



ADAC XML

DATA CAPTURE GUIDELINES

ADAC XML Files to be included as an
accompaniment to the
“Work-as-Executed”
bundle submitted to Council

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1 GLOSSARY

The following terms are used within this document.

Term/Acronym	Definition
ADAC	“Asset Design As Constructed” - The ADAC product is developed and maintained by a consortium of Local Councils and Water Utilities across Australia in conjunction with Institute of Public Works Engineering Australia - Queensland Branch (IPWEAQ). ADAC is used to facilitate the collection and lodgement of detailed information on civil infrastructure and associated assets that are either provided by the private development sector created in conjunction with other major project or upgrade works.
AHD	The Australian Height Datum (1971) is the NGRS normal–orthometric height datum for mainland Australia. The datum sets mean sea level as “zero” elevation. Mean sea level was determined from observations recorded by 30 tide gauges around the coast of the Australian continent for the period 1966 - 1968. Refer to Geoscience Australia website for more information.
As-Built	Another term for Work-as-Executed or WAE (see below).
As-Constructed	Another term for Work-as-Executed or WAE (see below).
GDA2020	Geocentric Datum of Australia 2020. Realised by the derived coordinates of the Australian Fiducial Network (AFN) geodetic stations, referenced to the GRS80 ellipsoid and determined with respect to ITRF2014 at epoch 2020.0.
GDA94	Geocentric Datum of Australia 1994. Realised by the derived coordinates of the Australian Fiducial Network (AFN) geodetic stations, referenced to the GRS80 ellipsoid and determined with respect to ITRF92 at epoch 1994.0.
MGA2020	Map Grid of Australia 2020. Universal Transverse Mercator projection of the Geocentric Datum of Australia 2020.
MGA94	Map Grid of Australia 1994. Universal Transverse Mercator projection of the Geocentric Datum of Australia 1994
WAE	Work-As-Executed. Compiled information clearly indicating 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.
WSC	Acronym for the <i>Wollondilly Shire Council</i>

2 PURPOSE

The purpose of this document is to provide practical guidelines and general assistance with respect to the survey capture, creation and provision of compliant ADAC XML files for Transport, Stormwater and Open Space/ Parks assets. ADAC XML files are required to accompany the usual bundle of “*Work-as-Executed*” (WAE) 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, WAE Plans (also known “As-Constructed” or “As-Built”) are prepared for submission to council. Information contained within the WAE plans is intended to clearly indicate relevant details, locations, levels and alignments (survey) and other approved variations in assets or construction methods that may have occurred during the operational works as compared to the original approved design.

While the WAE Plans accurately reflect all relevant details including material types, specifications and other asset-specific information, the accompanying ADAC XML digital file compiles this information into a standardised (XML) digital format.

3 GENERAL WORK AS EXECUTED REQUIREMENTS

Both an ADAC XML file and WAE drawings (red-lined marked up plans) are required to be submitted at project completion. The ADAC XML file is to be produced using the specified ADAC XML schema (currently release *Version 5.0.1*) unless advised otherwise and should be checked for compliance before being submitted to council. Further information on the preparation of the WAE plans and the ADAC capture process and preparation of the digital ADAC XML file can be found on Council’s website under the *Building & Development* reference tab.

The ADAC XML files are to be emailed to ADAC@wollondilly.nsw.gov.au noting the relevant Development Application and Construction Certificate numbers.

3.1 Drawing Requirements

- In preparing the WAE plans, the final “*Approved for Construction*” drawings are to be marked-up (red-lined) to indicate any changes from design. This would potentially include noting all approved changes or revisions to locations and levels, alignments, asset material types along with including other general descriptions such as gazetted road names;
- Changes and modifications to the “*Approved for Construction*” drawings are to be denoted by a “**strikethrough**” red-line with the new As-Constructed values (**in red**) noted adjacent to the original value or description;
- The marked-up “*For Construction*” drawings are to be clearly stamped “**Work-as-Executed**”;

- All drawings are to include the relevant Operational Works Approval Number with the final “revision number” in the drawing title block notated “*Work-As-Executed*”;
- WAE plans (red-lined) drawings are to be provided in digital PDF file format;
- All individual pages to include “*Certification Text Blocks*” completed and signed by the Registered Engineer with a responsibility for the physical works, confirming the veracity of the supplied engineering details and associated asset information;
- All individual pages to include “*Certification Text Blocks*” completed and signed by the Registered Surveyor with a responsibility for the physical works, confirming the veracity of the supplied engineering and asset information.

4 INTRODUCTION TO ADAC XML

ADAC XML files are a compulsory accompaniment to the “*Work-as-Executed*” bundle of information required by council as a part of the handover of nominated works and associated civil assets, infrastructure and associated landscape works.

The ADAC XML format (schema) is a non-proprietary 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 ADAC schema and associated XML files are used to facilitate the collection, translation and validation of data related to both new and existing infrastructure and assets.

Compliant ADAC XML files contain a structured and precise digital record of the assets described in the WAE (red-lined) plans and other associated engineering documentation. Details contained within the ADAC XML file 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 by council to check the completeness of the Work-as-Executed asset information and to upload this asset data to council systems. 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 ADAC XML generation tools¹ being used to produce the ADAC XML output, compliant files may be created during survey capture and then finalised in conjunction with the creation of the final WAE (red-lined) drawings.

Alternatively, the XML files may be generated after the WAE CAD drawings have been finalised. It is however essential that the WAE drawings and ADAC XML files are created using complete and survey-accurate information to identify both precise asset locations being represented and that the details in the corresponding ADAC XML file and WAE (red-lined) 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 sought 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. Signage assets may be related to either transport or open space. In those cases, recording assets under a different asset class (when preparing the ADAC XML file) to the actual area of use is valid and appropriate.

On receiving the work-as-executed bundle, council will undertake a data format and conformance check on both the WAE drawings and ADAC XML file to confirm the completeness and validity of the details. **Please note that if anomalies, errors or missing information are identified during these comparison checks, the WAE Plans and/or the ADAC XML file will be returned to the provider for correction and resubmission which can potentially delay the progress of asset handover and 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 or upgraded infrastructure and other related assets.

5 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 “Work-as-Executed” 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 “SCIMs” marks and/or newly placed permanent survey marks (PMs) with Map Grid of Australia (MGA) GDA94 or GDA2020 - UTM Zone 56 coordinates for the survey area. All AHD levels to be to fourth (4th) order standard or better as defined by the current ICSM² Standard.

Further information can be obtained from the online service located at: http://spatialservices.finance.nsw.gov.au/surveying/scims_online

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

6 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 version 5.0.1. Vendors of ADAC XML generators are provided with periodic 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 WAE 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 within this document are provided to assist with the capture of WAE survey data when using proprietary ADAC XML generators, either during the survey pickup of the newly-constructed works or when capturing the ADAC asset information as a part of the creation of the WAE plans and associated 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 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).

7 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 completing the “project” and “global” attribution details is included below.

7.1 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)	WSC 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: - o Council - o State - o Private
Receiver	Y		To be noted as: Wollondilly Shire Council
WorksApprovalID	N	Y	For developer contributed project, this will be the "PN" number (i.e. PN123456/03/DA1). For developers contributed projects, this is the Application Construction Certificate (e.g. CC/2022/1180/1) For Wollondilly Shire Council capital works projects, this will be the 4-digit work order number (i.e. WO5816).
DrawingNumber	Y		None
DrawingRevision	N	Y	None
ConstructionDate	Y		At <i>Project Level</i> , "Construction Date" must be populated with Surveyor's Summary Work as Executed (WAE) date
HorizontalCoordinateSystem	Y		At <i>Project Level</i> , "Horizontal Coordinate System" field must be populated with "MGA56"
HorizontalDatum	Y		At <i>Project Level</i> , "Horizontal Datum" field must be populated with "GDA94" or "GDA2020"
VerticalDatum	Y		At <i>Project Level</i> , "Vertical Datum" field must be populated with "AHD"
IsApproximate	Y		Must be required as "false"
OriginMark	N		Will be "Nil" as IsApproximate must be false
Notes	N		None
DrawingExtents-SouthWest	Y		Should never extend beyond: X: 516655m Y: 6,873,400m
DrawingExtents-NorthEast	Y		Should never extend beyond: X: 554175m Y: 6,936,810m
Description	Y		None
ProjectStatus	Y		None
Software.Product	Y		Auto-populated from the XML generating software
Software.Version	Y		Auto-populated from the XML generating software
Surveyor.Name	Y		None

ATTRIBUTE	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)	NOTES
Surveyor.DateFinalSurvey	Y		None
Surveyor.DateApproved	Y		None
Engineer.Name	Y		None
Engineer.DateApproved	Y		None

7.2 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)	WSC Mandatory (Yes?)
ADACId	Y	
Infrastructure Code	N	
Owner ⁺	N	Y
DrawingNumber	N	
DrawingRevision	N	
ConstructionDate	N	
Department	N	
Surveyor	N	
Engineer	N	
Status [*]	Y	
DataQuality	N	
Notes ^x	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:

Asset Level Status	Description
Newly Constructed	Newly constructed asset passed to Council
Existing	Existing asset that is recorded as it is current situated
Designed	Future asset that is recorded as it “designed” for the future
Planned	Future asset that is known but is prior 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

* At the individual *Asset Level*, the “Owner” field is both critical and mandatory with the following applicable values only to be used.

Asset Level Owner
Council
Private
State

x At the individual *Asset Level*, the “Notes” field should be used to record any additional information regarding the asset, or to record attribute information which isn’t available within defined values/enumerations in the ADAC XML schema. See individual Asset Types below for details where applicable.

The ADACId is also considered mandatory by WSC as it is used to identify assets/features that are considered non-compliant when the XML file is processed.

WSC requires the ADACId naming convention to match the WAE plans.

DataQuality is utilising the AS 5488-2013 “*Classification of Subsurface Utility Information*” standard. The following table defines the acceptable values based on the Project Status/Stage of the ADAC submission.

Project Status (Submission)	Existing Buried Infrastructure	Existing Surface Features	Buried Infrastructure
Preliminary	D	C	NA
For or As Approved including any Amendments	C	B	NA (Use actual design values)
Works As Executed	C	A	A

The DataQuality Rating is as follows:

AS5488 Standard Ratings	Tolerance Details
APlus	XY +/-50mm & Z +/-10mm
A	XYZ +/-50mm
B	XY +/-300mm & Z +/-500mm
C	XY +/-300mm & Z N/A
D	XYZ tolerance N/A

7.3 Cadastral Information

7.3.1 Cadastral Connection

Not required to be captured in ADAC format. This represents an observed and reduced cadastral connection feature. This feature does not relate to lot boundaries, water boundaries or easements which are detailed below.

7.3.2 Chainage Line

Not required to be captured in ADAC format.

7.3.3 Easement

Asset Capture: Area feature representing the boundary of an easement.

Spatial Relationship: Not Applicable

Mandatory Attribution: The following attribution is mandatory for Chainage Lines:

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

7.3.4 Lot Parcel

Asset Capture: Area feature (can be multi-part) representing the boundary of a titled or proposed Cadastral Lot.

Spatial Relationship: May share boundaries with RoadReserves or WaterCourses. Vertices must be coincident with any shared boundaries.

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

7.3.5 Road Reserve

Asset Capture: Multi-patched area feature (can be multi-part) representing a road reserve boundary.

Spatial Relationship: May share boundaries with WaterCourseReserve, LotParcels, or other RoadReserve areas. Vertices must be coincident with any shared boundaries.

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

Element Name	ADAC Mandatory (Y/N)
Name	Y

7.3.6 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

7.3.7 Water Course Reserve

Asset Capture: Area feature representing a boundary of a Water Course reserve.

Spatial Relationship: May share boundaries with RoadReserves and LotParcels. Vertices must be coincident with any shared boundaries.

Mandatory Attribution: The following attribution is mandatory for Water Course Reserves:

Element Name	ADAC Mandatory (Y/N)
Name	Y

7.4 Open Space Assets

7.4.1 Activity Area

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

Asset Capture: To be captured as an area feature within the “Open Space Activity Area” as represented by the dashed yellow outline in **Figure 1 - Page 26** (e.g. playground soft fall, recreational space, hardstand play area, landscaped areas).

Area feature (can be multi-part) 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. Refer examples in **Figure 1 - Page 26**.

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

7.4.2 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 its approximate centre point. Refer to the red dots in **Figure 1 - Page 26**.

Spatial Relationship: Point will be shown within the Open Space polygon or a defined Activity Area.

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

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

7.4.3 Artwork

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

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

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Artwork:

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

7.4.4 Barbeque

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

Asset Capture: Simple point feature representing the centre of the barbeque. Any hot water units, taps, lighting or shelters associated with the barbeque should be captured as separate features. The slab the barbeque is installed on is considered part of the asset and does not need to be separately captured.

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Barbeques:

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Y)
EnergySource	Y	
Plates	Y	
SurroundingMaterial	Y	
TopMaterial	Y	
Manufacturer	N	Y
ModelNumber	N	Y

7.4.5 Barrier Continuous

General Information: Includes fences, bollard runs, pedestrian fall protection gates and handrails within the Functional Area as well as on the roadside or in road reserve areas.

Asset Capture: Complex linear feature of polylines with straight line segments (read: No curves) representing a barrier type asset. Refer to the Red dash-dotted line in **Figure 1 - Page 26** and the dashed Yellow line in **Figure 2 – Page 27**.

If capturing gates please note the configuration/type in the notes field, either:

- Single
- Double
- Boom
- Sliding / Roller

Spatial Relationship: Not applicable.

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

7.4.6 Barrier Point

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

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

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Barrier Point:

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

7.4.7 Bicycle Fitting

General Information: None.

Asset Capture: Simple Point Feature representing the centre of the bicycle fitting. Any slab the bicycle fitting is installed on is considered part of the asset and does not need to be captured separately.

Spatial Relationship: Not applicable.

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

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

7.4.8 Boating Facility

Not required to be captured in ADAC format.

7.4.9 Building

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

Asset Capture: Area feature to recorded representing the vertical building footprint for a structure other than a shelter. Refer to the red solid outline as an example of a toilet block and Bandstand in **Figure 1 - Page 34**.

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Buildings:

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

7.4.10 Edging

General Information: Landscape or Activity Area edging.

Asset Capture: Complex linear feature of polylines with straight line segments (read: No 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 Edging:

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

7.4.11 Electrical Conduit

General Information: Electrical and Communication Services

Asset Capture: Complex linear feature of polylines with straight line segments (read: No 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 Electrical Conduit:

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

7.4.12 Electrical Fittings

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

Asset Capture: Simple point feature representing the centre of each asset. Light(s) are to be captured separately to the pole they are mounted on. Refer to the yellow circles in **Figure 1 - Page 26**.

Council requires all council owned lighting installed to be included in the XML submission.

Spatial Relationship: Shown coincident to supply conduit runs where applicable. Lights and Poles will have coincident geometries.

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

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

7.4.13 Fixture

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

Asset Capture: Simple point feature representing the centre of the asset. Dog bag dispensers including a pole do not require the pole to be separately captured.

- Back Flow / Check Valve
- Back Flow Valve with Meter Cage
- Concrete Fountains
- Drinking Fountains
- Flagpoles
- Large Rocks
- Scoreboards - Electronic
- Scoreboards - Manual
- Sewage Pump and Controller
- Shipping Container
- Small Recirculating Pump
- Submersible Pump Station and Controller
- Water Meter - With Cage
- Water Meter - Without Cage
- Water Tank Concrete
- Water Tank Metal
- Water Tank Plastic
- Water Tap - Brass
- Water Tap - Stainless Steel

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for General Fixtures:

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

7.4.14 Landscape Area

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

Asset Capture: Area feature (can be multi-part) representing the “footprint” of a landscaped area. Changes between landscaping (grassed area to garden bed) are to be shown as separate polygon.

Spatial Relationship: Not applicable.

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

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

7.4.15 Open Space Area

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

Asset Capture: Area feature (can be multi-part) representing the complete “footprint” of the Open Space area which may enclose other associated Open Space Assets

Spatial Relationship: To be coincident with the Lot Parcel, except where there is a clearly defined change to the intended usage.

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

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

7.4.16 Retaining Wall

General Information: None.

Asset Capture: Complex linear feature of polylines with straight line segments (read: No 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. If the wall is of varying height over its length the height is to be recorded as the highest point. Refer to the red and blue lines in **Figure 3 – Page 27**.

Spatial Relationship: Not applicable.

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

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

7.4.17 Seat

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/street bench configuration. Refer to the purple dot's in **Figure 1 - Page 26**.

Spatial Relationship: Not applicable.

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

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

7.4.18 Shelter

Not required to be captured in ADAC format. Please refer to Shelter polygon below in section 7.4.19.

7.4.19 Shelter Polygon

General Information: None

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 captured as separate objects. Shade sails with multiple shade panels may be captured as a single asset where the panels share a common mounting point e.g. Centre Pole. Refer to the orange polygon's in. Refer to the orange polygon's in **Figure 1 - Page 26**.

NOTE: The ADAC Schema allows for an identical Point feature capture for Shelters however that is not accepted by WSC.

Spatial Relationship: Not applicable.

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

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

7.4.20 Sign

General Information: Signs of various types found within Open Space and Parks. For all Traffic Control signage please refer to section 7.8.18 below in Transport.

Asset Capture: Simple point feature representing the approximate centre of the sign. Poles need not to be captured/recorded separately.

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Signs:

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Y)
Type	Y	
Material	Y	
Manufacturer	N	Y
ModelNumber	N	Y
Structure	Y	
SignText	N	Y
Rotation	N	

7.4.21 Table

General Information: Tables located within Open Space areas

Asset Capture: Simple point feature representing the approximate centre of the table. Refer to the cyan dot's in **Figure 1 - Page 26**.

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Tables:

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

7.4.22 Tree

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

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

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Trees:

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

7.4.23 Tree Irrigation (Pipe Work)

General Information: Permanent irrigation pipework installed to service street trees and tree planting within parks, open space, landscaped areas and road reserve that will be dedicated to Council.

In ADAC XML, tree irrigation pipework shall be captured under:

- Asset Element: WaterSupply
- Feature Class: Pipes
- Feature: Pipe
- Detail (Use): Irrigation (Enumeration Value)

Tree irrigation is not a standalone ADAC Asset Element and must be captured using the existing WaterSupply schema with the Use field populated as "Irrigation".

Asset Capture: Polyline feature representing the true constructed alignment of irrigation mains, sub-mains, laterals and sleeves.

Spatial Relationship: Must align with associated Tree assets and irrigation control assets (where applicable). Must connect logically to associated irrigation control infrastructure. Must be located within the relevant road reserve or open space parcel being dedicated to Council.

Mandatory Attribution: The following attribution is mandatory for Tree Irrigation:

Element Name	ADAC Mandatory (Y/N)
Use (Enumeration = Irrigation)	Y
Diameter	Y
Material	Y
Status	

7.4.24 Tree Irrigation Control

General Information: Control and connection infrastructure associated with tree irrigation systems, including controllers, pumps, master valves and points of connection that will be dedicated to Council. Tree irrigation control assets must be captured using the relevant ADAC WaterSupply feature class, depending on asset type, as outlined below:

- Valves / Fittings:
 - Asset Element: WaterSupply
 - Feature Class: ServiceFittings
 - Feature: ServiceFitting
 - Type: Appropriate enumeration (e.g. Control Panel or Other)
- Meters (where installed):
 - Asset Element: WaterSupply
 - Feature Class: Meters
 - Feature: Meter
 - Type: Irrigation (Enumeration)

Controllers and panels must be captured as ServiceFittings with the appropriate Type enumeration.

Asset Capture: Point feature representing the centre of the irrigation control asset.

Spatial Relationship: Must correspond with connected Tree Irrigation pipework. Must be located within the relevant road reserve or open space parcel being dedicated to Council.

Mandatory Attribution: The following attribution is mandatory for Tree Irrigation Control:

Element Name	ADAC Mandatory (Y/N)
Type (Enumeration)	Y
Status	Y
SerialNumber	Y

7.4.25 Waste Collection Point

General Information: Includes any poles, stands or enclosures associated with a bin.

Asset Capture: Simple point features representing the centre of asset. Refer to the green “dot’s” in **Figure 1 - Page 26**.

Spatial Relationship: Not applicable.

Mandatory Attribution: The following attribution is mandatory for Waste Collection Points:

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



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

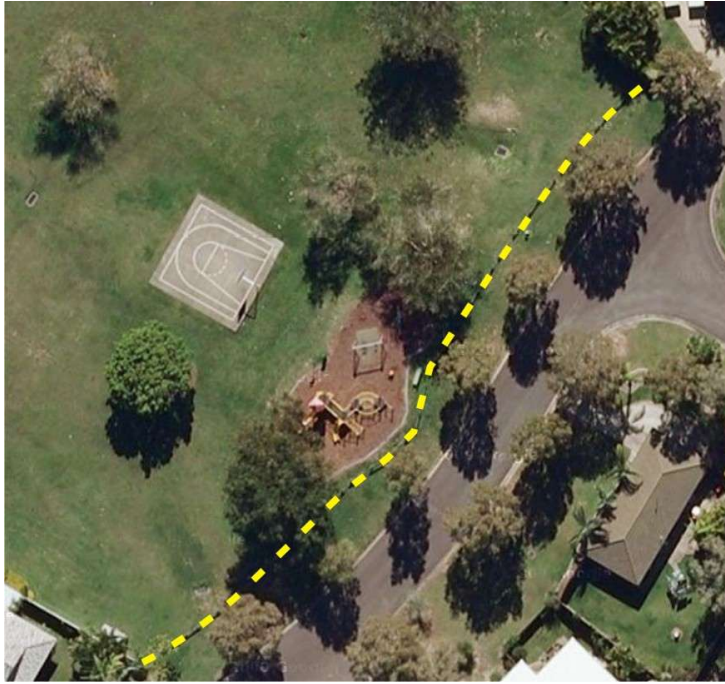


Figure 2 – Typical example of BarrierContinuous ADAC data capture.



Figure 3 – Typical example of Retaining Wall ADAC data capture.

7.5 Stormwater/Drainage Assets

7.5.1 End Structure

General Information: Represents a stormwater headwall / end wall.

Asset Capture: To be represented as a “point feature” at the outlet of the pipe/culvert as per the example shown by the location of the “green cross” in **Figure 4– Page 29**. Point to be located at top of the structure above the invert of the associated pipe/s and midway on the headwall. Fences surrounding the end structure should be captured separately as *Open Space Barrier Continuous*.

NOTE: The ADAC Schema allows for an identical Polyline feature capture for End Structures however that is not accepted by WSC.

Spatial Relationship: Not Applicable.

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

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
StructureID	Y	
StructureLevel_m	Y	
EndWall.Type	Y	
EndWall.Size	Y (if Endwall exists)	
EndWall.Length_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)	
Apron.Apron_Construction	Y (if Apron exists)	
GrateType	N	Y
TideGate	N	Y



Figure 4 End Structures

7.5.2 End Structure Polyline

Not required to be captured in ADAC format. Please refer to End Structure above in section 7.5.1.

7.5.3 Fitting

General Information: Represents an End Cap, Tide Gate, Frog Flap or Duckbill Valve.

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

Spatial Relationship: Must be coincident to the end of a Stormwater pipe asset.

Mandatory Attribution: The following attribution is mandatory for Fittings:

Element Name	ADAC Mandatory (Y/N)
FittingType	Y
Rotation	N

7.5.4 Flow Management Device

General Information: Represents Levees, weirs and spillways.

Asset Capture: To be represented as a single line feature representing the edge of material with the start and end points of the material being coincident. crown of the feature.

Spatial Relationship: Not Applicable.

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

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
Sqid_Id	N	Y
Type	Y	
Material	Y	
Length_m	N	Y
CrestElevation_m	N	Y

Note: Length represents the crest/crown length in the direction of the flow.

7.5.5 Pipe

General Information: None.

Asset Capture: A simple linear feature representing the invert of the pipe or midpoint of a box asset. Multiple-celled culverts & pipes should always be represented individually; therefore, the number of cells attribute should always be "1". Line direction should be enforced from gravity flow or gravity direction. Pipe features are captured from the intersection of pipe material and chamber wall. Refer to **Page 31**.

Error! Reference source not found. represents a single-celled pipe asset where vertices one and four represent the maintenance hole capture and vertices two and three are the intersection of the Pipe material and the chamber wall.

Figure 4 on page 31 represents an irregular shaped pit with multiple multi-celled pipes entering the pit asset and a large single-celled asset exiting the pit with an outlet through an End Structure.

Pipes are to be captured based on their physical and spatial properties and attributes. For example, if a pipe changes size, material, class, embedment or direction etc. then it must be broken and captured separately.

Spatial Relationship: May be coincident to component of the End Structure, Pit or WSUD Point features whether that be a chamber wall, end wall outside face or apron.

Mandatory Attribution: The following attribution is mandatory for Pipes:

Element Name	ADAC Mandatory (Y/N)
US_InvertLevel_m	Y
DS_InvertLevel_m	Y
US_SurfaceLevel_m	Y
DS_SurfaceLevel_m	Y
Diameter_mm	Y (if circular)
JointType	Y (if circular)
Height_mm	Y (if box)
Width_mm	Y (if box)
Material	Y
Class	Y
Cells	Y
ConcreteCoverType	Y
Grade	N
Length_m	N

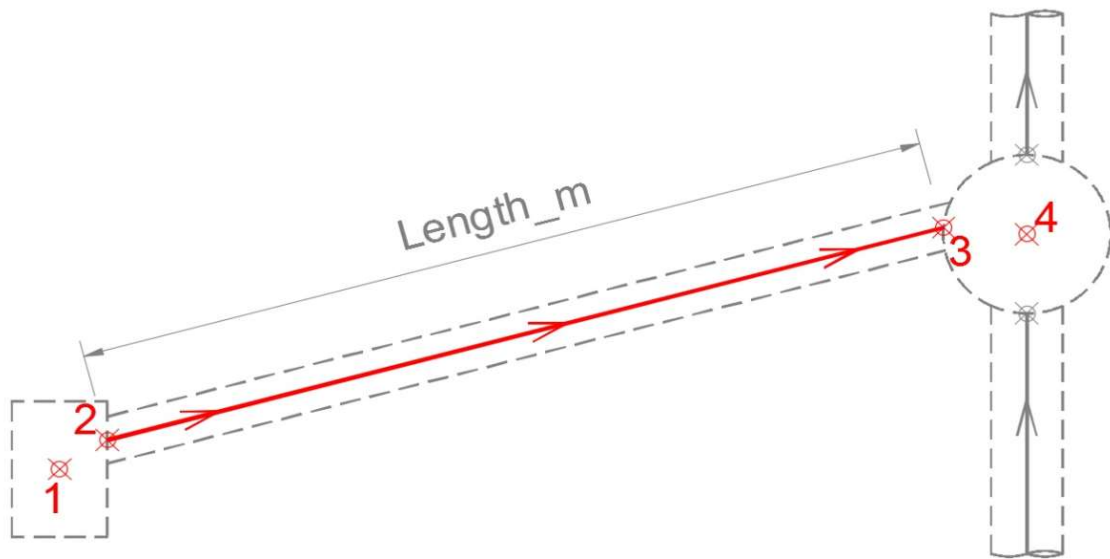


Figure 5 Single-celled pipe asset capture

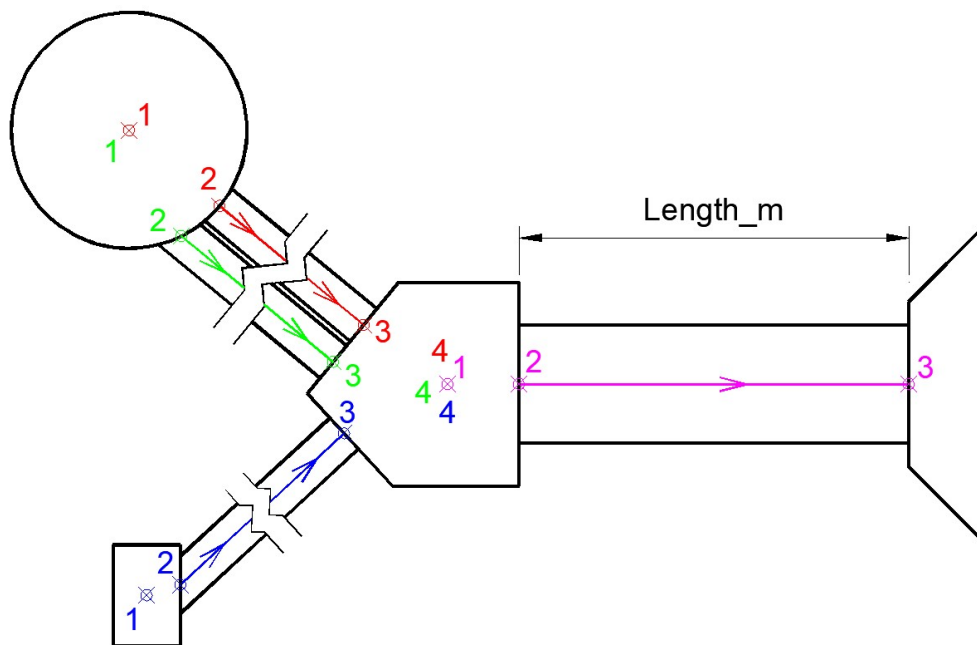


Figure 6 Multi-celled pipes asset capture

7.5.6 Pit

General Information: Relates to in-accessible pits, field inlets, gully pits, manholes and roofwater inspection chambers.

Asset Capture: To be captured and represented as a “point” located at the centre of chamber.

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

Maintenance Hole	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
Junctions (no access)	Use	Pit
	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.

Maintenance Hole lid size (in millimetres) is to be populated in the Notes element. Pit Number must reflect the WAE.

Spatial Relationship: Not Applicable.

Mandatory Attribution: The following attribution is mandatory for Pits:

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
PitNumber	Y	
Use	Y	
ChamberConstruction	Y	
Length_mm	Y (if rectangular)	
Width_mm	Y (if rectangular)	
Diameter_mm	Y (if circular)	
Radius_mm	Y (if extended)	
Extension_mm	Y (if extended)	
LidType	N	Y (if Use = Manhole or Roofwater Inspection Chamber)
SurfaceLevel_m	Y	
InvertLevel_m	Y	
Depth_m	Y	
InletConfig	Y (if Use = Kerb Inlet or Field Inlet)	
InletType	Y (if Use = Kerb Inlet or Field Inlet)	
InletSize	Y (if Use = Kerb Inlet or Field Inlet)	
LintelConstruction	Y (if Use = Kerb Inlet)	
LintelLength_m	Y (if Use = Kerb Inlet)	
OutletType	Y	
FireRetardant	Y	
Rotation	N	

7.5.7 Stormwater Quality Improvement Device

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 Interceptor)
- 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. Point features must be coincident to pipe features as per Pits/Maintenance Holes.

Spatial Relationship: For GPTComplex and NonGPTSimple assets please refer to Pit spatial Relationship details. A GPTSimple asset’s spatial location

must correlate with a Pit/Manhole or End Structure asset as they are housed within those structures and can be removed for maintenance or relocation.

Mandatory Attribution: The following attribution is mandatory for SQIDs:

7.5.7.1 GPTComplex

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
Sqid_Id	N	Y
Manufacturer	N	Y (if Commercial)
ModelNumber	N	Y (if Commercial)
Length_mm	Y (if rectangular)	
Width_mm	Y (if rectangular)	
Diameter_mm	Y (if 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	Y
SumpDepth_m	N	Y
HasFilterMedia	N	Y
HasBasket	N	Y
HasBoards	N	
DesignFlow_m3s	Y	
MaxContaminantVolume_m3	N	
MaxInternalVolume_m3	N	
MaintenanceCycle_mnths	N	
Rotation	N	

Note: Chamber Material is to be recorded in the Notes field.

7.5.7.2 GPTSimple

Element Name	ADAC Mandatory (Y/N)	WSC 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
Material	N	Y
MaintenanceCycle_mnths	N	
Rotation	N	

Note: Depth is to be recorded in the Notes field in meters.

7.5.7.3 NonGPTSimple

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

Note: Chamber Material and Depth (in meters) is to be recorded in the Notes field.

7.5.8 Surface Drain

General Information: None.

Asset Capture: Simple linear feature representing the invert of the channel. Surface Drains are to be captured based on their physical and spatial properties and attributes. For example, if a surface changes size, material, shape etc. then it must be broken and captured separately. **Figure 7 on Page 36** indicates the capture of a major surface drain as well as a smaller surface drain feeding into it. The main surface drain has been broken into separate features where the main changes of width occur. The smaller surface drain ends at the intersection of the main surface drain's outer edge.

Spatial Relationship: May be coincident to End Structures and WSUD regions/polygons.

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

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

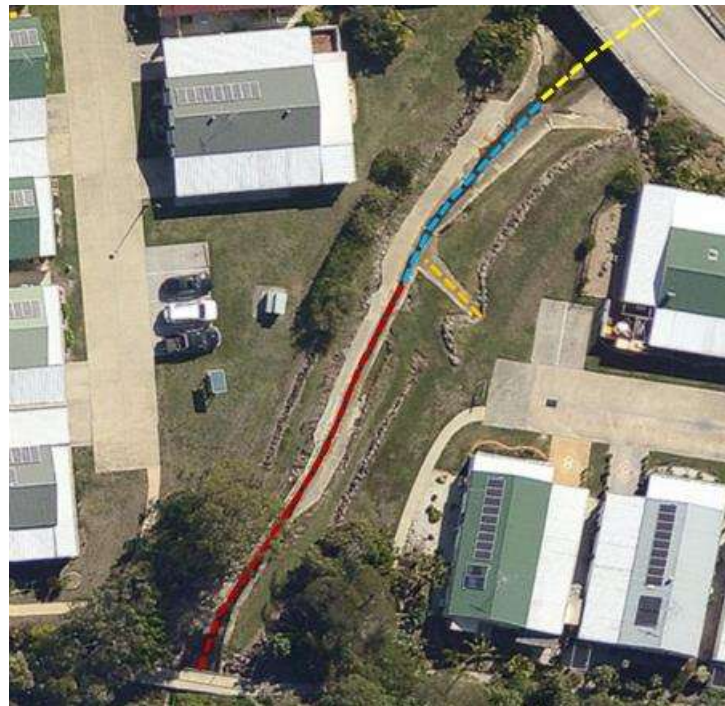


Figure 7 Surface Drains

7.5.9 WSUD (Water Sensitive Urban Design) Area

General Information: Typically assets such as kerbside bio-filtration beds or purpose built drainage swales should be captured individually as a closed polyline 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 8 on Page 38 below** demonstrates the capture of a WSUD and associated infrastructure, including a Vehicle Access (red polygon) and a gate (blue hatched line). **Figure 9 on Page 38 and Figure 10 on Page 39 below** represents a detention basin asset capture.

Note: Detention Basins are to be captured as a WSUD area feature with “Detention Basin” recorded in the Notes field.

Asset Capture: Polygon feature is to represent the outline of the permanent pond level. Any curves are to be captured as multiple straight line segments.

Spatial Relationship: Not Applicable.

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

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
Sqid_Id	N	Y
TreatmentMeasure	Y	
Function1	Y	
Function2	N	
Function3	N	
PondingArea_m2	N	Y
PondingDepth_m	N	Y
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	
DesignFlow_m3s	N	
HasSpillway	Y	
MaintenanceCycle_mnths	N	



Figure 8 Water Sensitive Urban Design Area



Figure 9 Detention Basin Capture



Figure 10 Detention Basin Example

7.6 Supplementary

Supplementary features are used to record additional asset types or points of reference which isn't otherwise covered under the ADAC schema. Wollondilly Shire Council has specified additional asset types required to be supplied in the XML under its *As-Constructed Data Standard*. The details for these asset types have been supplied below:

7.6.1 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)
Class	Y
Note	N
Attribute()TextValue	N
Attribute()IntegerValue	N
Attribute()DecimalValue	N
Attribute()DateValue	N
Attribute()TimeValue	N
Attribute()DateTimeValue	N

Note: Field order of custom attribution must be as detailed below.

7.6.2 Artificial Fauna Habitat (Polygon Feature)

General Information: Represents artificial fauna habitats such as glider poles, nesting platforms and ground hollows.

Asset Capture: Multi-patched area feature representing the footprint of the artificial fauna habitat. These are to be recorded with a **Class** element of "Artificial Fauna Habitat".

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Artificial Fauna Habitats*:

Attribute	Description	AttributeType	Allowable Values
Type	The type of Habitat	TextValue	Glider Pole
			Glider Rope
			Ground Hollow
			Log
			Nesting Platform
			Rock
Material	The predominant material	TextValue	Concrete
			Fibreglass
			Masonry
			Plastic
			Rock
			Steel Galvanised
			Steel Powder Coated

Attribute	Description	AttributeType	Allowable Values
			Timber
			Combination
Height_m	The height of the habitat in metres.	DecimalValue	
PoleMounted	Is the feature mounted to a pole?	TextValue	true
			false

7.6.3 Bridge (Polygon Feature)

General Information: None.

Asset Capture: Multi-patched area feature representing the footprint of the bridge, from abutment to abutment (refer **Figure 11 on Page 42**). These are to be recorded with a **Class** element of "Bridge". For road bridges which include a separated footbridge, the footbridge is considered part of the road bridge if it shares the same load bearing structure. Associated assets are to be capture separately e.g. Guardrails, Pavement etc

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Bridges*:

Attribute	Description	Type	Allowable Values
Name	Bridge descriptor name.	TextValue	
DeckWidth_m	Deck width measured from outside to outside.	DecimalValue	
DeckLength_m	Deck length measured from abutment to abutment.	DecimalValue	
VerticalClearance_m	Vertical clearance under the bridge, measured from the highest astronomical tide or the crown of the road.	DecimalValue	
DesignLoad	Maximum design load limit of the bridge, in tonnes	DecimalValue	
ActualLoadAllowance	Maximum actual load limit of the bridge in tonnes, where differs from the design load.	DecimalValue	
CrossingType	What is the bridge crossing?	TextValue	Over Road
			Under Road
			Over Water
			Over Rail
			Under Rail
			Other
Footpath		TextValue	Nil

Attribute	Description	Type	Allowable Values
	Are there footpaths fixed to the bridge?		One Side Both Sides
SpanType	The type of span used on the bridge.	TextValue	Arch Beam Girder Box Girder Composite Slab Concrete Portal Truss
SpanLength_m	Maximum length of each span, in metres.	DecimalValue	
SpanQuantity	Number of spans.	IntegerValue	
PrimaryUse	The primary purpose of the bridge.	TextValue	Pedestrian Vehicular Cycleway Rail
Lanes	Number of trafficable lanes on the bridge.	IntegerValue	
LhsRailType	Type of rail	TextValue	
LhsRailLength_m	Length of the rail	DecimalValue	
RhsRailType	Type of rail	TextValue	
RhsRailLength_m	Length of the rail	DecimalValue	



Figure 11 Supplementary Polygon Feature - Bridge Capture

7.6.4 Fire Management (Polyline Feature)

General Information: Represents Fire Control Lines and Fire Trails.

Asset Capture: Complex linear feature (polylines including curves but not Bezier curves) representing the centre longitudinal axis of a fire trail or fire control line. These are to be recorded with a **Class** element of “Fire Management”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Fire Management*:

Attribute	Description	Type	Allowable Values
Type	The type of Fire Management feature (e.g. fire trail, fire control line).	TextValue	Fire Control Line
			Fire Trail
TrailCategory	The type of fire trail. Only applicable when the Type is “Fire Trail” <i>Refer below for a description of each category.</i>	TextValue	1
			2
			3a
			3b
			4
			5
			NA
SurfaceMaterial	The surface material of the fire trail or control line	TextValue	Bitumen
			Concrete
			Exposed Aggregate
			Grass
			Gravel
			Pavers
			Natural
			Sand
			Timber
Width_m	Width in metres (2 decimal places).	DecimalValue	

Trail Categories:

- 1: *strategically important fire control line (sealed or well-formed road)*
- 2: *major control line (well formed, 10% gradient)*
- 3a: *permanent medium fire control line (4x4 vehicle on 10% - 17% gradient)*
- 3b: *permanent minor fire control line (4x4 vehicle 17% - 38% gradient)*
- 4: *temporary fire control line (4x4 vehicle 17% - 38% gradient)*
- 5: *dormant fire control line (4x4 vehicle 20% - 45% gradient)*

7.6.5 Platform (Polygon Feature)

General Information: None.

Asset Capture: Multi-patched area feature representing the footprint of the platform. These are to be recorded with a **Class** element of “Platform”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Platforms*:

Attribute	Description	Type	Allowable Values
Function	Primary purpose of the platform.	TextValue	Viewing
			Fishing
			Other
DeckMaterial	Predominant material of the platform deck.	TextValue	Timber
			Paved
			Concrete
SubstructureMaterial	Predominant material of the platform substructure.	TextValue	Timber
			Concrete
			Steel
			NA
ExternalHandrail Material	Predominant material of the platform handrails.	TextValue	Timber
			Metal
			None
MaximumHeight_m	The maximum distance between the deck and the ground in metres (2 decimal places).	DecimalValue	
Length_m	Length in metres (2 decimal places)	DecimalValue	
Width_m	Width in metres (2 decimal places)	DecimalValue	
Area_sqm	Area in square metres (2 decimal places)	DecimalValue	

7.6.6 Prepared Surface (Polygon Feature)

General Information: Represents a slab, pad or prepared surface other than an activity area.

Asset Capture: Multi-patched area feature representing the footprint of the prepared surface. These are to be recorded with a **Class** element of “Prepared Surface”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Prepared Surfaces*:

Attribute	Description	Type	Allowable Values
Function	The purpose of the prepared surface.	TextValue	Annex Slab
			Hose Down Pad
			Recreational
			Storage
			Various/Other
Material	The material of the prepared surface.	TextValue	Asphalt
			Bitumen

Attribute	Description	Type	Allowable Values
			Concrete
			Exposed Aggregate
			Gravel
			Other
			Synthetic Grass
			Tiles
			Pavers
Length_m	Length in metres (2 decimal places)	DecimalValue	
Width_m	Width in metres (2 decimal places)	DecimalValue	
Thickness_mm	Thickness in millimetres (0 decimal places)	DecimalValue	
Area_sqm	Area in square metres (2 decimal places)	DecimalValue	

7.6.7 Swimming Pool (Polygon Feature)

General Information: None.

Asset Capture: Multi-patched area feature representing the footprint of the pool shell. These are to be recorded with a **Class** element of "Swimming Pool".

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Swimming Pools*:

Attribute	Description	Type	Allowable Values
Type	The type of swimming pool.	TextValue	Wading
			Lap
			Hydrotherapy
			Recreational
			Diving
			Learn to Swim
Location	Is the swimming pool located indoors or outdoors?	TextValue	Indoor
			Outdoor
Material	Material of pool shell.	TextValue	Fibreglass
			Concrete
Finish	Finish applied to the pool shell material.	TextValue	Fibreglass
			Paint
			Pebble Crete
			Tile
Lanes	The number of lanes.	IntegerValue	
Length_m	Length of the pool in metres.	DecimalValue	
Width_m	Width of the pool in metres.	DecimalValue	
Volume_m3	Volume of the pool in cubic metres.	DecimalValue	
MinimumDepth_m	The minimum depth of the pool, in metres.	DecimalValue	

7.6.8 Swimming Pool Heating Equipment (Point Feature)

General Information: None.

Asset Capture: Point feature representing the centre of the pool heating equipment. These are to be recorded with a **Class** element of “Pool Heating Equipment”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Pool Heating Equipment*:

Attribute	Description	Type	Allowable Values
Type	The power source of the equipment.	TextValue	Gas
			Electric
			Solar
Component	The type of pool heating equipment.	TextValue	Exchanger
			Pump
			Valve
			Controller
			Solar Collector

7.6.9 Swimming Pool Fixture (Point Feature)

General Information: None.

Asset Capture: Point feature representing the centre of the pool fixture. These are to be recorded with a **Class** element of “Pool Fixture”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Pool Fixture*:

Attribute	Description	Type	Allowable Values
Type	The type of pool fixture.	TextValue	Tower
			Springboard
			Lifeguard Tower/Chair
			Access Ladder
			Starting Podium
Material	The material type of the pool fixture.	TextValue	Aluminium
			Concrete
			Plastic
			Stainless Steel
			Steel
			Timber
			Masonry
			Fibreglass
Finish	The finish applied to the pool fixture material.	TextValue	Combination
			Painted
			Polished
			Powdercoated
			Galvanised

Attribute	Description	Type	Allowable Values
			Stained
			PVC/Rubberised Coating

7.6.10 Water Body (Polygon Feature)

General Information: Represents man-made water bodies. Not to be used to represent WSUD areas.

Asset Capture: Multi-patched area feature representing the footprint of the water body. These are to be recorded with a **Class** element of “Water Body”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Water Body*:

Attribute	Description	Type	Allowable Values
MaximumDepth_m	Maximum depth of the water body, in metres.	DecimalValue	

7.6.11 Weighbridge (Polygon Feature)

General Information: None.

Asset Capture: Multi-patched area feature representing the footprint of the weighbridge. These are to be recorded with a **Class** element of “Weighbridge”.

Spatial Relationship: Not applicable.

Attribution: The following attribution is to be recorded against features identified as *Weighbridge*:

Attribute	Description	Type	Allowable Values
TotalLength_m	Total length of weighbridge in metres (2 decimal places).	DecimalValue	
Width_m	Width of weighbridge in metres (2 decimal places).	DecimalValue	
Lanes	Number of lanes on the weighbridge.	IntegerValue	
Decks	Number of separate weighing decks.	IntegerValue	
MaximumWeight	Maximum weight limit, in tonnes.	DecimalValue	
DeckMaterial	Material type of the weighbridge deck(s).	TextValue	Concrete Concrete/Steel

7.7 Surface

7.7.1 Breakline

Not required to be captured in ADAC format.

7.7.2 Contour

Asset Capture: Simple linear feature representing a single contour elevation.

Spatial Relationship: Not Applicable.

Mandatory Attribution: The following attribution is mandatory for Contours:

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

7.7.3 Spot Height

Asset Capture: Point feature representing a single elevation point. Spot heights must represent all surface features and lot boundary's.

Spatial Relationship: Not Applicable.

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

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

7.7.4 Profile Line

Not required to be captured in ADAC format.

7.8 Transport Assets

7.8.1 Bridge Abutment

Not required to be captured in ADAC format. Please refer to Bridge (Polygon Feature) below in section 7.6.3.

7.8.2 Bridge Deck

Not required to be captured in ADAC format. Please refer to Bridge (Polygon Feature) below in section 7.6.3.

7.8.3 Bridge Extent

Not required to be captured in ADAC format. Please refer to Bridge (Polygon Feature) below in section 7.6.3.

7.8.4 Bridge Pier

Not required to be captured in ADAC format. Please refer to Bridge (Polygon Feature) below in section 7.6.3.

7.8.5 Bridge Superstructure

Not required to be captured in ADAC format. Please refer to Bridge (Polygon Feature) below in section 7.6.3.

7.8.6 Containment Class

Not required to be captured in ADAC format.

7.8.7 Flush Point

Not required to be captured in ADAC format.

General Information: None.

Asset Capture: Point feature representing a road sub-soil drain flushing out point.

Spatial Relationship: Must be coincident with Subsoil drain features.

Mandatory Attribution: The following attribution is mandatory for Flush Points:

Element Name	ADAC Mandatory (Y/N)
Function	Y

7.8.8 Parking

General Information: None.

Asset Capture: Polygon capturing the area of a parking pavement only, as represented by the solid red line in **Figures 12 and 13 - Page 50 and 51**. Any curves are to be captured as multiple straight line segments.

Spatial Relationship: May adjoin/share road pavement boundary

Mandatory Attribution: The following attribution is mandatory for Parking:

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



Figure 12 (On Street Parking)



Figure 13 (Off Street Parking)

7.8.9 Path Structure

General Information: None.

Asset Capture: Complex Polyline feature comprising of straight line segments (read: no curves) representing the edge of the asset material with the start and end points being coincident. Path Structures include boardwalks, footbridges, stairs, ramps & underpasses.

Note: When capturing stairs, the number of treads should be recorded in the Notes field.

Spatial Relationship: May be coincident with Pathway features.

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

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

7.8.10 Pathway

General Information: None.

Asset Capture: To be captured as a Complex linear feature representing the centre longitudinal axis of a pathway. Any “curves” in paths to be captured as multiple straight-line segments. Please refer to the dashed blue lines in **Figure 14 and 15 – Page 52**.

Spatial Relationship: May be coincident with Pram Ramp or Path Structure features.

Mandatory Attribution: The following attribution is mandatory for Pathways:

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



Figure 14 Pram Ramp Capture



Figure 15 Pram Ramp Capture

7.8.11 Pavement

General Information: None.

Asset Capture: To be captured as an area/polygon feature from “lip of kerb to lip of kerb” where kerb existings and edge of material where no kerb is present. Note: Separate polygons will be required at changes in pavement and/or surfacing and change of Road name. Any curves are to be captured as multiple straight line segments. Refer to **Figure 16 – Page 55** for outline of Pavements taking note of the dashed red line delineating the intersection of pavement based on Road names.

Note: Private driveway crossovers are not to be captured in ADAC.

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

Mandatory Attribution: The following attribution is mandatory for Pavements:

Element Name	ADAC Mandatory (Y/N)	WSC Mandatory (Yes?)
Name	Y	
SurfaceType	Y (if surface exists)	
SurfaceThickness_mm	N	Y
SurfaceNomWidth_m	Y (if surface exists)	
PavementType	Y	
BaseLayer.LayerType	Y (if Base exists)	
BaseLayer.LayerDepth_mm	Y (if Base exists)	
BaseLayer.Stabilisation	Y (if Base Stabilised)	
SubBaseLayer.LayerType	Y (if SubBase exists)	
SubBaseLayer.LayerDepth_mm	Y (if SubBase exists)	
SubBaseLayer.Stabilisation	Y (if SubBase stabilised)	
LowerSubBaseLayer.LayerType	Y (if LowerSubBase exists)	
LowerSubBaseLayer.LayerDepth_mm	Y (if LowerSubBase exists)	
LowerSubBaseLayer.Stabilisation	Y (if LowerSubBase stabilised)	
PavementGeoTextile	N	Y (if exists)
SubGrade.CBR	Y	
SubGrade.Stabilisation	N	Y (if exists)

7.8.12 Pram Ramp Point

Not required to be captured in ADAC format. Please refer to section 7.8.13 below for Pram Ramp details as polygons.

7.8.13 Pram Ramp Polygon

General Information: None.

Asset Capture: Simple polygon representing the edge of material of a Pram Ramp. Refer to the red shaded polygons in **Figures 14 and 15 - Page 52**.

Spatial Relationship: Must be coincident with Pathway features.

Mandatory Attribution: The following attribution is mandatory for Pram Ramps:

Element Name	ADAC Mandatory (Y/N)
Rotation	N

7.8.14 Road Edge

General Information: None.

Asset Capture: Complex linear features representing the lip of kerb. In case of inverts, edge of concrete furthest from road centreline. Refer to **Figure 16 Page 55**. The solid red line represents Barrier Kerb and Channel, Yellow solid line is Barrier Kerb only and the solid green line is channel/invert.

Note: Pavement Extension refers to the distance the pavement extends behind the back of kerb.

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: The following attribution is mandatory for Road Edges:

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

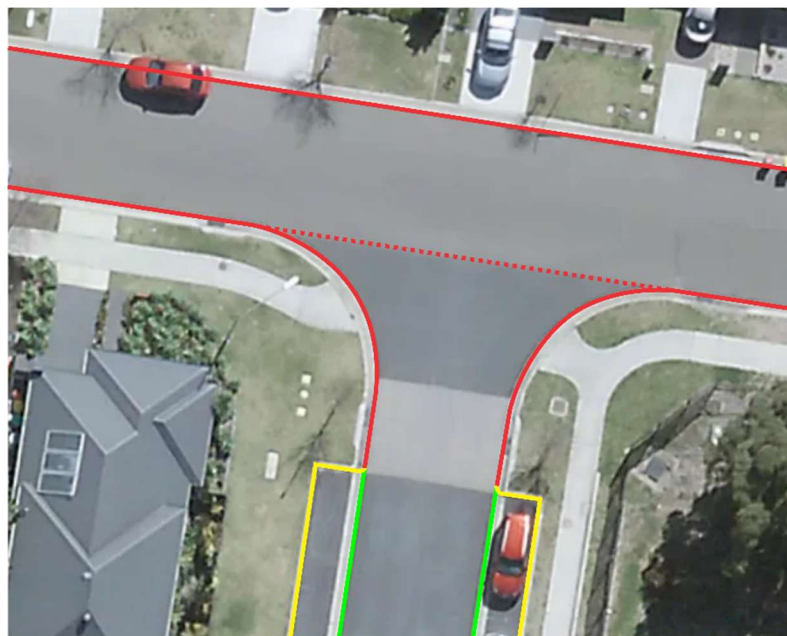


Figure 16 Road Edge

7.8.15 Road Island

General Information: None.

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. Refer **Figure17 – Page 56** for an example of 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. Also it must be coincident with surrounding Road Edge asset capture where applicable.

Mandatory Attribution: The following attribution is mandatory for Road Islands:

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



Figure 17 Road Island

7.8.16 Road Pathway

General Information: None.

Asset Capture: Complex Polyline feature comprising of straight line segments (read: no curves) representing the centre longitudinal axis of a road pathway (on-road cycleway).

Spatial Relationship: Within a road pavement boundary

Mandatory Attribution: The following attribution is mandatory for Road Pathways:

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

Note: Area of Road Pathway is to be recorded in the Notes field in square meters.

7.8.17 Road Safety Barrier

General Information: None.

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 18 – Page 58**.

Spatial Relationship: Not Applicable.

Mandatory Attribution: The following attribution is mandatory for Road Safety Barriers:

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

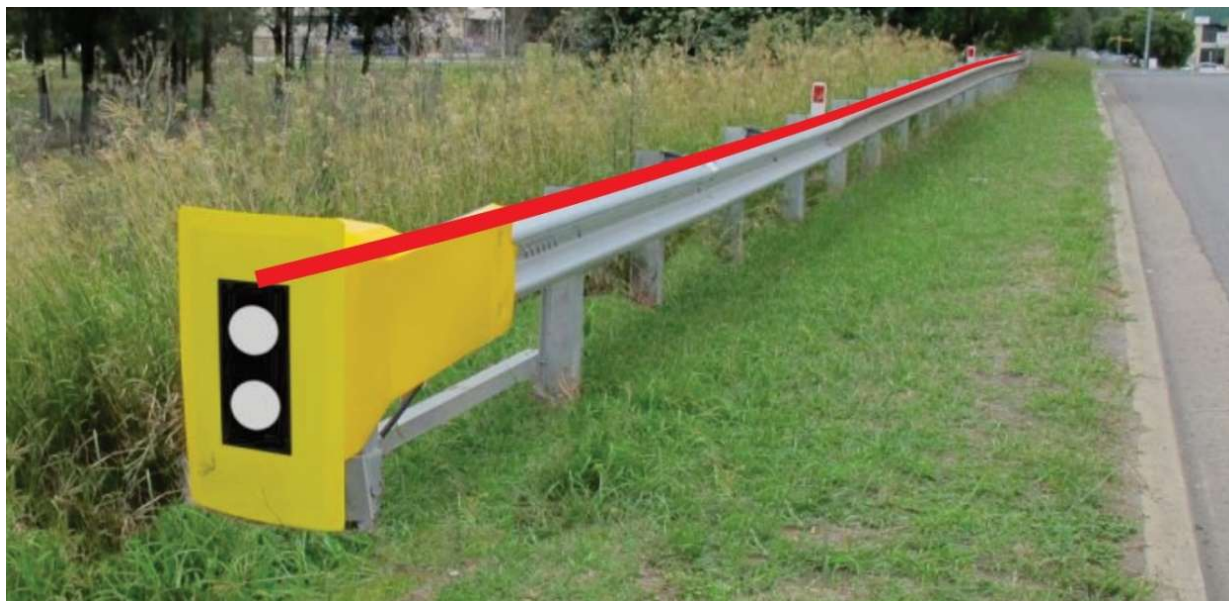


Figure 18 Road Safety Barrier

7.8.18 Sign – Traffic & Street

General Information: Signs of various types found within Road Reserves.

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

To be captured using Openspace.Sign with the Type = “Traffic Control”.

Spatial Relationship: Not Applicable.

Mandatory Attribution: The following attribution is mandatory for Road Signs:

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

7.8.19 Subsoil Drain

General Information: None.

Asset Capture: Simple linear feature representing a sub-soil drain with any curves are to be captured as multiple straight line segments.

Spatial Relationship: Must be coincident with Flush points.

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

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



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