Moreton Bay Regional Council

Asset Design As Constructed (ADAC)

Submission Guidelines

November 2022

Moreton Bay
Regional Council

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Version History

Version	Description	Valid From
1.0	ADAC Schema 4.2	10/12/2018
2.0	ADAC Schema 5.0.1	1/01/2023

Part 1: ADAC Information

1.0 Purpose

The purpose of this document is to provide guidelines and general assistance with respect to the creation and provision of compliant ADAC XML files. ADAC XML files are required to accompany the usual bundle of "As-Constructed" plans, drawings, schedules and associated information reflecting new donated civil infrastructure and associated assets (Figure 1).

This document applies to all ADAC submissions from 1st January 2023.

On completion of physical works and prior to asset handover, "As-Constructed" (also known as "As-Built") information is used to indicate any variations in locations and/or alignments (survey) and other approved changes in assets or construction methods that may have been carried out during operational works as compared to the original approved design. "As-Constructed" drawings are created that accurately reflect these changes, including material types, specifications and other asset-specific information. The digital ADAC XML file is created from this updated "As- Constructed" Plan information.

Please Note: Advice on the overall preparation and presentation of "As-Constructed" drawings and plans, including acceptable drawing file formats, styles, quantities etc. can be found in the Moreton Bay Regional Council Planning Scheme at **www.moretonbay.qld.gov.au/mbrc-planning-scheme/document/**. Refer to *Schedule 6 - Planning scheme policies*. Within this is the *Operational works inspection, maintenance and bonding procedures*.
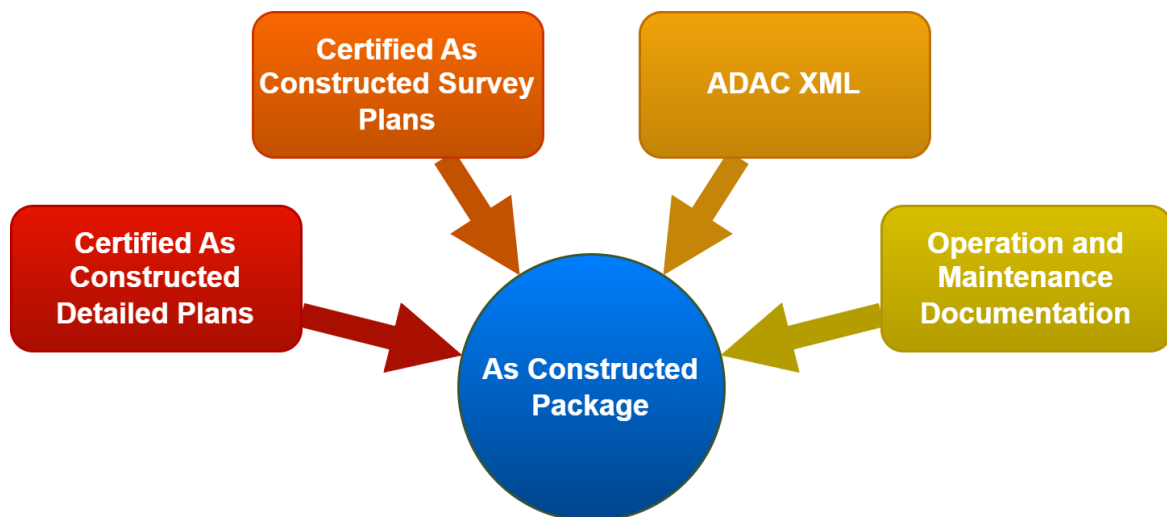
Figure 1: The As Constructed Package consists of a number of different datasets.

2.0 Introduction to ADAC XML

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

Compliant ADAC XML files contain a structured and digital record of the assets described in the "Design" and "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.

More specifically, the ADAC XML files are used to check the completeness of the "As-Constructed" information provided and tolerances between "Design" and "As Constructed". The files afford further confirmation of compliance with development approval conditions and are used to verify engineering specifications and other design-related requirements. Note: MBRC require all ground services (water, sewer, communications), constructed within MBRC property, to be included in the ADAC XML file. It is a requirement that the 'As-Constructed' ADAC XML files submitted be created from a copy of the "Design" ADAC XML files to allow these tolerance checks to be carried out on like for like assets. Like for like assets must have the same ADAC XML Schema[1] 'ADAC Id' value which must be unique.

Depending on the tools[2] (ADAC XML generator) being used to generate the ADAC XML, compliant files are initially created at the Design phase from design information and input of the responsible engineer. As Constructed ADAC XML files are created during survey capture and then finalised in conjunction with the creation of the "As-Constructed" drawings (e.g. DWGs).

Alternatively, the XML files may be generated after the electronic "As-Constructed" drawings have been finalised. It is however essential that the "As-Constructed" drawings are created using complete and survey-accurate information to identify the assets and the precise locations being represented. The generation of a pdf file from the ADAC XML, annotated with all asset attributes and certified accordingly, provides project managers a reference of the ADAC XML file content.

On receiving the "As-Constructed" bundle, council will undertake a data format and conformance check on the 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 checks, the ADAC XML file(s) may be returned to the provider for correction and resubmission which can potentially delay the progress of asset handover processes.

Once the ADAC XML data file(s) are accepted they are then uploaded to various internal systems and used to assist in the long-term management of the new donated infrastructure. The detailed asset and location data are also available to external agencies in the future via various digital formats.

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[1] ADAC XML Schema refers to the structure and organization of the database system within the software. The ADAC Data Dictionary on the IPWEA website illustrates this structure in an excel format.

[2] 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 software (CAD)design suites and survey tools.

3.0 As-Constructed Requirements

3.1 ADAC XML As-Constructed Requirements

The ADAC XML file is to be produced using the **Version 5.0.1 ADAC Schema** and should be "validated" for compliance before being submitted to council. The ADAC Schema and a detailed ADAC Data Dictionary can be found on the ADAC website at: **www.ipweaq.com/asset-owners**.

The ADAC XML files are to be provided via electronic transmission or if this is not possible, speak to your project manager about other formats such as CD/DVD-ROM, USB drive). All electronic files will need to be accompanied by an appropriate "Document Transmittal Form". Once received by Council, the ADAC XML files will undertake a compliance test. Failures will need to be corrected and resubmitted until passed. Each version of the ADAC XML file is to be named using the DA number or Council Capital Project Number followed by the suffix "-Submission1, 2, 3 etc."

3.2 Datum Information and Spatial Accuracy

Data contained in the ADAC XML file(s) must reflect the survey details exactly as shown on the "As-Constructed" drawings which must be derived from permanent survey marks (PSMs), with Map Grid of Australia (MGA Zone 56 – GDA 94 or GDA2020) coordinates and AHD levels to be to fourth order standard as defined by ICSM Standard for the Australian Survey Control Network Special Publication 1 (SP1) Version 2.0 October 2013.

4.0 Creation of the ADAC XML

In producing compliant ADAC XML files, information on the asset classes listed in Part 2 (pg. 10) will need to be captured, according to the approved ADAC Schema (refer to software structure and the ADAC Data Dictionary for details). Vendors of ADAC XML generators are provided with any updates to the ADAC Schema, free of charge, and should have these updates incorporated into their products for release to customers in a timely manner. Further information on the ADAC process, ADAC Schema, ADAC Data Dictionary and available tools and supporting agencies can be found on the ADAC website at: **http://www.ipweaq.com/asset-owners**.

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, as there are a number of MBRC specific mandatory attributes. The details provided in Part 2 are 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-Con" plans and associated drawings in civil design (software) suites.

Of particular note, you should be aware that the vertices that make up a polygon feature need to be captured in sequential order around the perimeter when creating the XML. Failure to do so may result in the polygon being captured incorrectly (clipping and "donuting") (Figure 2).
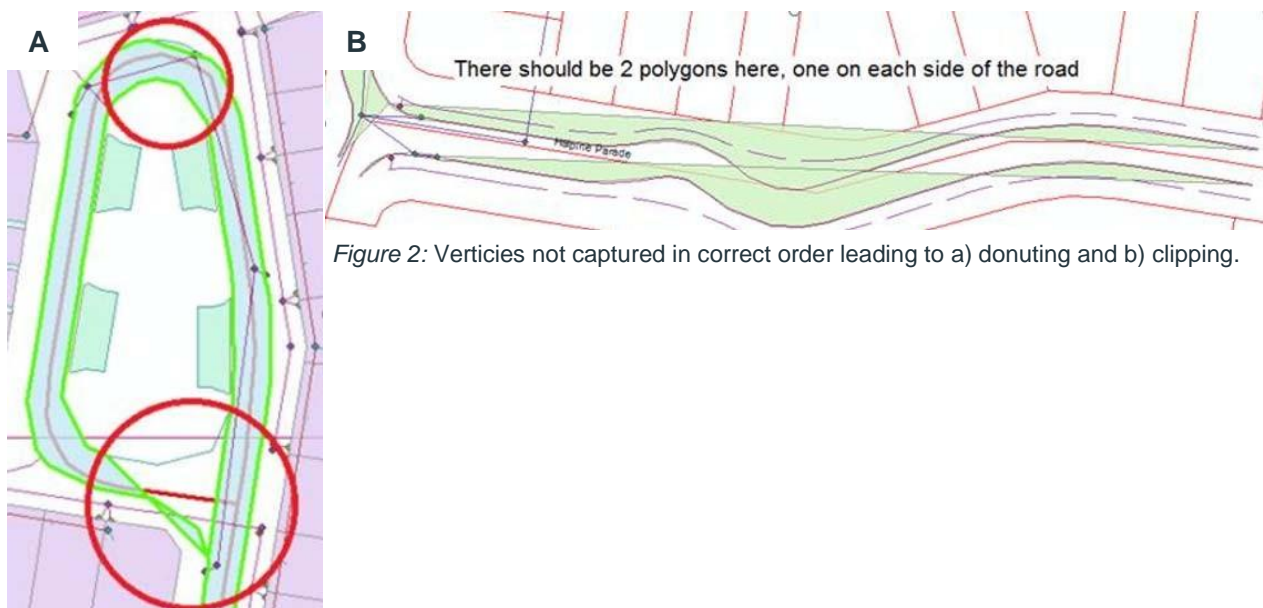
Figure 2: Verticies not captured in correct order leading to a) donuting and b) clipping.

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 data dictionary).

Part 2: Asset Capture Guidelines

The following section is intended to provide guidance on the capture of assets within the as-constructed file in a manner which is acceptable to the Moreton Bay Regional Council.

The physical nature of assets will determine where/ if assets are captured separately within the as-constructed file. For example, a pathway would be captured as individual and separate features to reflect any changes in physical properties, such as width or material type. Where possible, diagrams and images have been supplied in this document to assist in asset capture.

The mandatory attribution specified below includes the minimum information Council requires to enter each asset type into the asset register. While attributes marked "Non-Mandatory" are not required, it is preferable that this information be included (if known).

Please note that for ADAC Submissions to MBRC, Bézier curves should not be used.

1.0 General Items

1.1 Project Attribution

For ADAC XML files, the following attribution is included as header-level information within the schema.

Element Name	Notes
ExportDateTime	Should be auto populated from the XML generating software.
Name	Should be populated with the Project Name for Capital Works or Development Name and Stage for Development Approvals
Owner	This is not required to be provided at the project level, as it is a mandatory attribute for each feature.
Receiver	Will be Moreton Bay Regional Council
WorksApprovalID	For developer contributed project, this will be Council's reference number. For Moreton Bay Regional Council Capital works projects, this will be the 6-digit project number (i.e. 123456).
DrawingNumber	None
DrawingRevision	None
ConstructionDate	Must be populated for newly constructed assets
HorizontalCoordinateSystem	Must be MGA56
HorizontalDatum	Must be GDA94 or GDA2020.
VerticalDatum	Must be AHD.
IsApproximate	Must be False
OriginMark	Should be Nil as Is Approximate must be False.
Notes	None
DrawingExtents - SouthWest	The x and y coordinates of the southwest project extent
DrawingExtents – NorthEast	The x and y coordinates of the northeast project extent
Description	None
Project Status	None
Software	None
Surveyor	None
Engineer	None

1.2 Global Asset Attribution

The global asset attribution includes attributes which are common to all feature types in the ADAC schema.

Mandatory Attribution

The following attribution covered under the Global Types section of ADAC is mandatory for all assets:

Element Name	Mandatory (Y/N)
ADACId	Y
InfrastructureCode	N
Owner	Y

DrawingNumber	N
DrawingRevision	N
ConstructionDate	Y
Department	N
Surveyor	N
Engineer	N
Status	Y
DataQuality	Y
Notes	N
SupportingFiles	N

The **ADACId** element is mandatory as it will be used to as part of Council's data validation process to identify features which are non-compliant/ incomplete. All features must be uniquely identified by the ADACId, however beyond this there is no defined naming or numbering convention, except for stormwater pipes (more detail found in section 4.8 Pipes).

The **Owner** element is to be populated as per the following table:

Owner	Description
Council	All council owned assets
MBRC	All council owned assets (sourced from SEQCode AIS)
Private	All privately owned assets
P	All privately owned assets (sourced from SEQCode AIS)

The **DrawingNumber**, **DrawingRevision**, **ConstructionDate**, **Surveyor** and **Engineer** fields are only required to be populated against individual features where they differ to the information provided at the ADAC project level.

The **Notes** element should be used to record any additional information regarding the asset, or to record attribute information which isn't available within the defined enumerations in the schema. Where Council requires specific information to be recorded in the Notes field for a particular feature type, this has been specified in the relevant sections in this document.

The **Status** is a critical element within the as-constructed information, as it is what Council uses to load new and dispose existing assets into the asset register. It is very important the removal of redundant assets is included in the XML file. Please note the descriptions for each status below:

Status	Description
Newly Constructed	Newly constructed asset being passed to receiving entity
Existing	Existing asset described as encountered
Designed	Future asset described as a design
Planned	Future asset prior to detailed design
Removed	Previously existing asset described as it was prior to removal
Retired	Pre-existing asset no longer in use but left in-situ.
Rehabilitated	Existing asset repaired, refitted or refurbished as part of works project.

DataQuality refers to the spatial precision requirements of each asset type. These values are derived from the AS 5488-2013 "Classification of Subsurface Utility Information" standard. The requirements for submissions to MBRC are shown in the following table:

Asset Class	Tolerance Details	AS5488 Standard Rating
Cadastral	n/a	D
Transport	XY: ± 1 m	D
Stormwater	XY: ± 50mm; Z: ± 10mm*	A+
• Surface Drains, WSUD Areas	XY: ± 1 m	D
Open Space	XY: ± 1 m	D
Water and Sewer	Seqcode	
Supplementary	XY: ± 1 m	D

*Invert levels = Z: ± 10mm, Surface levels = Z: +25mm/ -15mm

For more details, see Part 3: Appendix

2.0 Cadastral and Surface Data

For Developer Contributed files, **contour and spot height information is required** to be supplied within the as-constructed data (including within the ADAC XML), for the purposes of assessing the submission.

2.1 Cadastral Connections

Cadastral Connection features are not required to be captured for submission to MBRC.

2.2 Contours

Asset Capture

Linear feature capturing a single contour feature.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Contours*:

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

2.3 Easements

Only required to include MBRC easements. Non-council easements (e.g. Energex or UnityWater) should not be included.

Asset Capture

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

Spatial Relationship

May share boundaries with WaterCourseReserve, LotParcels or RoadReserve. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers".

Mandatory Attribution

The following attribution is mandatory for *Easements*:

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

2.4 Lot Parcels

Lot parcels are required for new developments or where existing parcels are modified, otherwise not required.

Asset Capture

Multi-patched area feature representing the boundary of a titled or proposed Cadastral Lot.

Spatial Relationship

May share boundaries with RoadReserves, WaterCourses or Easements. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers".

Mandatory Attribution

The following attribution is mandatory for *Lot Parcels*:

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

2.5 Road Reserves

Asset Capture

Multi-patched area feature representing a gazetted or soon to be gazetted Road Reserve boundary.

Spatial Relationship

May share boundaries with Water Course Reserves, Lot Parcels, other Road Reserves or Easements. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers".

Mandatory Attribution

The following attribution is mandatory for *Road Reserves*:

Element Name	Mandatory (Y/N)
Name	Y

2.6 Spot Heights

Asset Capture

Simple point feature repressing a single elevation point.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Spot Heights*:

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

2.7 Survey Mark

Asset Capture

Single Point Feature representing a Permanent Survey Mark (PSM).

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Survey Marks*:

Element Name	Mandatory (Y/N)
MarkName	Y

2.8 Water Course Reserve

Asset Capture

Multi-patched area feature representing the boundary of a Water Course Reserve.

Spatial Relationship

May share boundaries with Road Reserves, Lot Parcels or Easements. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers".

Mandatory Attribution

The following attribution is mandatory for *Water Course Reserves*:

Element Name	Mandatory (Y/N)
Name	Y

3.0 Transport Assets

3.1 Bridge Abutments

Bridge Abutments are not required for ADAC submissions for MBRC.

3.2 Bridge Containment Class

Bridge Containment Class features are not required for ADAC submissions for MBRC.

3.3 Bridge Decks

Asset Capture

Polygon feature representing the extent of a bridge deck.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Bridge Decks*:

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

3.4 Bridge Extents

Asset Capture

Complex area feature representing the extent of a bridge including approaches and departures.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Bridge Extent*:

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

3.5 Bridge Pier

Bridge Piers are not required for ADAC submissions for MBRC.

3.6 Bridge Superstructure

Bridge Superstructure features are not required for ADAC submissions for MBRC.

3.7 Flush Points

Asset Capture

Simple point feature representing the outlet of a Sub Soil Drain which drains into Stormwater Pits/ Maintenance Holes.

Spatial Relationship

Must be coincident to Sub Soil Drain assets.

Mandatory Attribution

The following attribution is mandatory for *Flush Points*:

Element Name	Mandatory (Y/N)
Function	Y

3.8 Parking

Asset Capture

Multi-patch region/polygon feature representing the area of Parking. 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.

Off Street parking is accessed via driveways connected to the road and falls outside of the road reserve. (Figure 3).

Figure 3: Off Street parking is separated from the road by a driveway.

On Street parking is defined by MBRC as that which has either a different surface material to the main pavement (e.g. concrete) or are physically separated from the main pavement by an invert

or other flush kerb (Figure 4). All other On Street parking should be captured as part of the road Pavement.

The total number of Disabled Spaces should be recorded in the "ComponentInfo Notes" field in the format "DISABLED: *N*" where *N* is the total number of dedicated disability accessible bays.

Figure 4: On Street Parking is separated from the road pavement by a change in materials or a physical barrier such as an invert kerb. The parking here is outlined in blue and contains one disabled space.

Spatial Relationship

Must be coincident to other regions representing pavement / parking where there is a common boundary (e.g. no slivers/overlaps).

Mandatory Attribution

The following attribution is mandatory for *Parking*:

Element Name	Mandatory (Y/N)
Name	Y
NoOfCarparks	Y
OnOffStreet	Y
SurfaceType	Y
SurfaceThickness_mm	Y
SurfaceArea_sqm	Y
PavementType	Y
BaseLayerType	Y
BaseLayerDepth_mm	Y
BaseStabilisation	Y*
SubBaseLayerType	Y*
SubBaseLayerDepth_mm	Y*
SubBaseStabilisation	Y*
LowerSubBaseLayerType	Y*
LowerSubBaseLayerDepth_mm	Y*
LowerSubBaseStabilisation	Y*
PavementGeoTextile	Y*
SubgradeCBR	Y
SubgradeStabilisation	Y*

Y*: Mandatory if exists/ stabilised.

3.9 Path Structures

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the centre longitudinal axis of a path structure. Path Structures include boardwalks, footbridges, stairs, ramps & underpasses.

Spatial Relationship

Changes in surface types or widths must be represented as separate features.

Mandatory Attribution

The following attribution is mandatory for **Path Structures**:

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

3.10 Pathways

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the centre longitudinal axis of a pathway. Changes in surface types or widths must be represented as separate features.

Spatial Relationship

Figure 5 and Figure 6 and are examples of the spatial capture of a pathway and the spatial relationship with pram/kerb ramps.

Figure 5: Pathway (blue) spatial representation with reference to a pram ramp (red polygon) and its spatial representation (red point) in the case where the pathway ends at the pram ramp.

Figure 6: Pathway (blue) spatial representation with reference to a pram ramp (red polygon) and its spatial representation (red point) in the case where the pathway continues past the pram ramp.

Mandatory Attribution

The following attribution is mandatory for *Pathways*:

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

3.11 Pavements

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.

Access driveways which provide access to multiple properties (Figure 7) or council assets are considered Pavement assets and should be captured accordingly.

MBRC has two additional surface materials as well those listed in the ADAC 5.0 Schema. If the material used is one of these, the SurfaceType should be entered as "AC" and the ComponentInfo Notes Field should use one of the codes below:

Code	Description
ACMG	Asphalt multigrade binder
ACPM	Asphalt C320 polymer modified binder

Pavement Geotextile location is to be provided in the ComponentInfo Notes field.
Bin Set Down Areas are also captured as Pavement features. Ensure surface material and depth attributes are entered for these features and include function in ComponentInfo Notes Field i.e. Bin Set Down Area/Bin Bay.

Figure 7: Access driveways to multiple properties (blue) or council assets should be captured as Pavement assets.

Spatial Relationship

Must be coincident to other regions representing pavement / parking where there is a common boundary- no slivers/overlaps. Figure 8 demonstrates the capture boundaries of a Pavement block.

Figure 8: Spatial boundaries for pavement capture including where a kerb exists (blue), where no kerb exists (yellow) and where separate pavement areas a recorded for each road.

Mandatory Attribution

The following attribution is mandatory for *Pavements*:

Element Name	Mandatory (Y/N)
Name	Y
SurfaceType	Y
SurfaceThickness_mm	Y
SurfaceNomWidth_m	Y
PavementType	Y
BaseLayerType	Y
BaseLayerDepth_mm	Y
BaseStabilisation	Y*
SubBaseLayerType	Y*
SubBaseLayerDepth_mm	Y*
SubBaseStabilisation	Y*
LowerSubBaseLayerType	Y*
LowerSubBaseLayerDepth_mm	Y*
LowerSubBaseStabilisation	Y*
PavementGeoTextile	Y*
SubgradeCBR	Y
SubgradeStabilisation	Y*

Y*: Mandatory if exists/stabilised.

3.12 Pram Ramps

Asset Capture

Point feature representing a pram ramp. Typically captured in the centre of Pram Ramp where it transitions to a Kerb/Road. Refer to Figure 5 for the capture of Pram Ramps. The pram ramp (which is highlighted by the red polygon) is captured based on the red point.

Spatial Relationship

May be coincident with a road edge feature.

Mandatory Attribution

The following attribution is mandatory for *Pram Ramps*:

Element Name	Mandatory (Y/N)
Rotation	N

3.13 Pram Ramp Polygons

Pram ramp polygons are not required for ADAC submission for MBRC. Please refer to the Pram Ramp point feature details.

3.14 Road Edges

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the nominal kerb line (see IPWEA Standard Drawing RS-080). See Figure 9 for an example. In the case of inverts, this will be the lowest point. Kerb around Road Islands are to be represented as a Road Edge feature.

Figure 9: Kerb should be captured at the nominal kerb line as defined by IPWEA Standard Drawing RS-080. The above shows an example of where this would be for different kerb types.

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	Mandatory (Y/N)
Type	Y
Material	Y
Width_mm	Y
Length_m	Y
PavementExtension_mm	Y

3.15 Road Islands

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 (Figure 10). Kerb around Road Islands are to be represented as a Road Edge feature. See Figure 11 for examples of different island types.

Figure 10: Road island capture is based on physical characteristics. Separate polygons are required when the type of island or infill material changes, as shown by the yellow, blue and green polygons above.

Spatial Relationship

Must be coincident to other regions representing road islands where there is a common boundary i.e. no slivers and/or overlaps. Must be coincident to any kerb (Road Edge) surrounding the Road Island.
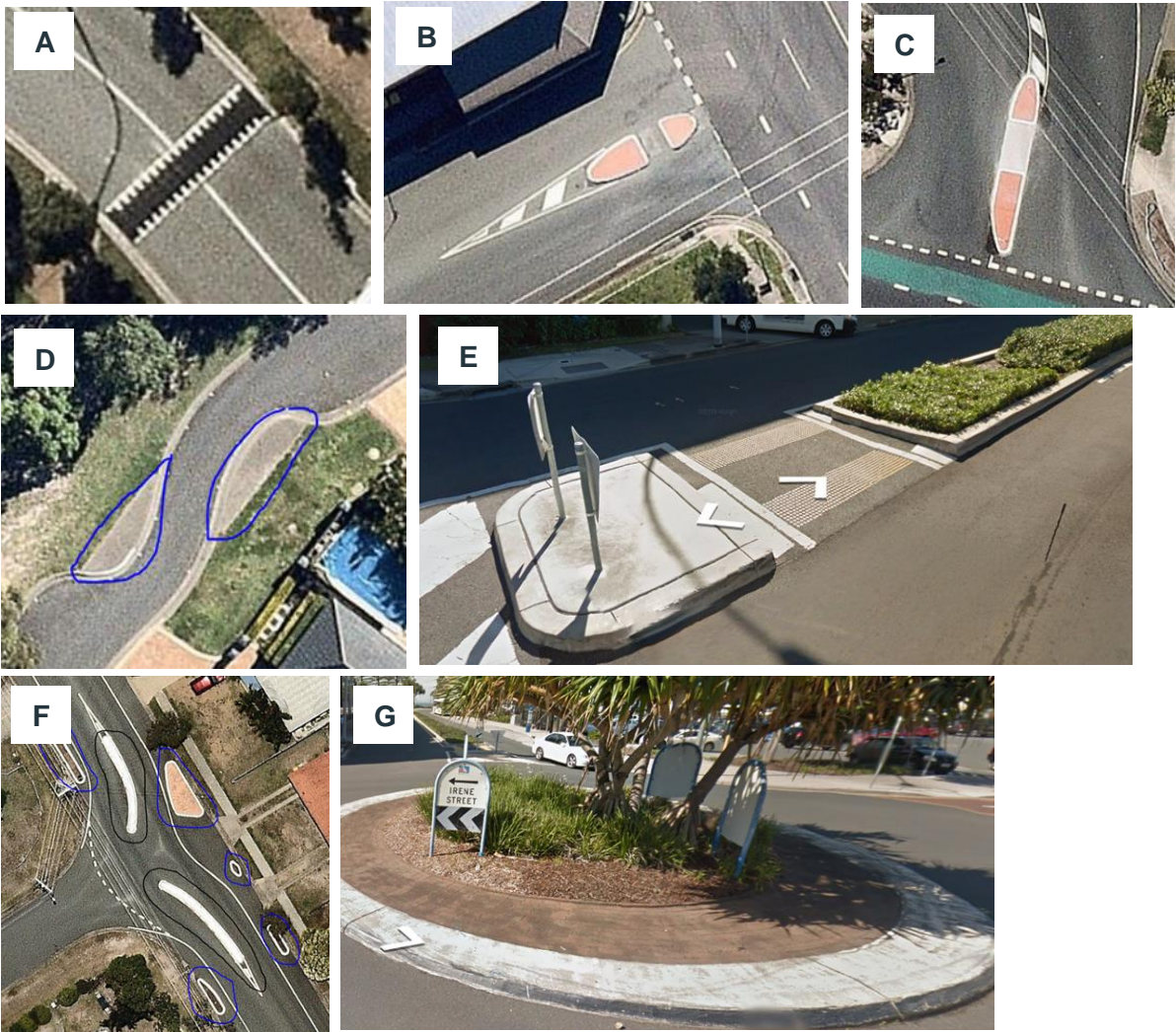
Figure 11: Island Types including - A - Road Hump; B - Pedestrian refuge (should be captured as two polygons); C - Pedestrian refuge with concrete path (captured as one polygon); D - Chicanes; E - Median (landscaped) and pedestrian refuge (concrete); F - Splitters (black) and LATM (blue); G - Roundabout.

Mandatory Attribution

The following attribution is mandatory for **Road Islands**:

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

3.16 Road Pathways

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the centre longitudinal axis of a road pathway (on-road cycleway).

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Road Pathways*:

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

3.17 Road Safety Barriers

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing a barrier dedicated to Transport such as a Guardrail.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Road Safety Barriers*:

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

3.18 Sub Soil Drains

Asset Capture

Linear feature 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

The following attribution is mandatory for *Sub Soil Drains*:

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

4.0 Stormwater Assets

4.1 End Structures

Represents a stormwater headwall / end wall.

Asset Capture

Point feature representing the invert of the headwall (Figure 12). Fences surrounding the end structure should be captured separately as Barrier Continuous.

For End Structure features the Outlet Protection Type is to be recorded in the ComponentInfo Notes field. Refer to ApronMaterial for approved values.

Figure 12: End structure point represents the invert of the headwall or end wall.

Spatial Relationship

Must be coincident to a stormwater pipe.

Mandatory Attribution

The following attribution is mandatory for *End Structures*:

Element Name	Mandatory (Y/N)
StructureID	Y
StructureLevel_m	Y
EndWall.Type	Y*
EndWall.Size	N
EndWall.Length_m	N
EndWall.Thickness_m	N
EndWall.Material	Y*
EndWall.Construction	N
WingWall.LWW_Length_m	N
WingWall.LWW_Height_m	N
WingWall.LWW_Thickness_m	N
WingWall.LWW_Material	Y*
WingWall.LWW_Construction	N
WingWall.RWW_Length_m	N

WingWall.RWW_Height_m	N
WingWall.RWW_Thickness_m	N
WingWall.RWW_Material	Y*
WingWall.RWW_Construction	N
Apron.Apron_Width_m	N
Apron.Apron_Thickness_m	N
Apron.Apron_Area_m2	N
Apron.Apron_Material	Y*
Apron.Apron_Construction	Y*
GrateType	Y
TideGate	Y

Y*: Mandatory if it End Wall/ Wing Wall/ Apron exists.

4.2 End Structure Polyline

End Structures as polylines are not required in ADAC submissions for MBRC. Please refer to the End Structure point feature details.

4.3 Fittings

Represents a stormwater fitting feature.

Asset Capture

Single point feature representing the centre point of the fitting.

Spatial Relationship

Must be coincident to the end point of a stormwater Pipe feature.

Mandatory Attribution

The following attribution is mandatory for *Fittings*:

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

4.4 Flow Management Devices

Represents a WSUD polyline feature e.g. Weir, Spillway or Levee.

Asset Capture

Simple polyline feature representing the centre of the asset in the direction of water flow.

Crest Width (m) must be included in the ComponentInfo Notes field.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Flow Management Devices*:

Element Name	Mandatory (Y/N)
Sqid_Id	Y
Type	Y
Material	Y
Length_m	Y
CrestElevation_m	Y

4.5 GPT Complex

Gross Pollutant Trap (GPT) Complex assets are commercial or custom-built devices (e.g. Humes Interceptor).

Asset Capture

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

Spatial Relationship

GPT Complex assets must be coincident to pipe features as per Pit/Manhole features.

Mandatory Attribution

The following attribution is mandatory for *GPT Complex*:

Element Name	Mandatory (Y/N)
Sqid_Id	Y
Manufacturer	Y (if Commercial)
ModelNumber	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	Y
SumpDepth_m	N
HasFilterMedia	N
HasBasket	N
HasBoards	N
DesignFlow_m3s	Y
MaxContaminantVolume_m3	N
MaxInternalVolume_m3	N
MaintenanceCycle_mnths	N
Rotation	N

4.6 GPT Simple

Asset Capture

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

Gross Pollutant Trap (GPT) Simple assets are "in pit" baskets or "end of line" devices.

Spatial Relationship

A GPT Simple asset's spatial location must correlate with a Pit/Manhole or EndStructure asset as they are housed within those structures and can be removed for maintenance or relocation.

Mandatory Attribution

The following attribution is mandatory for *GPT Simple*:

Element Name	Mandatory (Y/N)
Sqid_Id	Y
Construction	Y
Manufacturer	Y
ModelNumber	Y
TreatmentMeasure	Y
Function1	Y
Length_mm	Y
Width_mm	N
Material	N
MaintenanceCycle_mnths	N
Rotation	N

4.7 Non GPT Simple

Asset Capture

Single point feature located at the centre of asset on the top surface. For assets located in a pit/ chamber, capturing centre of lid is appropriate only when the lid is centred over the chamber.

Non GPT Simple assets represent basic and minor sand filtration storage.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Non GPT Simple*:

Element Name	Mandatory (Y/N)
Sqid_Id	Y
Construction	Y
Manufacturer	Y
ModelNumber	Y
TreatmentMeasure	Y

Function1	Y
Function2	N
Function3	N
Length_mm	Y
Width_mm	Y
MaintenanceCycle_mnths	N
Rotation	N

4.8 Pipes

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 Figure 13 and Figure 14.
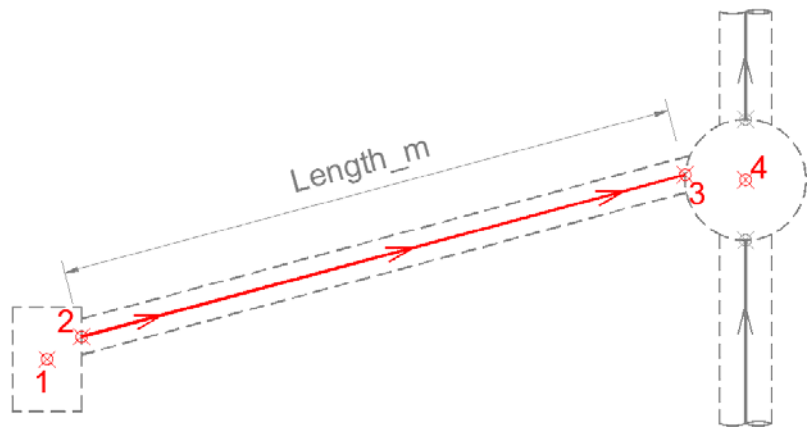

Figure 13: A single-celled pipe asset where vertices 1 and 4 represent the maintenance hole capture and vertices 2 and 3 are the intersection of the Pipe material and the chamber wall.
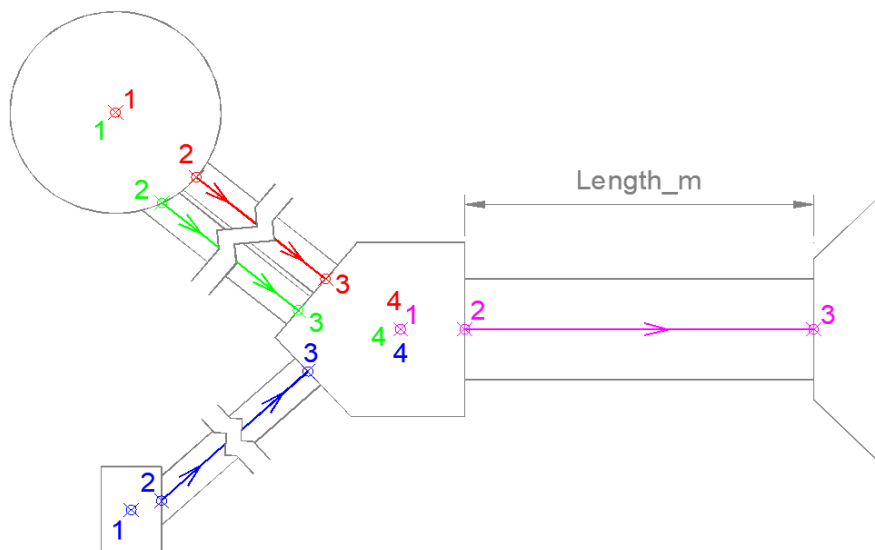

Figure 14: An irregular shaped pit with multiple multi-celled pipes entering the pit asset and a large single-celled asset exiting the pit with an outlet through an End Structure.

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.

Individual pipes and open drains (refer to Surface Drains) are represented as a single line feature, drawn in the direction of gravitational flow, from asset start to asset end - e.g. pipe in to pipe out. **The ADACId is in the format "ADACId Upstream Node - ADACId Downstream Node" - e.g. "G1/1 - G1/2"** (Figure 15).
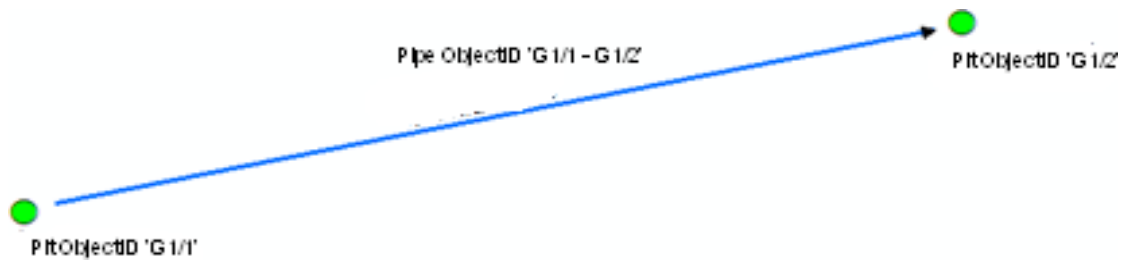
Figure 15: Pipe drawin in direction of gravitational flow, showing naming convention.

Figure 15 shows a single line, to represent individual pipe or drain, drawn in direction of gravitational flow. Individual pipes and open drains **should represent actual pipe extents and not be snapped to the start and end point pit features** (e.g. Inlets, Gullies, Manholes) if not spatially accurate to do so.

The upstream and downstream pipe surface levels are to be recorded at the centre of the Pit they connect to rather than directly above the pipe extent, matching the surface level of the connecting pit. The downstream surface level of pipes that terminate at an End Structure should match the surface level of the End Structure.

Pipes should not be split where another pipe breaks into them (Figure 16). The pipe breaking in should be assigned a Fitting node as per "Pipes with no terminating structure" below. Structure ID and ADACId is the same, unique for the field, and prefixed "Junction" followed by a unique identifier.
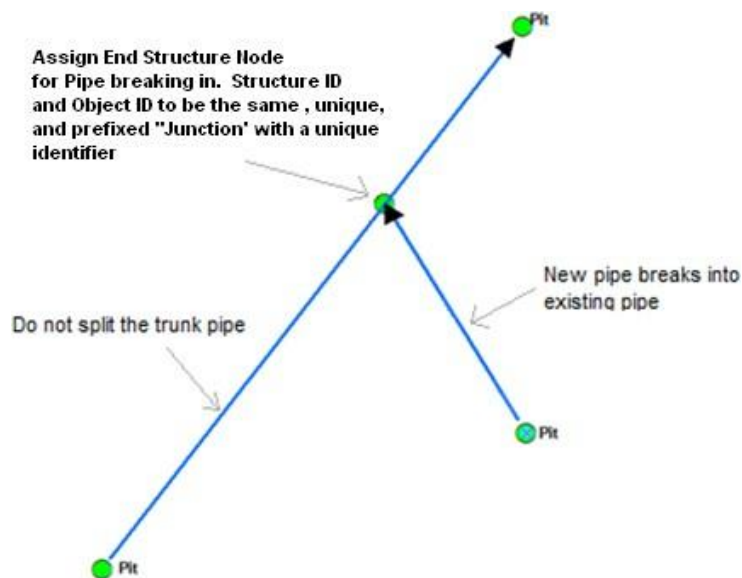
Figure 16: Use of End Node for pipe break in where main pipe continues.

Pipe intersections represented by an end node.

Pipes without terminating structures (i.e. pipes without End Structures or Pits at either upstream or downstream ends) should have Fitting nodes created with the Type of End Cap listed.

The Structure ID and ADACId should be of the format 'End1', 'End2', 'End3' etc. and the End Structure Nodes should snap to the end of the Pipe Polyline (Figure 17).

End Structure Points to be snapped to end of pipe
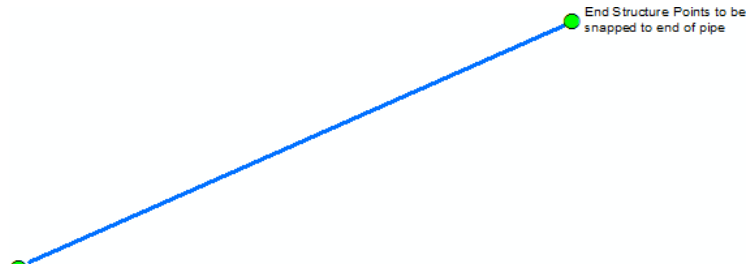
Figure 17: End Structure nodes should snap to the end of the pipe polyline.

Junctions at changes in pipe or pipe direction where there is no existing structure are represented as nodes (Figure 18). Please use Stormwater Fitting, Fitting Type "End Cap". ADAC Global Types "Component Info Notes" field to be denoted "NULL".
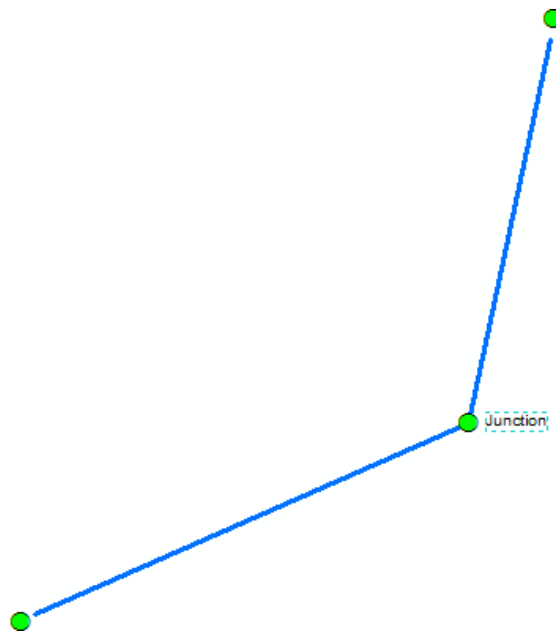
Junction

Figure 18: Use of Junction where pipe direction changes.

Spatial Relationship

Must be coincident to Stormwater point features.

Mandatory Attribution

The following attribution is mandatory for *Pipes*:

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

4.9 Pits
Asset Capture

Point feature representing the centre of chamber of a pit or manhole. The InletConfig's Left/Centre/Right is referenced from the road crown looking at the lintel. The StructureID as shown in the design drawing must be provided in the PitNumber field.

Pits with both a round and rectangular component should include both sets of dimensions in the attribution. For example, rectangular kerb inlets over a round manhole chamber.

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

	Uses	Lid Type	Inlet	Lintel
Maintenance Holes	Maintenance Hole Roofwater Inspection Chamber	Yes	No	No
Gully Pits	Kerb Inlet	No	Yes	Yes
Field Inlets	Field Inlet	No	Yes	No
All Others	Roofwater Outlet	No	No	No

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Pits*:

Element Name	Mandatory (Y/N)
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	Y*
SurfaceLevel_m	Y
InvertLevel_m	Y
Depth_m	Y
InletConfig	Y*
InletType	Y*
InletSize	Y*
LintelConstruction	Y*
LintelLength_m	Y*
OutletType	Y
FireRetardant	Y
Rotatation	N

Y*: If required as per the table above.

4.10 Surface Drains

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.

Spatial Relationship

May be coincident to End Structures and WSUD Areas.

Mandatory Attribution

The following attribution is mandatory for *Surface Drains*:

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

4.11 WSUD Areas

Asset Capture

Water Sensitive Urban Design (WSUD) areas such as kerbside bio-filtration beds or purpose-built drainage swales should be captured individually as a region/polygon. Individual areas are to be recorded within the ADAC data capture fields defining class type (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 19 demonstrates the capture of a WSUD and associated infrastructure.

Where the treatment type is "Detention Basin" this value is to be recorded in the ComponentInfo Notes field, as this value is not accommodated in the current schema.

Figure 19: WSUD Area (yellow) and associated infrastructure including Vehicle Access (red) and Gate (blue dashed).

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *WSUD Complex Areas*:

Element Name	Mandatory (Y/N)
Sqid_Id	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
DesignFlow_m3s	N
HasSpillway	Y
MaintenanceCycle_mnths	N

5.0 Open Space Assets

5.1 Activity Areas

Examples include: Sports Fields, Courts, Playgrounds and Animal Agility Areas.

Figure 20: Open Space Areas(red) and Activity Areas (yellow).

Asset Capture

Multi-patched area feature representing different activity areas. For playgrounds, this will often align with the soft fall boundaries. For animal agility areas, this will often align with the fencing surrounding the area. For sports fields and courts, this will often align with the marked boundaries of the area, or the edge of the material. Please refer to the dashed yellow line in the example shown above in Figure 20 representing activity areas for dedicated purposes.

Allowable Type values for each Use value:

Use	Type
Animal	Leash Free
Fitness	Exercise
General	N/A
Play	Adventure
	Softfall
	Playground
Sports	Bike Track
	Court
	Pitch
	Sportsfield

Spatial Relationship

Feature must be totally within the Parent Open Space Area feature.

Mandatory Attribution

The following attribution is mandatory for *Activity Areas*:

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

5.2 Activity Points

Includes individual pieces of playground, fitness, animal agility or sports equipment.

Asset Capture

Point feature representing individual activity assets that typically fall within an Activity Area. Playground modules should be represented as a single feature, located by its approximate centre point. Please refer to the yellow dots in the example shown in Figure 20.

Spatial Relationship

Should typically fall within a defined Activity Area feature.

Mandatory Attribution

The following attribution is mandatory for *Activity Points*:

Element Name	Mandatory (Y/N)
Use	Y
Type	Y
Material	Y
Theme	N
Units	N
Manufacturer	N
Model Number	N

5.3 Artworks

Includes Entry Statements, Memorials, Monuments, Plaques, Sculptures & Statues.

Asset Capture

Simple point feature representing the centre of an asset.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Artwork*:

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

5.4 Barbeques

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	Mandatory (Y/N)
EnergySource	Y
Plates	Y
SurroundingMaterial	Y
Top Material	Y
Manufacturer	N
ModelNumber	N

5.5 Barriers Continuous

Includes fences(including fauna fences), bollard runs, pedestrian fall protection, gates (including fauna gates) and freestanding walls.

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing a barrier type asset. Please refer to the dashed yellow line in the example shown below in Figure 21.

When capturing gates, please specify the gate configuration in the ComponentInfo Notes field. Gate configurations include:
- Single
- Double
- Boom Gate
- Sliding / Roller
- Fauna - Self-closing
- Fauna - Electric
- Fauna - Manual

When capturing fauna fencing, please specify the fauna fence type in the ComponentInfo Notes field. Fauna Fence types include:
- Fauna - Chain Wire
- Fauna - Weld Mesh
- Fauna - Turtle Fence
- Fauna - Dog Proof Fence
- Fauna - Floppy Top
- Fauna - Other

Figure 21: Continuous Barrier

Guardrails are to be captured as Transport Road Safety Barriers.

Spatial Relationship

None.

Mandatory Attribution

The following attribution is mandatory for *Barrier Continuous*:

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

5.6 Barriers Point

Includes bollards and locking posts.

Asset Capture

Simple point feature representing the centre of an asset. Road guide posts are not to be captured as Barrier Points (not captured by Moreton Bay Regional Council).

Spatial Relationship

Not Applicable.

Mandatory Attribution

Height is not recorded in the ADAC Schema (refer to the ADAC Data Dictionary). To facilitate entry to MBRC systems, please record the height in the ADAC Global Types "Component Info Infrastructure Code" field in meters to two decimal places using the format "Height = ##.##m".

The following attribution is mandatory for *Barrier Points*:

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

5.7 Bicycle Fittings

Asset Capture

Simple point feature representing the centre of a 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	Mandatory (Y/N)
Type	Y
Material	Y
Manufacturer	N
ModelNumber	N

5.8 Boating Facilities

Asset Capture

Area feature representing an individual boating facility such as a pontoon, ramp or jetty.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Boating Facilities*:

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

5.9 Buildings

Asset Capture

Area feature (closed polygon) representing the vertical building footprint for a structure other than a shelter.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Buildings*:

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

5.10 Edging

Any edging surrounding Activity Areas and Landscape Areas.

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the edge of an Activity or Landscape Area.

Spatial Relationship

Must be coincident with an Activity or Landscaping area feature.

Mandatory Attribution

The following attribution is mandatory for *Edging:*

Element Name	Mandatory (Y/N)
Material	Y
Length_m	Y
Width_m	Y

5.11 Electrical Conduits

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing a conduit run. **Electrical and communications conduit should be captured independently** with the Use listed under the ComponentInfo Notes field as either "Electrical" or "Communications".

Spatial Relationship

Conduits shown as a polyline starting and finishing at coincident points with each associated fitting.

Mandatory Attribution

The following attribution is mandatory for *Electrical Conduits*:

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

Length_m	Y
Protection	Y

5.12 Electrical Fittings

Includes Lights, Pits, Poles, Power Outlets and Switchboards.

Asset Capture

Simple point feature representing the centre point of the asset. Council requires all **Rate 3** lighting installed to be included in the file. A description of lighting ratings can be found in the Appendix under Lighting Ratings. Lights affixed to a pole are captured as a Pole feature where the lights are attributes of the pole. Bollard lighting does not require a separate Pole feature to be captured.

For certain asset types, the ComponentInfo Notes field must contain:
- Pits: "Electrical" or "Communications" depending on the pit type. Both types of pits must be captured independently.
- Poles: Height of the pole and number of luminaires, separated by a comma (e.g. 4.5, 2).

Spatial Relationship

Must be coincident to Electrical Conduit Polylines. Lights with poles will have coincident geometry.

Mandatory Attribution

The following attribution is mandatory for *Electrical Fittings*:

Element Name	Mandatory (Y/N)
Type	Y
Base	Y
Material	Y
EnergySource	Y
Manufacturer	Y*
ModelNumber	Y*

Y*: Mandatory for Light and Pole assets only. For poles, these details refer to the attached luminaires.

5.13 Fixtures

Allowable Type values are:
- Banner Poles
- Dog Bag Dispenser
- Dog Hitching Post
- Fish Cleaning Station
- Flag Poles
- Goal Post
- Planter Box
- Scoreboard

Asset Capture

Simple point feature representing the centre of an asset.
- Dog bag dispensers including a pole do not require the pole to be separately captured.
- Fish Cleaning Stations include any lighting, taps and slabs associated with it and these do not need to be captured separately.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Fixtures*:

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

5.14 Landscape Areas

Landscape Area features are no longer required to be captured for submission to MBRC.

5.15 Open Space Areas

Includes areas such as Parks or Bushlands.

Asset Capture

Multi-patched area feature representing the complete "footprint" of the Open Space area and enclosing relevant Open Space assets. For example, parks will often align with the cadastral Lot Parcels, in which case the lot boundaries can be used to represent the Open Space feature. Please refer to the dashed red line in the example shown in Figure 20.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Open Space Areas*:

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

5.16 Retaining Walls

If asset is a Marine type, one of the following values must be recorded in the Notes field:
- Breakwater
- Groyne
- Seawall

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing a retaining wall. While recognised as a three-dimensional object, the retaining wall is typically captured as a linear course where the wall intersects the ground. Figure 22 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 taken from the highest point of the wall. Where there is a material or construction change, a separate feature should be captured (blue).

Figure 22: Retaining walls are captured at the base of the wall where it intersects with the ground (red) and the height is taken from the highest point. Features should be split where there is a material or construction method change (blue).

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for **Retaining Walls**:

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

5.17 Seats

Asset Capture

Simple point feature representing the centre of a seat. Seating associated with a table are not to be captured separately. Any slab the seat 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 **Seats**:

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

5.18 Shelters

Asset Capture

Simple point feature representing the centre of a shelter. Any lighting, tables, seats or barbeques located underneath the shelter are to be captured as separate assets. Shade sails which share a common pole should be treated as the one feature. Poles associated with shade sails / shelters do not need to be captured separately. Any slab the shelter is installed on is considered part of the asset and does not need to be captured separately.

The ComponentInfo Notes field should contain the Area of the shelter in square meters.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for **Shelters**:

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

5.19 Shelter Polygons

Shelters as polygons are not required to be captured in ADAC submissions for MBRC. Please refer to Shelter point feature details.

5.20 Signs

All traffic related signage is to have *Type = Traffic Control* with the MUTCD Sign Code recorded in the ModelNumber field.

Asset Capture

Simple point feature representing the centre of a sign. Poles associated with the sign do not need to be separately captured, but there must be a point for each individual sign plate.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for **Signs**:

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

Structure	N
SignText	Y*
Rotation	N
Manufacturer	N
ModelNumber	Y*

Y*: Mandatory if it exists.

5.21 Tables

Asset Capture

Simple point feature representing the centre of a table.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Tables*:

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

5.22 Trees

Asset Capture

Simple point feature representing the centre of an asset.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Trees*:

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

5.23 Waste Collection Points

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

Asset Capture

Simple point feature representing the centre of the asset.

Spatial Relationship

Not applicable.

Mandatory Attribution

The following attribution is mandatory for *Waste Collection Points*:

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

6.0 Water and Sewage Assets

For all water supply and sewage assets, please refer to the SEQ Design and Construction Code for detailed capture conventions and positional accuracy requirements at **http://www.seqcode.com.au/standards/**.

For all Water Supply and Sewage assets, the SEQ D&C Code (Section use of generic values) specifies that for submissions of as constructed records "Other" is only to be used where a material is genuinely something other than the materials that the schema currently provides. There are a number of values which are not acceptable including:

Asset Types	Values not accepted
• Water Hydrants • Water Meters • Water Service Fittings • Water Storage Tanks • Water Supply Valves • Water Services	Unknown
• Maintenance Holes • Sewage Connections	Unknown M_1 M_2
• Water Supply Fittings • Sewage Fittings	Unknown M_1 M_2 P_1 P_2
• Water Supply Pipes • Sewage Non-Pressure Pipes • Sewage Pressure Pipes	Unknown M_1 M_2 P_1 P_2 JT_1 EB_1 EB_2

6.1 Sewage Connections

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the invert of the property connection. Line direction should be enforced from Inspection Opening to the Non-Pressure Pipe/Maintenance Hole due to gravitational flow. The Z coordinate of the alignment is recorded as the invert level of the pipe. Refer to Figure 23 below for further information on property connections.
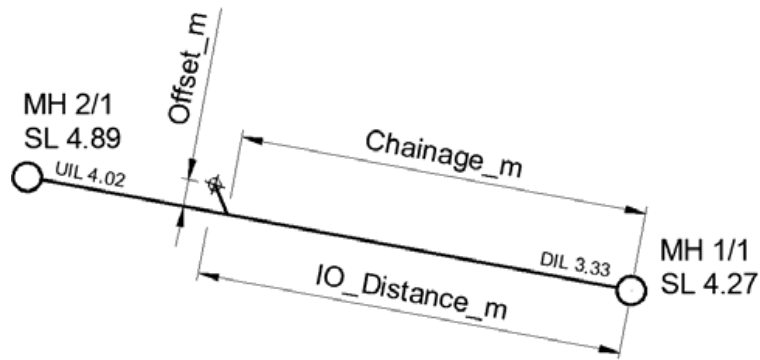
Figure 23: Sewage Connection layout.

Spatial Relationship

Gravity downstream end point of the linear feature must be coincident to anywhere on a Non-Pressure pipe linear feature or the point feature of a Maintenance Hole if the asset is a "Stub" connection.

Mandatory Attribution

The following attribution is mandatory for **Sewage Connections**:

Element Name	Mandatory (Y/N)
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
DSMHID	N
IO_Distance_m	Y
SO_Nearest_m	Y
SO_Other_m	Y
Sediment_Trap	Y

6.2 Sewage Fittings

Asset Capture

Single point feature representing the centre point of the fitting. The Structure ID as shown in the design drawings must be recorded in the ADACId attribute.

For a taper, record the larger diameter in the BodySize_mm attribute and the small diameter in the BranchSize_mm.

Refer to SEQ D&C Code Asset Information Specification; Section capture convention such as Pipe breaking and levels for pipe fittings for further information of asset capture requirements at **http://www.seqcode.com.au/standards**.

Spatial Relationship

Must be coincident to the pipe asset.

Mandatory Attribution

The following attribution is mandatory for *Sewage Fittings*

Element Name	Mandatory (Y/N)
Type	Y
Material	Y
BodySize_mm	Y
BranchSize_mm	N
Rotation	N
Lining	Y
Protection	Y

6.3 Sewage Maintenance Holes

Asset Capture

Single point feature located at the centre of chamber. 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 or a pipe asset anywhere along its length.

Mandatory Attribution

The following attribution is mandatory for *Sewage Maintenance Holes*:

Element Name	Mandatory (Y/N)
Use	Y
Length_mm	Y (if rectangular)
Width_mm	Y (if rectangular)
Diameter_mm	Y (if circular)
Area_sqm	Y (if custom)
SurfaceLevel_m	Y
InvertLevel_m	Y
FloorConstruction	Y
FloorMaterial	Y
WallConstruction	Y
WallMaterial	Y
RoofMaterial	Y
Lining	Y
LidMaterial	Y
DropType	Y
CatchmentPS	N
LineNumber	N
MH_Number	Y
Chainage_m	N

TieDistance_m	N
OffsetDistance_m	N
Rotation	Y

6.4 Sewage Non-Pressure Pipes

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the invert of the pipe asset. Line direction should be enforced from gravity flow or gravity direction.

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. Refer to Figure 24 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.

Pipes are to be captured based on their physical and spatial properties and attributes. For example, if a pipe changes size, material, class or direction etc. then it must be broken and captured separately. Sewer pipes should not be broken by connections.
For further information refer to SEQ D&C Section Envelopers and Conduits and Section Pipe Breaking; Website:
http://www.seqcode.com.au/standards/http://www.seqcode.com.au/standards/.

Where the pipe use is Overflow, the point of discharge must be provided in the ComponentInfo Notes attribute. The following values should be used:

"STW" - discharge to stormwater system
"OPEN" - discharge to water course
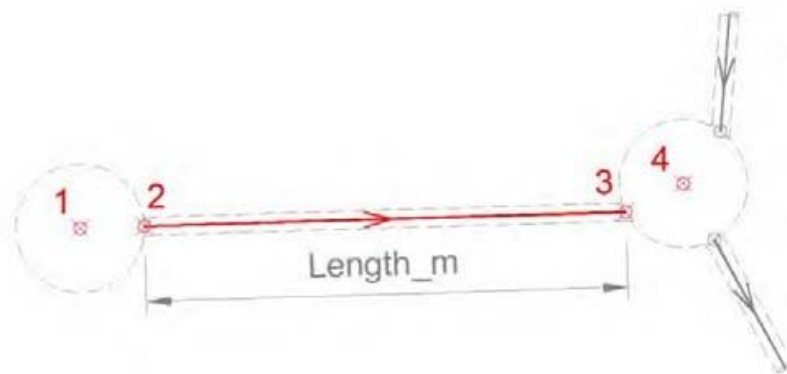

Figure 24: Sewage pipe and chamber layout. Points 2 and 3 represent the intersection of pipe material and chamber wall whereas points 1 and 4 represent the Maintenance Holes capture.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Sewage Non-Pressure Pipes*:

Element Name	Mandatory (Y/N)
LineNumber	Y

Element Name	Mandatory (Y/N)
Use	Y
Diameter_mm	Y
Material	Y
Class	Y
Lining	Y
Protection	Y
JointType	Y
US_InvertLevel_m	Y
DS_InvertLevel_m	Y
US_SurfaceLevel_m	Y
DS_SurfaceLevel_m	Y
Alignment_m	N
Depth_m	Y
Embedment	Y
RockExcavated	Y
PipeGrade	N
Length_m	Y

6.5 Sewage Pressure Pipes

Asset Capture

Complex linear feature (polylines including curves but not Bézier curves) representing the invert of the pipe asset. Line direction should be enforced from Pump active asset to Discharge Maintenance Hole due to pumped flow.

Pipes are to be captured based on their physical and spatial properties and attributes. Sewer pipes should not be broken by connections. For further information refer to SEQ D&C Section Pipe Breaking at **http://www.seqcode.com.au/standards/**.

The Line Number as shown in the design drawings must be recorded in the ADACId attribute.

Not all combinations of pipe attributes exist, for example a reinforced concrete pipe would not have a concrete protective liner or flanged joints. Particular attention should be given to provide valid pipe-material pipe-class combinations.

The following information is to be provided in the ComponentInfo Notes field:
- Where applicable, the LDG Standard drawing access structure type should be provided.
- The LDG Standard drawing access structure cover class ("B" or "D") should be provided

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Sewage Pressure Pipes*:

Element Name	Mandatory (Y/N)
Use	Y
Diameter_mm	Y
Material	Y

Class	Y
Lining	Y
Protection	Y
JointType	Y
Alignment_m	N
Depth_m	Y
Embedment	Y
RockExcavated	Y
Length_m	Y

6.6 Sewage Valves

Asset Capture

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

Spatial Relationship

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

Mandatory Attribution

The following attribution is mandatory for *Sewage Valves*:

Element Name	Mandatory (Y/N)
Use	Y
Type	Y
Diameter_mm	Y
Protection	Y
Manufacturer	N
ModelNumber	N
Rotation	N
Lining	Y

6.7 Water Hydrants

Asset Capture

Single point feature representing the centre of the vertical hydrant branch.

Spatial Relationship

Must be coincident to a pipe asset.

Mandatory Attribution

The following attribution is mandatory for *Hydrants*:

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

6.8 Water Meters

Asset Capture

Single point feature located at the centre point of the domestic meter itself. The definition for the Offset Side element is the offset from the left or right side boundary when looking from the road.

Spatial Relationship

Should be coincident with pipe.

Mandatory Attribution

The following attribution is mandatory for *Meters*:

Element Name	Mandatory (Y/N)
SerialNumber	Y
Type	Y
Diameter_mm	Y
Dials	N
Manufacturer	N
ModelNumber	Y
InitialReading	N
PrivateBooster	Y
OffsetSide	Y
Offset_m	Y
InstallationDate	Y
LotNo	Y
PlanNo	Y
Rotation	N
WaterQuality	Y

6.9 Water Pipes

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 (Figure 25). Water pipes should not be broken by connections. For further information refer to SEQ D&C section Envelopers and Conduits and Pipe Breaking at **http://www.seqcode.com.au/standards/.**

Not all combinations of pipe attributes exist, for example an ABS pipe would not have a protective liner or spigot-socket joints. Particular attention should be given to provide valid pipe-material pipe-class combinations.

Class types SDR7.4, SDR9, SDR11, SDR13.5, SDR17 and SDR21 are not available in the ADAC scheme, to capture class select "Other" in the class section and specify class type in the ComponentInfo Notes field.
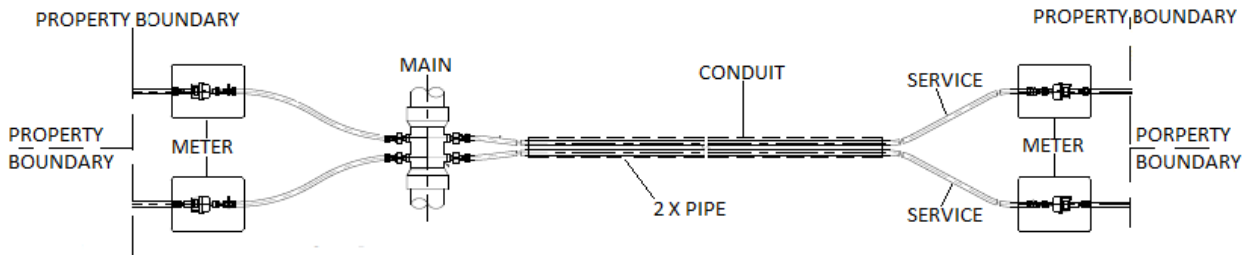
Figure 25: Layout of water reticulation network. All pipes are captured individually based on physical characteristics. In this example, both pipes and the conduit should be captured independently.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for **Water Pipes**:

Element Name	Mandatory (Y/N)
Use	Y
Alignment_m	N
Diameter_mm	Y
Material	Y
Class	Y
Lining	Y
Protection	Y*
JointType	Y*
AverageDepth_m	Y
Embedment	Y
Length_m	Y
WaterQuality	Y

Y*: Not mandatory for conduits.

6.10 Water Services

Asset Capture

Simple linear feature (i.e. straight lines) representing the invert of a water supply domestic service. Where the Water Service does not align with the side property boundary, offsets from the side property boundary must be provided. These can be supplied in the Dimensions feature within the ADAC schema. Service pipes of greater than 65 mm diameter should be input separately as the constituent water pipe, fitting and valve feature. Diameter_mm 20, 25, 38 or 50 for copper and 25, 32, 40, 63 for PE (external diameter).

Note: Water Service connections must not break at the water main.

The lot numbers being serviced by the Water Service feature are to be recorded in the ComponentInfo Notes field.

Spatial Relationship

Must be coincident to a Water Pipe feature.

Mandatory Attribution

The following attribution is mandatory for *Water Services*:

Element Name	Mandatory (Y/N)
Diameter	Y
Material	Y
Class	Y
Protection	Y
Termination	Y
Water Quality	Y
Length_m	Y

6.11 Water Service Fittings

Asset Capture

Single point feature representing the centre point of the fitting. Please refer to the yellow circles in Figure 26 for representations of a Tee and Tapping Band.

Spatial Relationship

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

Mandatory Attribution

The following attribution is mandatory for *Water Service Fittings*:

Element Name	Mandatory (Y/N)
Type	Y
BelowGround	Y
WaterSaver	Y
AutoShutOff	Y
Rotation	N
WaterQuality	Y

6.12 Water Storage Tanks

Asset Capture

Single point feature located on the centre of the chamber.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The following attribution is mandatory for *Storage Tanks*:

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

Volume_m3	Y
Rotation	N

6.13 Water Supply Fittings

Asset Capture

Single point feature representing the centre point of the fitting. Please refer to the yellow circles in Figure 26 below for representations of a Tee and Tapping Band. For a taper, record the larger diameter in the BodySize_mm attribute and the smaller diameter in the BranchSize_mm
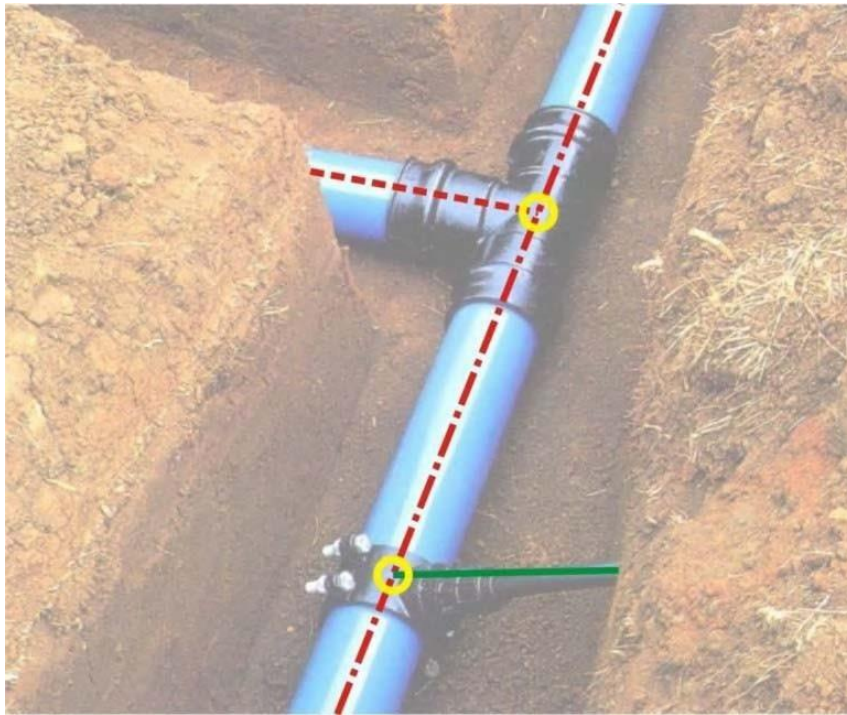
Figure 26: Water supply fittings represented by yellow circles include a Tee and Tapping Band.

Spatial Relationship

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

Mandatory Attribution

The following attribution is mandatory for *Water Supply Fittings*:

Element Name	Mandatory (Y/N)
Type	Y
Material	Y
Lining	Y
Protection	Y
BodySize_mm	Y
BranchSize_mm	N
Rotation	N
WaterQuality	Y

6.14 Water Supply Maintenance Holes

Asset Capture

Single point feature representing the centre of the chamber. The Structure ID as shown in the design drawings must be recorded in the ObjectId attribute.

The invert level of the maintenance structure can be located by holding the target on the floor of the maintenance hole and measuring the level; this is not the same level as invert level of the ingoing and outgoing pipes. Surface level is taken as the top level of the lid or, of the roof where there is no lid, or the wall where there is no roof. Where the diameter/width/length vary over the depth of the structure, take the largest.

Spatial Relationship

Should be coincident with pipe.

Mandatory Attribution

The following attribution is mandatory for *Maintenance Holes*:

Element Name	Mandatory (Y/N)
Use	Y
Length_mm	Y (if rectangular)
Width_mm	Y (if rectangular)
Diameter_mm	Y (if circular)
SurfaceLevel_m	Y
InvertLevel_m	Y
FloorConstruction	Y
FloorMaterial	Y
WallConstruction	Y
WallMaterial	Y
RoofMaterial	Y
LidMaterial	Y
Rotation	N

6.15 Water Valves

Asset Capture

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

Spatial Relationship

Must be coincident to a Water Pipe asset.

Mandatory Attribution

The following attribution is mandatory for *Water Valves*:

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

ModelNumber	N
Rotation	N
WaterQuality	Y

7.0 ADAC Supplementary Assets

Supplementary features are used to record additional asset types or points of reference which isn't otherwise covered under the ADAC schema. The Moreton Bay Regional 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.

Element Name	Mandatory (Y/N)
Class	Y
ComponentInfo Notes	Y*
Attributes	Y

*Note required to identify supplementary assets

7.1 CCTV Camera (Point Feature)

CCTV Security Cameras.

Asset Capture

Point feature representing the centre of a CCTV Security Camera asset.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The *Class* is to be populated with "**CCTV Camera**". For CCTV Cameras, the following attribution is mandatory:

Attribute (valname)	Description	Allowable Values
Element: *TextValue*		
Type	Type of camera	Analytic General LPR N/A
Manufacturer	Camera Manufacturer	*Free Text*
Model Number	Camera Model Number	*Free Text*
Serial Number	Serial Number of Camera	*Free Text* Unknown

7.2 Green Infrastructure (Point Feature)

Represents fauna related infrastructure such as overpasses, underpasses, nest boxes, escape poles, refuge poles etc. Please note that Fauna Fencing and Fauna Gates are captured under Open Space - Barrier Continuous.

Asset Capture

Multi-patched area feature representing the footprint of the artificial fauna habitat. These are to be recorded with a *Class* element of "**Green Infrastructure**".

Spatial Relationship

Not Applicable.

Mandatory Attribution

The *Class* is to be populated with "**Green Infrastructure**".

The *Notes* field is to be populated with one of the following Green Infrastructure types:
- Fauna Overpass
- Fauna Underpass
- Fauna Escape Pole
- Fauna Refuge Pole
- Nest Box
- Wildlife Stencil
- Wildlife Camera
- LED Signage

For each of the Green Infrastructure types above, the following attribution is mandatory. For those attributes which are not mandatory, the field should still be completed with the value "N/A". Accepted values are shown in the second table below.

	Overpass	Underpass	Escape Pole	Refuge Pole	Nest Box	Stencil	Camera	LED Signage
TextValue Attributes								
Type	Y	Y	Y	N	Y	Y	Y	Y
Material	N	N	N	N	Y	N	N	N
Maintenance Access	N	N	Y	Y	N	N	N	N
Stencil Image	N	N	N	N	N	Y	N	N
Stencil Text	N	N	N	N	N	Y	N	N
Has Anchor	Y	N	N	N	N	N	N	N
Entry/Exit type	N	Y	N	N	N	N	N	N
Fixture Type	N	Y	N	N	N	N	N	N
DecimalValue Attributes								
Height_m	Y	N	Y	Y	Y	N	N	N
Length_m	Y	N	N	N	N	N	N	N
Area_m2	N	N	N	N	N	Y	N	N
Number of Spans	Y	N	N	N	N	N	N	N
Number of Stays	Y	N	N	N	N	N	N	N
Ground Anchors	Y	N	N	N	N	N	N	N
Screw Anchors	Y	N	N	N	N	N	N	N
Hulk Anchors	Y	N	N	N	N	N	N	N
Block Anchors	Y	N	N	N	N	N	N	N
Tie Ins	Y	N	N	N	N	N	N	N
DiameterTieIn_mm	Y	N	N	N	N	N	N	N

Attribute (valname)	Description	Allowable Values
Element: *TextValue*		
Type	The type and subtype of green infrastructure.	Overpass - Rope Cage Overpass - Rope Ladder Overpass - Aluminium Ladder Underpass - RCP Underpass - RCBC Underpass - Bridge Escape Pole - Metal Clad Escape Pole - Drop Pole Nest Box - Possum Nest Box - Bird Nest Box - Glider Nest Box - Bat Camera - Buckeye Solar Camera - Other LED Sign - Koala LED Sign - Kangaroo LED Sign - Wildlife N/A
Material	The predominant material.	Aluminium Combination Fibreglass Masonry Plastic Stainless Steel Steel Steel Galvanised Steel Powder Coated Timber Treated Timber N/A
Maintenance Access	Is there maintenance access?	Yes No N/A
Stencil Image	Wildlife stencil image.	Kangaroo Koala None N/A
Stencil Text	Wildlife stencil text	Wildlife Slow Other None N/A
Has Anchor	Overpass anchor presence/absence.	Yes No N/A
Entry/Exit type	Underpass entry/exit type.	Lead in Logs Other N/A

Fixture Type	Underpass fixture type.	Shelf Post and Rail Concrete Ledge Other N/A
Element: *DecimalValue*		
Height	The maximum/mounting height of the infrastructure except for Fauna Overpass Height which is minimum height above roadway	Metres to 2 decimal places.
Length_m	Length of asset.	Metres to 2 decimal places.
Area_m2	Area of asset.	Square metres to 2 decimal places.
Number of Spans	Number of spans for Fauna Overpass.	Whole Number. 0 for N/A.
Number of Stays	Number of stays for Fauna Overpass.	Whole Number. 0 for None or N/A.
Ground Anchors	Number of ground anchors for Fauna Overpass.	Whole Number. 0 for None or N/A.
Screw Anchors	Number of screw anchors for Fauna Overpass.	Whole Number. 0 for None or N/A.
Hulk Anchors	Number of hulk anchors for Fauna Overpass.	Whole Number. 0 for None or N/A.
Block Anchors	Number of block anchors for Fauna Overpass.	Whole Number. 0 for None or N/A.
Tie Ins	Number of tie ins for Fauna Overpass.	Whole Number. 0 for None or N/A.
Diameter Tie In_mm	Diameter of tie ins.	Millimetres to 2 decimal places.

7.3 Traffic Signal (Point Feature)

Asset Capture

Point feature representing the Traffic Signal. These are to be recorded with a *Class* element of "**Traffic Signal**". Please note that conduit associated with Traffic Signals should be captured under Open Space Electrical Conduits.

Spatial Relationship

Not Applicable.

Mandatory Attribution

The *Class* is to be populated with "**Traffic Signal**". The following attribution is to be recorded against each feature.

Attribute (valname)	Description	Allowable Values
Element: *TextValue*		
Pedestrian Crossing	Are the Traffic Signals for a dedicated pedestrian crossing?	Yes No

Part 3: Appendix

Data Quality

The spatial precision requirements of each Asset type are determined by the following table:

	AS5488 Standard Rating	Tolerance Details
Cadastral	D	n/a
Transport	D	XY: ± 1 m
Stormwater	A+	XY: ± 50mm; Z: ± 10mm*
Surface Drains, WSUD Areas	D	XY: ± 1 m
Open Space	D	XY: ± 1 m
Water and Sewer		Seqcode
Supplementary	D	XY: ± 1 m

*Invert levels = Z: ± 10mm, Surface levels = Z: +25mm/ -15mm

The **DataQuality** Rating is derived from the AS 5488-2013 "Classification of Subsurface Utility Information" standard which states as follows:

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

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 Constructed	C	A	A
As Constructed Gravity Sewerage	C	A	A+

Lighting Ratings

Definitions for Lighting Ratings:

Metered: Light supply is metered, stand-alone lights or poles are owned and maintained by the Customer

Rate 1 - Non-Contributed: Unmetered supply charge. Pole is owned and maintained by the energy supplier. Not applicable to stand-alone lights

Rate 2 - Contributed: Unmetered supply charge. Light is contributed to the energy supplier who becomes the owner and maintainer. Not applicable to stand-alone lights.

Rate 3 - Unmetered: Unmetered supply charge for Public Lighting. Light is owned and maintained by the Local or State Government customer. Not applicable to stand-alone lights.

Rate 8 - Unmetered: Unmetered supply charge for Public Lighting. Light is owned and maintained by the private customer (retirement villages and complexes etc).

Rate 9 - Night Watchman: Unmetered supply charge for security flood lighting - Light is owned by the customer.

Rating	Metered	Ownership and Maintenance	Applicable to stand alone lights
Metered	Yes	Customer	Yes
Rate 1	No	Energy supplier	No
Rate 2	No	Contributed to energy supplier	No
Rate 3	No	Local or state government	No
Rate 8	No	Private customer	?
Rate 9	No	Customer	No

FOR MORE INFORMATION

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