Protection	N	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metres

Electrical Fitting

General Information: Includes Lights, Pits, Poles, Power Outlets and Switchboards.

Asset Capture: Simple point feature representing the centre of each asset. If lights are mounted on a pole this aspect is to be recorded in the "notes" field of the record.

Spatial Relationship: Shown coincident to supply conduit runs where applicable.

Mandatory Attribution: The following attribution is mandatory for Electrical Fittings:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Base	Y	
Material	Y	
Energy	Y	
Manufacturer	N	Y
ModelNumber	N	

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Fixtures and Fitting

General Information: Includes Dog Bag Dispensers and Drinking Bowls, Fish Cleaning Stations, Flag Poles, Goal Posts and other specialised fixtures and fittings.

Asset Capture: Simple point feature representing the centre of the asset.

Mandatory Attribution: The following attribution is mandatory for Fixtures & Fittings:

Element Name	ADAC Mandatory (Y/N)
Type	Y
Material	Y
Manufacturer	N
ModelNumber	N

Positional Accuracy: Horizontal Accuracy of +/- 1 metres

Landscape Area

General Information: Gardens and Grassed areas (included Synthetic Grass) are to be included in the As-Constructed ADAC data.

Asset Capture: Multi-patched area feature representing the "footprint" of a landscaped area. Changes between landscaping (grassed area to garden bed) are to be shown as separate polygon.

Mandatory Attribution: The following attribution is mandatory for Landscaped Areas:

Element Name	ADAC Mandatory (Y/N)
Type	Y
RootBarrier	Y
Irrigated	Y

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metres

Retaining Wall

General Information: Walls used to retain or stabilise earth or other material or act as a barrier.

Asset Capture: Complex linear feature (polylines including curves but Bezier curves) is used to represent a retaining wall. While it is accepted to be a three dimensional object, the wall is to be captured as a linear course at the point where it intersects the ground. **Figure 3 below** shows the capture location of a new retaining wall (red hatched). Where the retaining wall gradually changes height over its length, the height is to be averaged over the length of the wall. Changes in the retaining wall material must be represented as a separate feature as per the blue dashed line in **Figure 3 below**.

Figure 3

Mandatory Attribution: The following attribution is mandatory for Retaining Walls:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Material	Y
Construction	Y
Length_m	Y
Height_m	Y
Width_m	N

Positional Accuracy: Horizontal Accuracy of +/- 0.5 metre

Seat (and Bench)

General Information: Seats and Benches located within Open Space areas but not including seating comprising part of a Table feature.

Asset Capture: Simple point feature representing the centre of the seat or park bench configuration.

Mandatory Attribution: The following attribution is mandatory for Seats and Benches:

Element Name	ADAC Mandatory (Y/N)
SeatType	Y
Places	Y
Material	Y
Manufacturer	N
ModelNumber	N

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Shelter

General Information: Open space park shelter structure.

Asset Capture: Complex polygon feature representing the footprint of a shelter structure. Significant assets within the Shelter such as lighting, barbeques or park furniture are to be captured as separate objects. Shade sails with multiple shade panels may be captured as on asset where the panels share a common mounting point e.g. Centre Pole.

Mandatory Attribution: The following attribution is mandatory for Shelter structures:

Element Name	ADAC Mandatory (Y/N)
Type	Y

Element Name	ADAC Mandatory (Y/N)
ConstructionType	Y
FloorMaterial	Y
WallMaterial	Y
RoofMaterial	Y
Manufacturer	N
ModelNumber	N

Positional Accuracy: Horizontal Accuracy of +/- 2 metres

Shelter Polygon

See details above.

Sign

General Information: Signs of various types found within Open Space and Parks.

Asset Capture: Simple point feature representing the approximate centre of the sign. Street or Traffic signs are not required to be captured. Poles need not to be captured/recorded separately.

Mandatory Attribution: The following attribution is mandatory for Signs:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material	Y	

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Manufacturer	N	
ModelNumber	N	
Structure	Y	
SignText	N	Y
Rotation	N	

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Table

General Information: Tables located within Open Space areas

Asset Capture: Simple point feature representing the centre of the table.

Mandatory Attribution: The following attribution is mandatory for Tables:

Element Name	ADAC Mandatory (Y/N)
Type	Y
Seating.SeatType	Y *(If seating exists)*
Seating.Places	Y *(If seating exists)*
Material	Y
Manufacturer	N
ModelNumber	N

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Tree

General Information: Standalone trees and shrubs located in parks and open space, gardens, landscaped areas and streetscapes.

Asset Capture: Simple point feature approximating the centre of the tree.

Mandatory Attribution: The following attribution is mandatory for Trees:

Element Name	ADAC Mandatory (Y/N)
Species	Y
Genus	Y
RootBarrier	Y
Grate	Y

Positional Accuracy: Horizontal Accuracy of +/- 1 metre

Waste Collection Point (Rubbish Bin)

General Information: Includes rubbish and recycling bins.

Asset Capture: Simple point fingers representing the centre of asset.

Mandatory Attribution: The following attribution is mandatory for waste collection points:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material	Y	
Manufacturer	N	Y
ModelNumber	N	

Sewerage Assets

Property Connection

Asset Capture: Complex linear feature (Polyline not including Curves read: Straight line segments) representing the invert of the pipe asset. Enforced line direction from Inspection Opening to the Non Pressure Pipe/Maintenance Hole due to gravitational flow. Please refer to **Figure 4 below** for examples of a "Jump Up", "Sloped Branch" and "Stub" Connection. **Figure 5 below** defines the Connection dimension attributes.

Spatial Relationship: Gravity downstream end point of the linear feature must be coincident to anywhere on a Non Pressure pipe linear feature or the chamber wall of a Maintenance Hole/Shaft if the asset is a "Stub" connection.

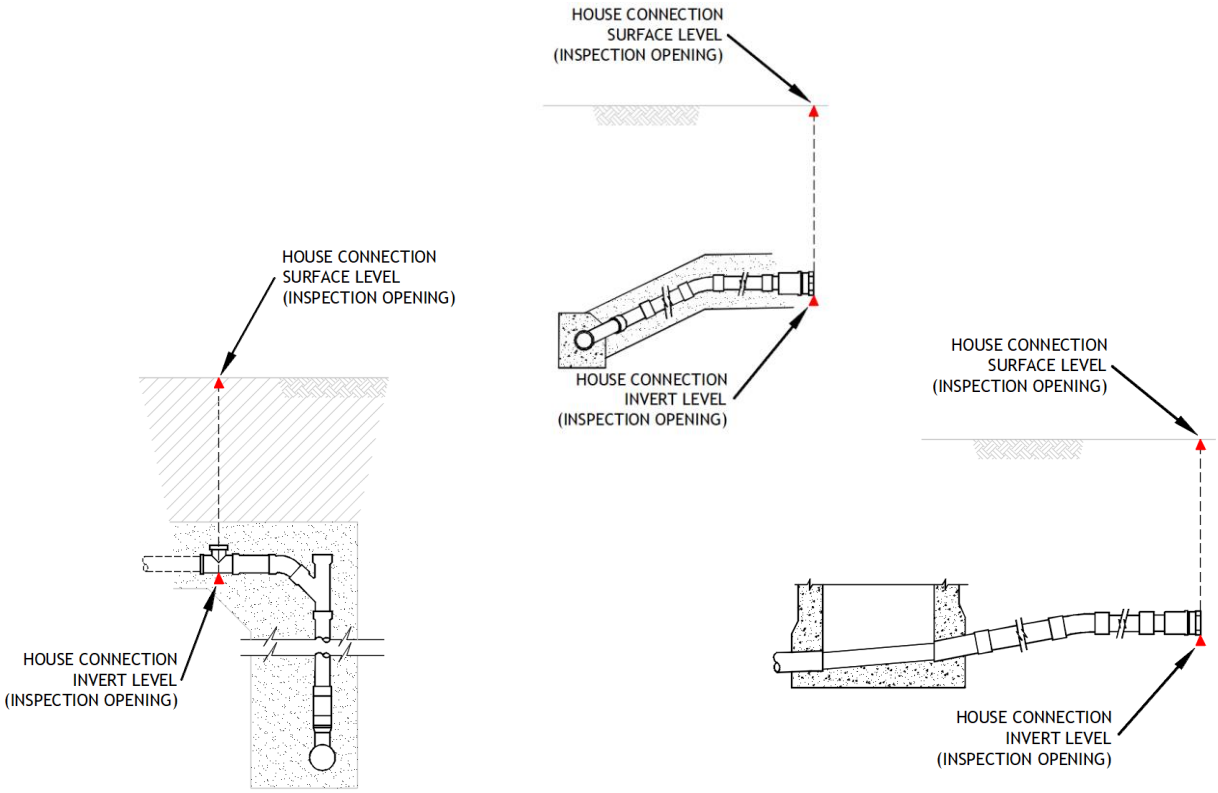

Figure 4

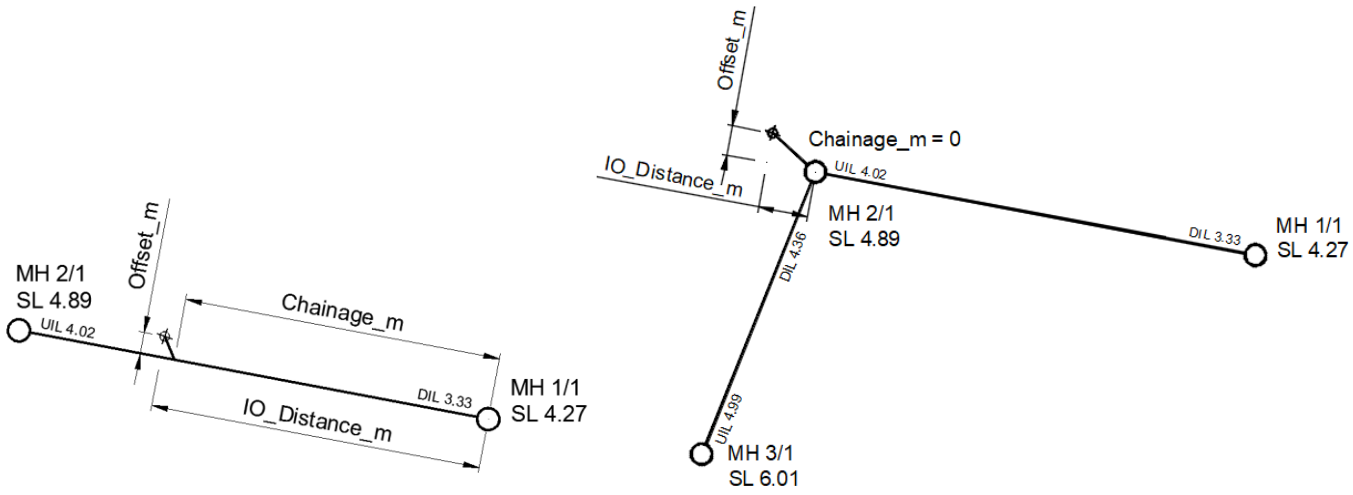

Figure 5

Mandatory Attribution: The following attribution is applicable to house connections.

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
SurfaceLevel_m	Y	
InvertLevel_m	Y	
Use	Y	
Diameter_mm	Y	
Material *	Y	
Class *	Y	
Length_m	Y	
Type	Y	
Chainage_m	Y	
Offset_m	Y	
LineNumber	N	Y
DSMHID	N	Y
IO_Distance_m	Y	
SO_Nearest_m	Y	
SO_Other_m	Y	
Sediment_Trap	Y	

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Fitting

Asset Capture: Single point feature representing the centre point of the fitting.

Spatial Relationship: Must be coincident to the end of pipe assets or a pipe asset anywhere along its length.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material *	Y	
Lining *	N	Y
Protection *	N	Y
BodySize_mm	Y	
BranchSize_mm	N	Y
Rotation	N	

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Maintenance Hole (Including Inspection Openings at End-of-Line)

Asset Capture: Single point feature located at the centre of chamber on the top/lid surface. Note: Capturing centre of lid is appropriate only when the lid is centred over the chamber.

Spatial Relationship: Must be coincident to the end of pipe assets.

Mandatory Attribution: The following attribution is mandatory for Maintenance Holes:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
ChamberSize.Rectangular.Length_mm	**Y** *(if rectangular)*	
ChamberSize.Rectangular.Width_mm	**Y** *(if rectangular)*	
ChamberSize.Circular.Diameter_mm	**Y** *(if circular)*	
ChamberSize.Custom.Area_sqm	**Y** *(if custom)*	
SurfaceLevel_m	**Y**	
InvertLevel_m	**Y**	
FloorConstruction	**Y**	
FloorMaterial *	**Y**	
WallConstruction	**Y**	
WallMaterial *	**Y**	
RoofMaterial *	**Y**	
Lining *	N	**Y**
LidMaterial *	**Y**	
DropType	**Y**	
CatchmentPS	N	
LineNumber	N	**Y**
MH_Number	**Y**	
Chainage_m	N	**Y**
TieDistance_m	N	
OffsetDistance_m	N	**Y**
Rotation	**Y**	

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Non Pressure Pipe

Asset Capture: Complex linear feature (read: polylines with no curves only straight line segments) representing the invert of the pipe asset. Enforced line direction from Gravity Upstream (read: higher AHD level) to Gravity Downstream (read: lower AHD level) due to gravitation flow in each individual pipe.

The gravity upstream and downstream ends of an individual pipe are captured at the intersection between the pipe material and the wall of the chamber. Please refer to **Figure 6 below** for a detailed diagram. Points 2 and 3 represent the intersection of pipe material and chamber wall whereas points 1 and 4 represent the Maintenance Holes capture.

Spatial Relationship: Must be coincident to Maintenance Hole point features in the pumped sewerage network.

Mandatory Attribution: The following attribution is mandatory for Non-Pressure Pipes:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
LineNumber	N	Y
Use	Y	
Diameter_mm	Y	
Material *	Y	
Class *	Y	
Lining *	N	Y
Protection *	Y	
JointType *	Y	
US_InvertLevel_m	Y	
DS_InvertLevel_m	Y	
US_SurfaceLevel_m	Y	
DS_SurfaceLevel_m	Y	
Alignment_m	N	Y
Depth_m	Y	

Embedment *	Y	
RockExcavated	N	
PipeGrade	N	Y
Length_m	N	Y

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

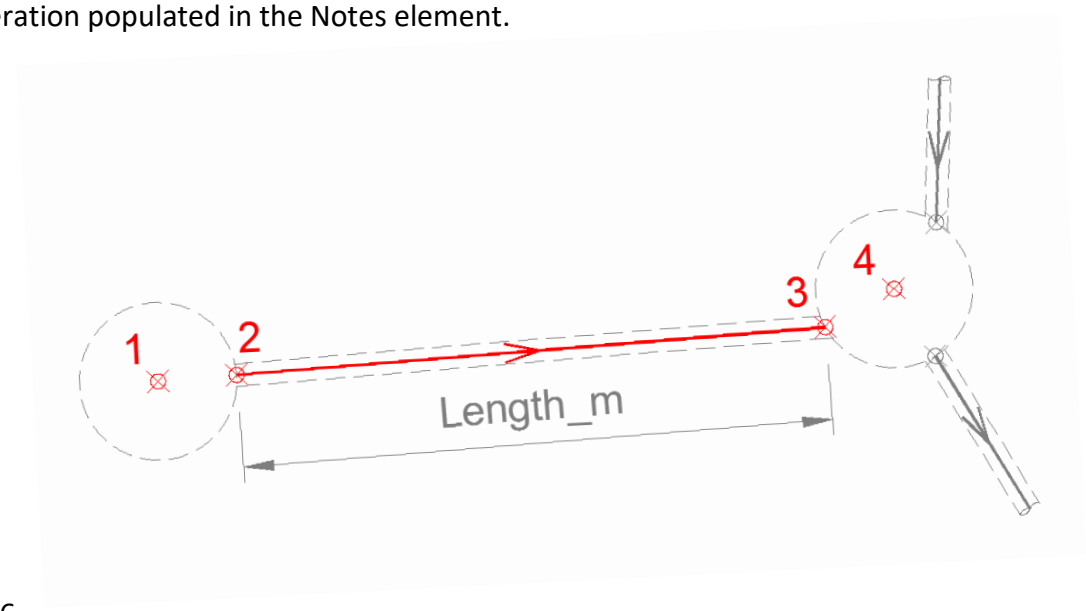

Figure 6

Pressure Pipe

Asset Capture: Complex linear feature (read: polylines with no curves only straight line segments) representing the invert of the pipe asset. Enforced line direction from Pump active asset to Discharge Maintenance Hole due to pumped flow. Pipes to be captured based on their physical and spatial properties and attributes. For example, if a pipe changes size, material, class, embedment or direction then it must be broken and captured separately.

Spatial Relationship: Must be coincident to Pressure pipe point features in the pumped sewerage network.

Mandatory Attribution: The following attribution is mandatory for Pressure Pipes:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
Diameter_mm	Y	
Material *	Y	
Class *	Y	
Lining *	N	Y
Protection *	N	Y
JointType *	Y	
Alignment_m	N	Y
Depth_m	N	
Embedment *	N	
RockExcavated	N	
Length_m	N	

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Valve

Asset Capture: Single point feature representing the centre of a valve body, typically the spindle.

Asset Capture: The relationship between Use and Type is as per the below table.

ADAC.Use	ADAC.Type
Non-Return	Generic Rubber Gate Swing Check
Service Stop Scour Diversion Zone Boundary Flow Control	Gate Butterfly Knife Gate Eccentric Plug Globe Ball Generic Penstock
Pressure Control	Overflow Pressure Release Vacuum Release
Gas Release	Air Valve
Other	Special

Spatial Relationship: Must be coincident anywhere along its length or at the end of Pressure Pipe assets.

Mandatory Attribution: The following attribution is mandatory for Valves:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
Type	Y	
Diameter_mm	Y	
Lining *	N	Y
Protection *	N	Y
Manufacturer	N	
ModelNumber	N	
Rotation	N	

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Break Points for Linear Sewerage Assets - Sewerage Pipes

The following details identify where “breaks” are to be made and pipe lengths to be recorded as individual records during ADAC XML file creation.

Sewer Pipe lengths are to be broken or terminated under the following circumstances:

- Non-pressure (gravity) sewer pipes broken at sewer maintenance holes
- Pressure sewer pipes to be broken at:
    - Changes in Pipe Size;
    - Changes in Pipe Material;
    - Changes in Pipe Class.
    - Change in pipe “grade” (change of direction or slope)

Stormwater/Drainage

Pit (Field Inlets and Gully Pits and Maintenance Holes)

Asset Capture: To be captured and represented as a "point" located at the centre of chamber. Note: Double-Grated pits to be recorded in the Notes element.

Refer to the below matrix for common pit types & the attribution required.

Maintenance Holes	**Use**	Maintenance Hole Roofwater Inspection Chamber
	Lid Type?	Yes
	Inlet?	No
	Lintel?	No
Gully Pits	**Use**	Kerb Inlet
	Lid Type?	No
	Inlet?	Yes
	Lintel?	Yes
Field Inlets	**Use**	Field Inlet
	Lid Type?	No
	Inlet?	Yes
	Lintel?	No
All others	**Use**	Pit Roofwater Outlet
	Lid Type?	No
	Inlet?	No
	Lintel?	No

Please note: the Dimensions of Rectangular, Circular or Extended relate to the Chamber size with the Inlet.InletSize populated with the size of the grate when applicable.

Mandatory Attribution: The following attribution is mandatory for Pits:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
PitNumber	Y	
Use	Y	
ChamberConstruction	Y	
ChamberSize.Rectangular.Length_mm	Y *(if rectangular)*	
ChamberSize.Rectangular.Width_mm	Y *(if rectangular)*	
ChamberSize.Circular.Diameter_mm	Y *(if circular)*	
ChamberSize.Extended.Radius_mm	Y *(if extended)*	
ChamberSize.Extended.Extension_mm	Y *(if extended)*	
LidType	N	Y *(if Use = Maintenance Hole or Roofwater Inspection Chamber)*
SurfaceLevel_m	Y	
InvertLevel_m	Y	
Depth_m	Y	
Inlet.InletConfig	Y *(if Use = Kerb Inlet or Field Inlet)*	
Inlet.InletType	Y *(if Use = Kerb Inlet or Field Inlet)*	
Inlet.InletSize	Y *(if Use = Kerb Inlet or Field Inlet)*	
Lintel.LintelConstruction	Y *(if Use = Kerb Inlet)*	
Lintel.LintelLength_m	Y *(if Use = Kerb Inlet)*	
OutletType	Y	
FireRetardant	Y	
Rotation	N	

End Structure (headwalls and end-walls)

Asset Capture: To be represented as a "point feature" at the outlet of the pipe/culvert as per the example shown by the green cross in **Figure 7 below**. Point to be located at top of the structure above the invert of the associated pipe/s and midway on the headwall.

Mandatory Attribution: The following attribution is mandatory for End Structures:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
StructureID	Y	
StructureLevel_m	Y	
EndWall.Type	Y	
EndWall.Size	Y *(if Endwall exists)*	
EndWall.Length_m	Y *(if Endwall exists)*	
EndWall.Height_m	Y *(if Endwall exists)*	
EndWall.Thickness_m	Y *(if Endwall exists)*	
EndWall.Material	Y *(if Endwall exists)*	
EndWall.Construction	Y *(if Endwall exists)*	
WingWall.LWW_Length_m	Y *(if Wingwall exists)*	
WingWall.LWW_Height_m	Y *(if Wingwall exists)*	
WingWall.LWW_Thickness_m	Y *(if Wingwall exists)*	
WingWall.LWW_Material	Y *(if Wingwall exists)*	
WingWall.LWW_Construction	Y *(if Wingwall exists)*	
WingWall.RWW_Length_m	Y *(if Wingwall exists)*	
WingWall.RWW_Height_m	Y *(if Wingwall exists)*	
WingWall.RWW_Thickness_m	Y *(if Wingwall exists)*	
WingWall.RWW_Material	Y *(if Wingwall exists)*	
WingWall.RWW_Construction	Y *(if Wingwall exists)*	
Apron.Apron_Width_m	Y *(if Apron exists)*	
Apron.Apron_Thickness_m	Y *(if Apron exists)*	
Apron.Apron_Area_m2	Y *(if Apron exists)*	
Apron.Apron_Material	Y *(if Apron exists)*	

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Apron.Apron_Construction	Y *(if Apron exists)*	
GrateType	N	Y
TideGate	N	Y

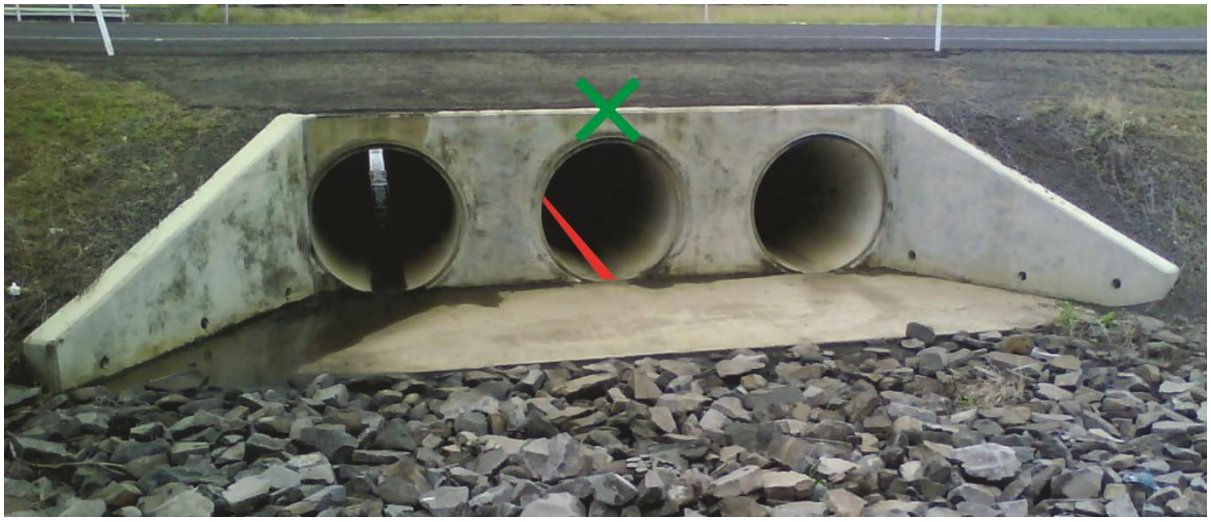

Figure 7

End Structure Polyline

See above. Polyline feature is to represent the top of End Wall and Wing Walls.

Flow Management Device

Asset Capture: To be represented as a polyline feature comprising of straight line segments (read: no curves).

Mandatory Attribution: The following attribution is mandatory for Flow Management Devices:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Sqid_Id	N	Y
Type	Y	

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Material	Y	
Length_m	N	
CrestElevation_m	N	Y

Pipe

Asset Capture: To be represented as a single line feature representing the invert of a pipe or midpoint of a box asset as per the red solid line in **figure 7 above** and in **Figure 8 below**. The Network is to be represented as a Disconnected Network from Chamber wall to Chamber wall with a Length value of Pipe Material Length as per **Figure 8 below**. The number of cells is to be recorded in the "Cells" field of the table structure. Enforced line direction from Gravity Upstream (read: higher AHD level) to Gravity Downstream (read: lower AHD level) due to gravitational flow.

Mandatory Attribution: The following attribution is mandatory for Pipes:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
US_InvertLevel_m	Y	
DS_InvertLevel_m	Y	
US_SurfaceLevel_m	Y	
DS_SurfaceLevel_m	Y	
PipeStructure.CircPipe.Diameter_mm	Y *(if circular)*	
PipeStructure.CircPipe.Material	Y *(if circular)*	
PipeStructure.CircPipe.Class	Y *(if circular)*	
PipeStructure.CircPipe.JointType	Y *(if circular)*	
PipeStructure.BoxPipe.Height_mm	Y *(if box)*	
PipeStructure.BoxPipe.Width_mm	Y *(if box)*	
PipeStructure.BoxPipe.Material	Y *(if box)*	
PipeStructure.BoxPipe.Class	Y *(if box)*	
Cells	Y	
ConcreteCoverType	Y	

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Grade	N	Y
Length_m	N	Y

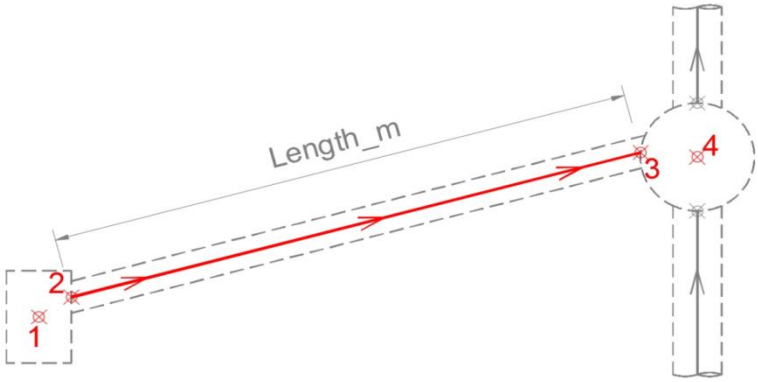

Figure 8

Surface Drain

Asset Capture: To be captured as a Simple linear feature (read: polylines with no curves) representing the midpoint between batters/invert of channel and in direction of water flow. Surface Drains are to be captured based on their physical, spatial properties and attributes. For example, if a surface changes size, material, shape etc. then it must be captured separately. **Figure 9 below** indicates the capture of a major surface drain as well as a smaller surface drain feeding into it. The main surface drain has been represented as a separate feature where the main change of width occurs (red and blue lines). The smaller surface drain ends at the intersection of the main surface drain's outer edge. **Figure 10 below** indicates where to collect the width of the channel (formed outer edge to formed outer edge).

Mandatory Attribution: The following attribution is mandatory for Surface Drains:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
DrainShape	Y	
LiningMaterial	Y	
LinedWidth_m	Y	
BatterMaterial	N	
BatterWidth_m	N	
US_InvertLevel_m	Y	
DS_InvertLevel_m	Y	
AverageGrade	N	Y
Length_m	N	Y

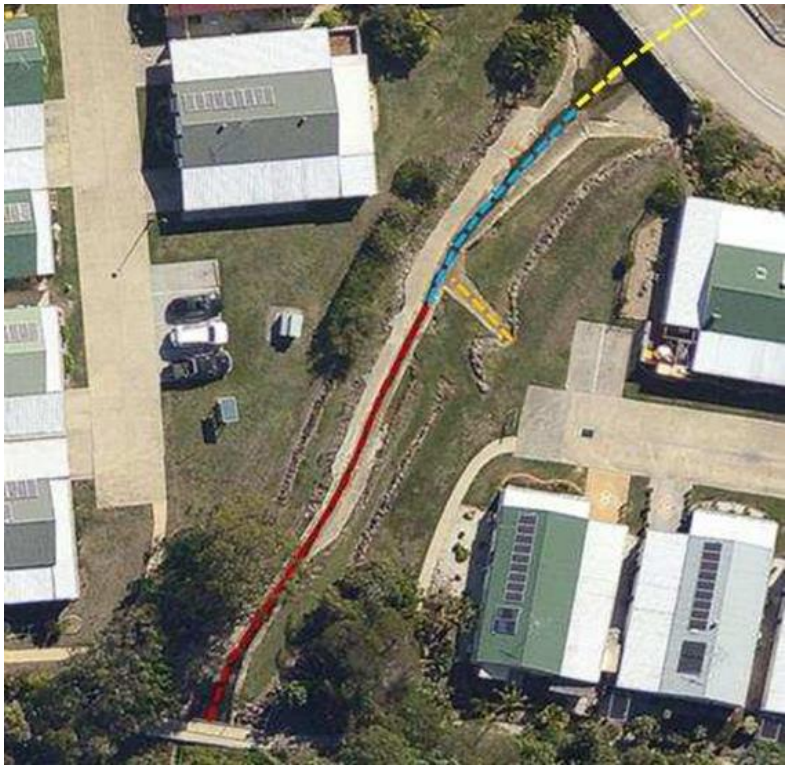

Figure 9

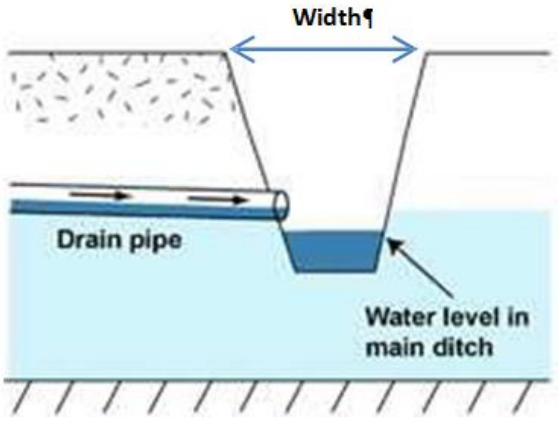

Figure 10

Stormwater Quality Improvement Device (SQID)

General Information: Assets such as Gross Pollutant Traps (GPTs) fall into and are captured in three primary categories:

- GPT Complex such as Commercial or Custom built device (e.g. Humes Intercepter)
- GPT Simple such as an "in pit" basket or "end of line" device and must align with a Stormwater Pit feature
- GPT Non-Simple which represent basic and minor sand filtration storage

Note: All GPT devices are recognised as a point features and described accordingly within ADAC data capture fields.

Asset Capture: Point feature is to represent the center of chamber

Mandatory Attribution: The following attribution is mandatory for SQIDs:

GPTComplex

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Sqid_Id	N	Y
Construction.Commerical.Manufacturer	N	Y *(if a commercial item)*
Construction.Commerical.ModelNumber	N	Y *(if a*

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
		commercial item)
Construction.Commerical.Size.Rectangular.Length_mm	Y *(if commercial and rectangular)*	
Construction.Commerical.Size.Rectangular.Width_mm	Y *(if commercial and rectangular)*	
Construction.Commerical.Size.Circular.Diameter_mm	Y *(if commercial and circular)*	
Construction.Custom.Size.Rectangular.Length_mm	Y *(if custom and rectangular)*	
Construction.Custom.Size.Rectangular.Width_mm	Y *(if custom and rectangular)*	
Construction.Custom.Size.Circular.Diameter_mm	Y *(if custom and circular)*	
Function1	Y	
Function2	N	
Function3	N	
US_PipeDiameter_mm	N	
DS_PipeDiameter_mm	N	
SurfaceLevel_m	Y	
US_InvertLevel_m	Y	
DS_InvertLevel_m	Y	
CleanoutLevel_m	Y	
Depth_m	N	
SumpDepth_m	N	
HasFilterMedia	N	
HasBasket	N	
HasBoards	N	
DesignFlow_m3s	Y	
MaxContaminantVolume_m3	N	
MaxInternalVolume_m3	N	
MaintenanceCycle_mnths	N	
Rotation	N	

GPTSimple

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Sqid_Id	N	Y
Construction	Y	
Manufacturer	N	Y
ModelNumber	N	Y
TreatmentMeasure	Y	
Function1	Y	
Length_mm	Y	
Width_mm	N	Y *(if Rectangular)*
Material	N	
MaintenanceCycle_mnths	N	
Rotation	N	

NonGPTSimple

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Sqid_Id	N	Y
Construction	Y	
Manufacturer	N	Y
ModelNumber	N	Y
TreatmentMeasure	Y	
Function1	Y	
Function2	N	Y
Function3	N	Y
Length_mm	Y	
Width_mm	N	Y *(if Rectangular)*
MaintenanceCycle_mnths	N	
Rotation	N	

Water Sensitive Urban Design (WSUD Areas)

General Information: Typically assets such as kerbside bio-filtration beds, drainage swales or bio-basins should be captured individually as a closed polyline/polygon representing the ponding area of the asset. Individual areas are to be recorded within the ADAC data capture fields defining class type within the ADAC data capture fields (e.g swale, buffer strip, bio-retention basin). Any associated infrastructure with the WSUD (e.g. vehicle accesses, fences, gates, etc.) should be captured separately. **Figure 11 below** demonstrates the capture of a WSUD and associated infrastructure, including a Vehicle Access (red polygon) and a gate (blue dashed line).

Asset Capture: Polygon feature is to represent the outer perimeter.

Mandatory Attribution: The following attribution is mandatory for WSUD Areas:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Sqid_Id	N	Y
TreatmentMeasure	Y	
Function1	Y	
Function2	N	
Function3	N	
PondingArea_m2	N	
PondingDepth_m	N	
FilterArea_m2	N	
FilterDepth_m	N	
TransitionDepth_m	N	
DrainageDepth_m	N	
MacrophyteZoneArea_m2	N	
MacrophyteZoneDepth_m	N	
CoarseSedimentArea_m2	N	
SedimentVolume_m3	N	
MinSurfaceLevel_m	N	
PermanentPondLevel_m	N	
OutletLevel_m	N	

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
DesignFlow_m3s	N	
HasSpillway	Y	
MaintenanceCycle_mnths	N	

Figure 11

Supplementary

PointFeature / PolylineFeature / PolygonFeature

Asset Capture: Simple Point, Complex Polyline or Multi-patch Area feature (depending on the feature type) representing objects or assets that add clarity or context to the strict ADAC features.

Mandatory Attribution: The following attribution is mandatory for Supplementary Features:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Class	Y	
Note	N	Y
Attribute()TextValue	N	
Attribute()IntegerValue	N	
Attribute()DecimalValue	N	
Attribute()DateValue	N	
Attribute()TimeValue	N	
Attribute()DateTimeValue	N	

Surface

Breakline

Asset Capture: Complex linear feature with straight line segments (read: no curves) capturing a single hard breakline.

Contour

Asset Capture: Linear feature capturing a single contour feature.

Mandatory Attribution: The following attribution is mandatory for Surface Features:

Element Name	ADAC Mandatory (Y/N)
Status	Y
Elevation_m	Y

Spot Height

Asset Capture: Simple point feature representing a single elevation point.

Mandatory Attribution: The following attribution is mandatory for Sport Heights:

Element Name	ADAC Mandatory (Y/N)
Status	Y
Elevation_m	Y

Profile Line

Note: Profile Lines are not required to be recorded in ADAC xml submissions for WRC

Transport Assets

Bridge

General Information: Bridges can be represented using multiple feature types comprising the single Bridge extent encompassing the Deck, Superstructure, Abutments and Piers. A common identifier links all spatial and non-spatial features.

Pavement, Pathway and Guardrail features are to be captured using the usual Transport features.

Bridge Abutment

Asset Capture: Polygon feature representing a single Abutment located at each end of the bridge structure as per **Figure 12 below**.

Spatial Relationship: Must be located within a Bridge Extent polygon.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
BridgeID	Y
Material	Y

Figure 12

Containment Class

Asset Capture: Non spatial table.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
BridgeID	Y
ContainmentClass	Y

Bridge Deck

Asset Capture: Polygon feature representing each individual Deck feature located between abutments or supports.

Spatial Relationship: Must be located within a Bridge Extent polygon and spatial related to Pavement and Pathway features.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
BridgeID	Y
Material	Y
NomWidth_m	Y
DeckLength_m	Y

Bridge Extent

Asset Capture: Polygon feature describing the footprint for the whole structure and all its parts including approach and departure assets.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
BridgeID	Y	
Name	N	Y
Use	Y	
Type	Y	
CrossingType	Y	
Spans	Y	
MinimumClearance_m	N	
PredominantMaterial	Y	
DesignLoad	N	Y

Bridge Pier

Asset Capture: Polygon feature representing a single supporting structure.

Spatial Relationship: Must be located within a Bridge Extent polygon located under deck spans.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
BridgeID	Y
Material	Y

Bridge Superstructure

Asset Capture: Polygon feature representing a single Superstructure..

Spatial Relationship: Must be located within a Bridge Extent polygon and between abutments or supports.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
BridgeID	Y
Material	Y

Flush Point

Asset Capture: Point feature representing a flushing point in a subsoil drain network.

Spatial Relationship: Must be located along or at the end of a Subsoil Drain feature.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Function	Y

Parking

Asset Capture: Polygon capturing the area of a parking pavement.

Spatial Relationship: May adjoin/share road pavement boundary

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Name	Y	
NoOfCarparks	N	
OnOffStreet	Y	
Surface.SurfaceType	Y *(if surface exists)*	
Surface.SurfaceThickness_mm	Y *(if surface exists)*	
Surface.SurfaceArea_sqm	N	Y
PavementStructure.PavementType	Y	
PavementStructure.BaseLayer.LayerType	Y *(if Base exists)*	
PavementStructure.BaseLayer.LayerDepth_mm	Y *(if Base exists)*	
PavementStructure.BaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*
PavementStructure.SubBaseLayer.LayerType	Y *(if SubBase exists)*	
PavementStructure.SubBaseLayer.LayerDepth_mm	Y *(if SubBase exists)*	
PavementStructure.SubBaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*
PavementStructure.LowerSubBaseLayer.LayerType	Y *(if LowerSubBase exists)*	
PavementStructure.LowerSubBaseLayer.LayerDepth_mm	Y *(if LowerSubBase exists)*	
PavementStructure.LowerSubBaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*
PavementGeoTextile	N	Y *(if Geotextile exists)*
SubGrade.CBR	Y	
SubGrade.Stabilisation	N	Y *(if Stabilisation exists)*

Pathway

Asset Capture: To be captured as a closed linear feature representing the edge of material of a pathway ensuring the start and end of each feature is coincident. Please refer to the cyan regions in **Figures 13 and 14 below**. Asset capture is based on physicality therefore separate regions/polygons are required if any part of the pavement profile changes i.e. Surface type, finishing type. Routinely a portion of the old/existing asset(s) is captured to provide continuity and context when merging with current Council data.

Spatial Relationship: May be coincident to a PramRampPolygon feature as well as changes in surface types or widths must be coincident points. **Figure 13 below** shows the capture of a pathway (blue hatch area) and its relationship with a path structure (magenta hatch area).

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Structure	Y
SurfaceMaterial	Y
Width_m	Y
Depth_mm	Y

Figure 13

Figure 14

Path Structure

Asset Capture: To be captured as a closed linear feature representing the edge of material of a pathway structure ensuring the start and end of each feature is coincident. Please refer to the magenta region in **Figures 13 above**.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Structure	Y
SurfaceMaterial	Y
SubStructureMaterial	Y
Width_m	Y

Pavement

Asset Capture: Multi-patch region/polygon feature representing the area of Pavement. Asset capture is based on physicality therefore separate regions/polygons are required if any part of the pavement profile changes i.e. Surface, Base, Sub-Base, Lower Sub-Base and/or Subgrade. Please refer to the solid blue transparent hatch in **Figure 15 and Figure 16 below** for a typical representation of Pavement capture.

Spatial Relationship: Must be coincident to other regions representing pavement / parking where there is a common boundary- no slivers/overlaps.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Name	Y	
Surface.SurfaceType	Y *(if surface exists)*	
Surface.SurfaceThickness_mm	N	Y *(if surface exists)*
Surface.SurfaceNomWidth_m	Y *(if surface exists)*	
PavementStructure.PavementType	Y	
PavementStructure.BaseLayer.LayerType	Y *(if Base exists)*	
PavementStructure.BaseLayer.LayerDepth_mm	Y *(if Base exists)*	
PavementStructure.BaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*
PavementStructure.SubBaseLayer.LayerType	Y *(if SubBase exists)*	
PavementStructure.SubBaseLayer.LayerDepth_mm	Y *(if SubBase exists)*	
PavementStructure.SubBaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
PavementStructure.LowerSubBaseLayer.LayerType	Y *(if LowerSubBase exists)*	
PavementStructure.LowerSubBaseLayer.LayerDepth_mm	Y *(if LowerSubBase exists)*	
PavementStructure.LowerSubBaseLayer.Stabilisation	N	Y *(if Stabilisation exists)*
PavementGeoTextile	N	Y *(if Geotextile exists)*
SubGrade.CBR	Y	
SubGrade.Stabilisation	N	Y *(if Stabilisation exists)*

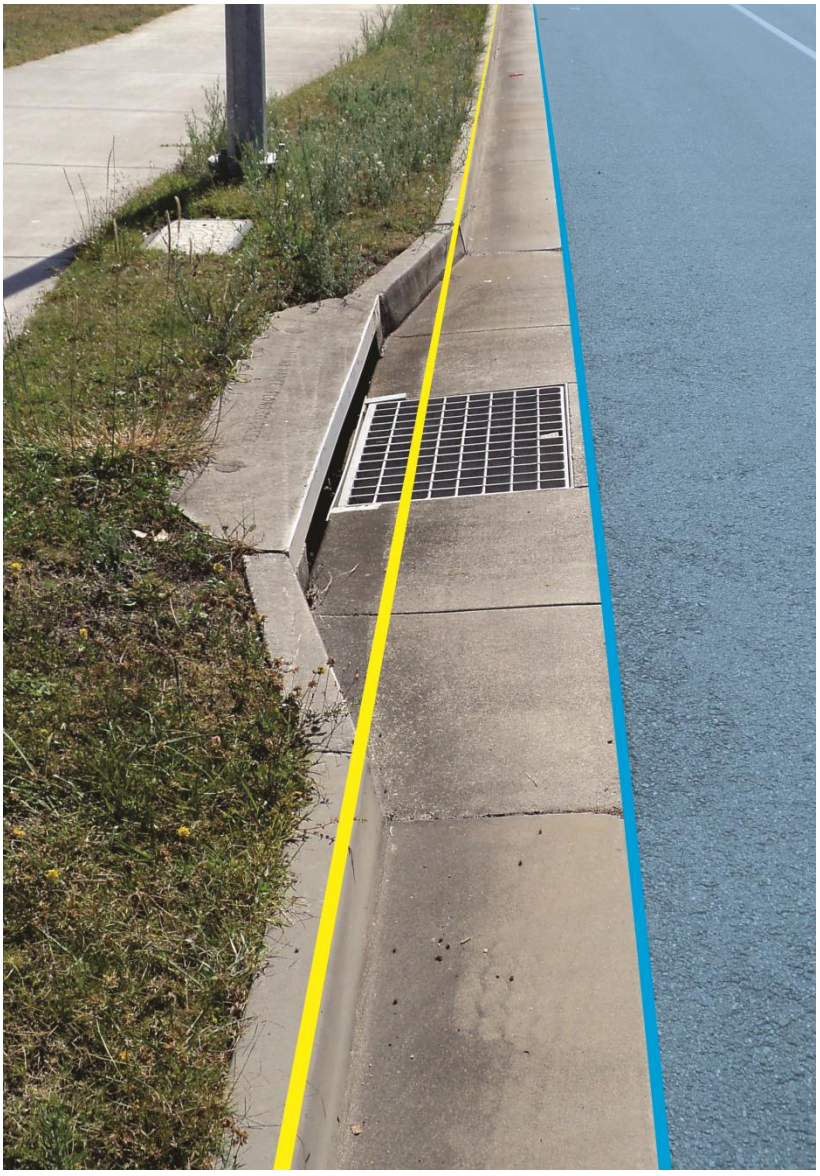

Figure 15

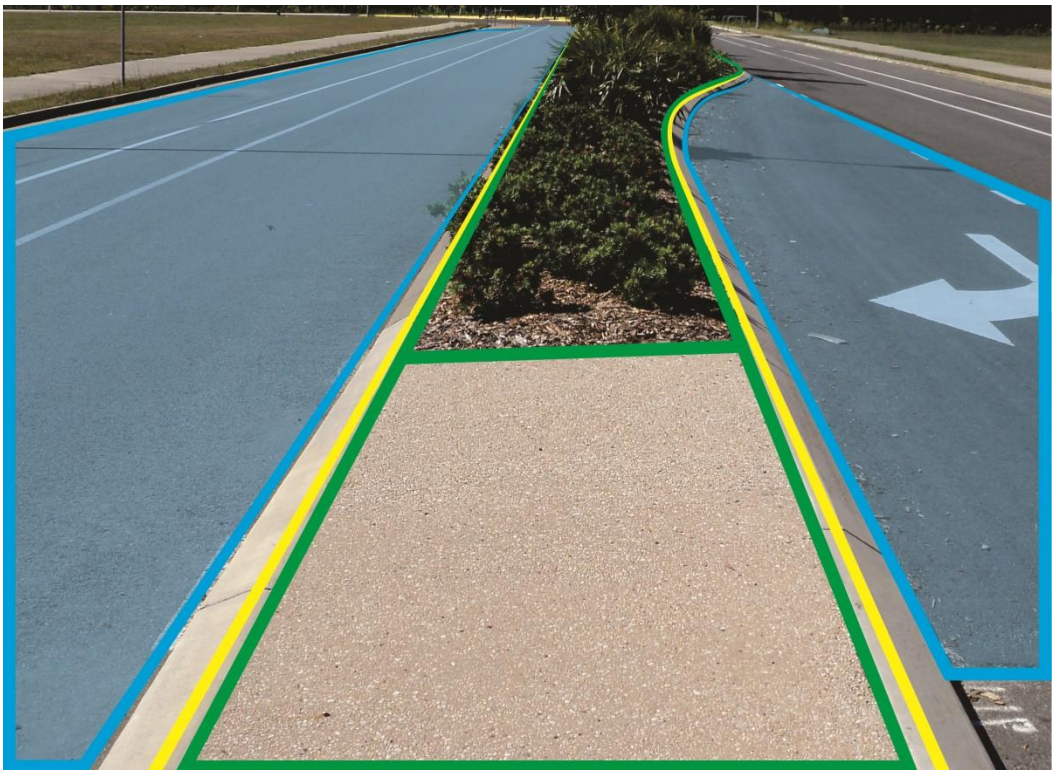

Figure 16

Pram Ramp

Note: Pram Ramps as point features are not to be recorded in ADAC xml submissions for WRC. Pram Ramp polygons are to be used instead.

Pram Ramp Polygon

Asset Capture: Multi-patch region/polygon feature representing the area of the Pram Ramp.

NOTE: The ADAC Schema allows for an identical Point feature capture for Pram Ramps however that is not accepted by WRC.

Spatial Relationship: Must be coincident to Pathway, Road Pathway or Path Structure assets. **Figure 14 above** shows an example of the capture of a pram ramp (red hatch area) and its relationship with Pathway / PathStructure.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Rotation	N

Road Edge

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing the top of kerb. In case of inverts, edge of concrete furthest from road centreline. Refer to the yellow solid line in **Figure 15 and Figure 16 above**.

Spatial Relationship: Must be coincident to other polylines representing road edge where there is a common boundary between kerb types / material change i.e. no slivers and/or overlaps.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material	Y	
Width_mm	Y	
Length_m	N	Y
PavementExtension_mm	Y	

Road Island

Asset Capture: Multi-patch region/polygon feature representing the area of Island/LATM bounded by the back of Kerb features. Asset capture is based on physicality therefore separate regions/polygons are required if the Type of Island or Infill changes. Please refer to the solid green lines in **Figure 16 above** for Road Island asset capture.

Spatial Relationship: Must be coincident to other regions representing road islands where there is a common boundary i.e. no slivers and/or overlaps.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Area_sqm	N	Y
InfillType	Y	

Road Pathway (On Road Cycleway)

Asset Capture: To be captured as a closed linear feature representing the area of Road Pathway ensuring the start and end of each feature is coincident.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Structure	Y
SurfaceMaterial	Y
Width_m	Y

Road Safety Barrier

Asset Capture: Complex Polyline feature comprising of straight line segments (read: no curves) representing a guard rail or transport safety barrier as per the red solid line in **Figure 17 below**.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Type	Y
LeadingEndTreatment	Y
TrailingEndTreatment	Y
StandardHeight	N
Height_m	N
Length_m	Y
MotorcyclistProtectionType	Y
PedestrianProtectionSheeting	Y
BridgeTransition	Y
StandardPostSpacing	N
PostSpacing_m	N
PostType	N
RailType	Y
HorizontalAlignment	N
NumberOfBollards	N

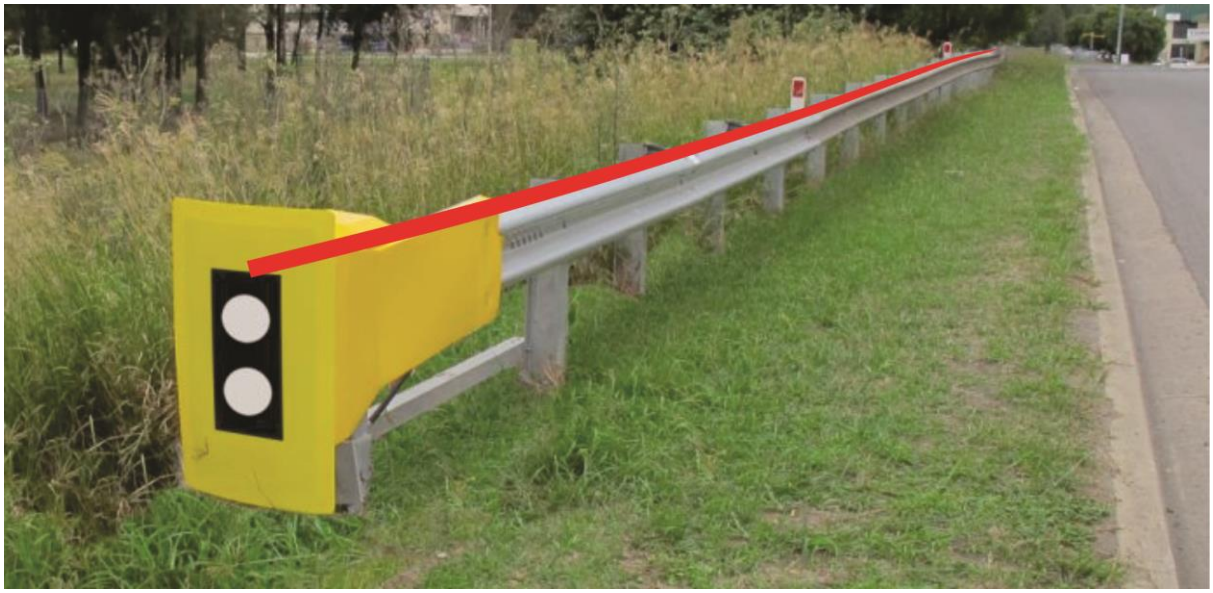

Figure 17

Subsoil Drain

Asset Capture: Simple Linear feature (i.e. straight lines) representing the Invert of a circular sub-soil drain pipe asset. Pipes are typically broken where the Use and/or Type of drain changes.

Spatial Relationship: Must be coincident to Flush points.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
Type	Y	
Length_m	N	Y

Water Supply Assets

Fitting

Asset Capture: Single point feature representing the centre point of the fitting. Please refer to the yellow circles in **Figure 18 below** for representations of a "Tee" and "Tapping Band".

Spatial Relationship: Must be coincident to a pipe asset in the water reticulation network.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
Material *	Y	
Lining *	N	Y
Protection *	N	Y
BodySize_mm	Y	
BranchSize_mm	N	Y
Rotation	N	
WaterQuality	Y	

* Generic Enumerations e.g. "M_1"," M_2" etc and "Unknown" are not acceptable. "Other" is only acceptable if the enumeration isn't available in the allowable values with the actual enumeration populated in the Notes element.

Hydrant

Asset Capture: Single point feature representing the centre of the vertical hydrant branch. Note: Hydrant Diameter refers to the riser

pipe diameter in millimetres not the connecting reticulation pipe size.

Spatial Relationship: Must be coincident to a pipe asset.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Diameter_mm	Y
Rotation	N
WaterQuality	Y

Maintenance Hole

Asset Capture: Single point feature located on the centre of the chamber. If required to capture the polygon feature please utilise the Supplementary Polygon feature (refer to Supplementary Features Page 55 above).

Spatial Relationship: No connectivity is enforced due to the size and shape of the object.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
ChamberSize.Rectangular.Length_mm	Y *(if rectangular)*
ChamberSize.Rectangular.Width_mm	Y *(if rectangular)*
ChamberSize.Circular.Diameter_mm	Y *(if circular)*
SurfaceLevel_m	Y
InvertLevel_m	Y
FloorConstruction	Y

Element Name	ADAC Mandatory (Y/N)
FloorMaterial *	Y
WallConstruction	Y
WallMaterial *	Y
RoofMaterial *	Y
LidMaterial *	Y
Rotation	N

* Generic Enumerations e.g. “M_1”,” M_2” etc and “Unknown” are not acceptable. “Other” is only acceptable if the enumeration isn’t available in the allowable values with the actual enumeration populated in the Notes element.

Meter

Asset Capture: Single point feature located at the centre point of the domestic meter itself.

Please note: The definition for the OffsetSide element is “*the offset from the left or the right side boundary when looking from the road*.”

Spatial Relationship: Must be coincident to a water service pipe or water pipe with a Use of “Fire Service”, “Service” or “Fire Service Thru Meter”.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
SerialNumber	Y	
Type	Y	
Diameter_mm	Y	
Dials	N	Y

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Manufacturer	N	Y
ModelNumber	N	Y
InitialReading	N	
PrivateBooster	Y	
OffsetSide	Y	
Offset_m	Y	
InstallationDate	Y	
LotNo	Y	
PlanNo	Y	
Rotation	N	
WaterQuality	Y	

Pipe

Asset Capture: Simple Linear feature (i.e. straight lines) representing the Invert of a circular pipe asset. Pipe segments are to be captured based on the pipe attributes. If any physical element of a pipe changes (e.g. size, material, class etc.) then the pipe asset must be broken and captured separately. Please refer to the red and green polylines in **Figure 18 below**. The red lines represent reticulation pipes whereas the green line represents

a service pipe. Note: the dash/dot polyline is not broken at fittings as physical specification of the pipe doesn't change.

Note: Service pipes less than and equal to 63mm in diameter are to be captured as WaterService, not Pipe.

Spatial Relationship: Pipes must be coincident to water valves and fittings that participate in a flow network.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Use	Y	
WaterQuality	Y	
Alignment_m	N	Y
Diameter_mm	Y	
Material *	Y	
Class *	N	Y
Lining *	N	Y
Protection *	N	Y
JointType *	N	
Depth_m	N	
Embedment *	N	
Length_m	N	Y

* Generic Enumerations e.g. "M_1"," M_2" etc and "Unknown" are not acceptable. "Other" is only acceptable if the enumeration isn't available in the allowable values with the actual enumeration populated in the Notes element.

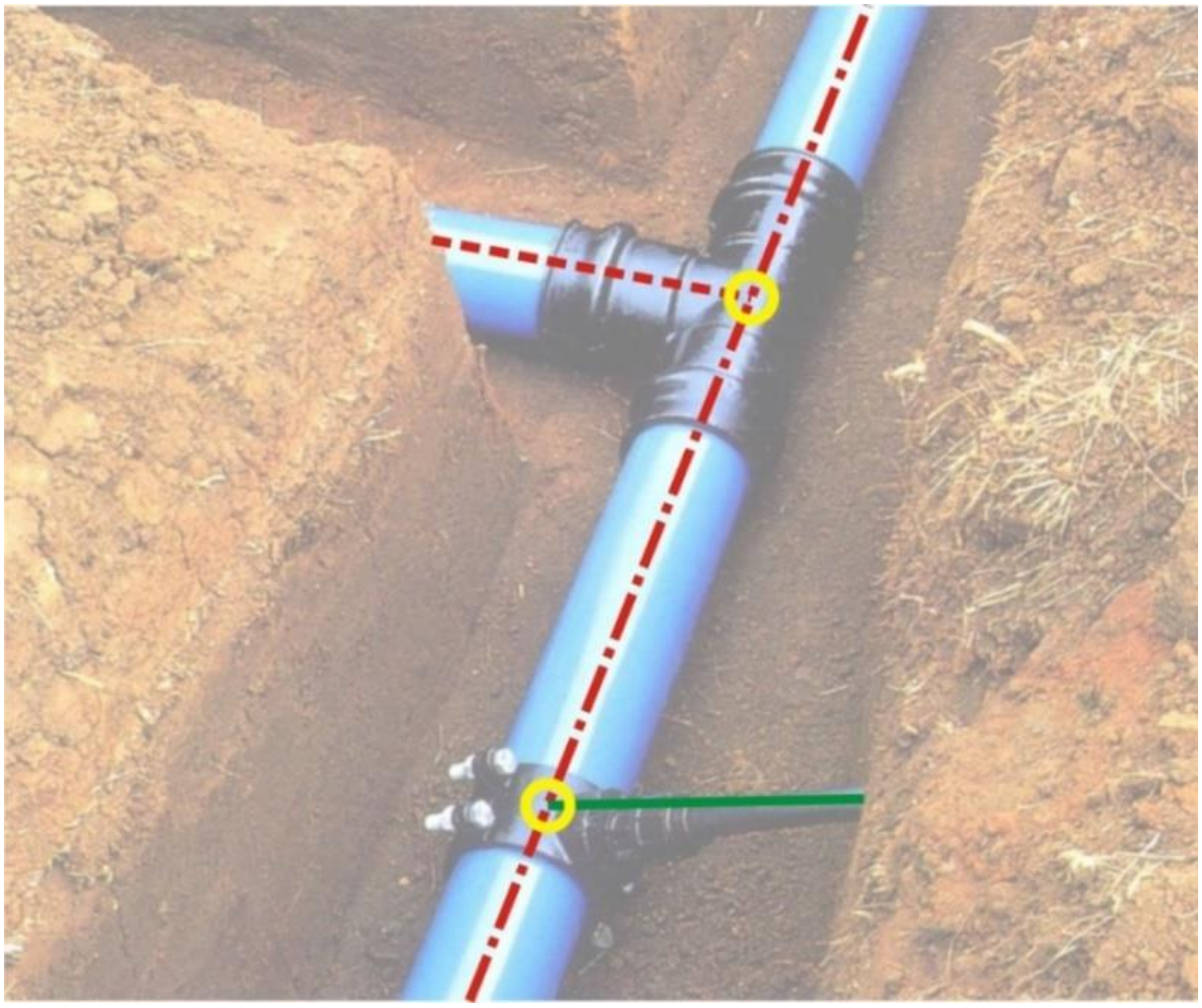

Figure 18

Service Fitting

Asset Capture: Single point feature representing the centre point of the service fitting. Identical to Fittings detailed above.

Spatial Relationship: Must be coincident to a pipe asset in the water reticulation network.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)	WRC Mandatory (Yes?)
Type	Y	
BelowGround	N	Y
WaterSaver	N	Y
AutoShutOff	N	Y
Rotation	N	
WaterQuality	Y	

Storage Tank

Asset Capture: Single point feature representing the centre of chamber relating to a domestic storage tank feature.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Material	Y
Source	Y
Manufacturer	N
ModelNumber	N
Volume_m3	Y
Rotation	N

Valve

Asset Capture: Single point feature representing the centre of a valve body, typically the spindle.

Data Capture: The relationship between Use and Type is as per the following table.

ADAC.Use	ADAC.Type
Non-Return	Generic NR Rubber Gate Swing Check Wafer RPZ
Service Stop Scour Diversion Zone Boundary Flow Control	Gate Butterfly Knife Gate Eccentric Plug Globe Ball Valve Vee Ported Ball Control
Pressure Control	Overflow Pressure Relief Pressure Sustaining Altitude Valve Vacuum Release
Gas Release	Air Valve
Other	Special

Spatial Relationship: Must be coincident to a Water Pipe asset.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Use	Y
Type	Y
Diameter_mm	Y
Manufacturer	N

Element Name	ADAC Mandatory (Y/N)
ModelNumber	N
Rotation	N
WaterQuality	Y

Water Service

Asset Capture: Simple Linear feature (i.e. straight lines) representing the Invert of a circular pipe asset as per the solid green line in **Figure 18 above**. Only Service pipes less than and equal to 63mm are to be captured here. Larger sized Service pipes are to be captured in Water pipe with a Use of "Service".

Spatial Relationship: Pipes must be coincident to water valves and fittings that participate in a flow network.

Mandatory Attribution:

Element Name	ADAC Mandatory (Y/N)
Daimeter_mm	Y
Material	Y
Class	N
Protection	N
Termination	N
WaterQuality	Y
Length_m	N

Break Points for Linear Water Assets - Water Pipes

Water Pipe lengths are to be broken or terminated where there are:

- Changes in Pipe Size;
- Changes in Pipe Material;
- Changes in Pipe Class;
- At all Valves and Hydrants;
- At the following fittings:
    - Tee
    - Wye
    - Taper
    - Connector
    - Gibault
    - Tee Branch Dead End