As Constructed Requirements Submission Guideline

April 2024

GLADSTONE
REGIONAL COUNCIL

Acknowledgement of Country

Gladstone Regional Council would like to acknowledge the traditional custodians of this land, the Bailai, the Gurang, the Gooreng Gooreng and the Taribelang Bunda people.

We pay respect to their Elders past, present and emerging.

Gladstone Regional Council is committed to cultivating a culture of inclusion and connectedness, acknowledging that our communities are richer when diversity is embraced.

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2   VERSION HISTORY

VERSION NO	DESCRIPTION & DISTRIBUTION	DATE	COMMENTS
1.0	UPDATE TO ALIGN WITH ADAC V5.01 AND ASSET DATA STANDARDS	11/07/2023	DRAFT FOR ASSET GOVERNANCE TEAM REVIEW
1.0	MANAGER ASSET GOVERNANCE APPROVAL	12/04/2024	APPROVAL ECM DSI 5968523 V1
1.0	DOCUMENT REVIEW	12/04/2024	EXTERNAL CONSULTANT REVIEW
1.1	UPDATE TO ALIGN WITH FEEDBACK FROM CONSULTANT REVIEW	04/06/2024	UPDATED DOCUMENT
1.1	MANAGER ASSET GOVERNANCE APPROVAL	25/07/2024	Approval by Ed Dahlheimer

3   PURPOSE

The purpose of this document is to provide practical guidelines and general assistance with respect to the creation and provision of compliant as-constructed data and information.

On completion of physical works and prior to asset handover, "As-Constructed" (also known as "As- Built") information is collected. The "As-Constructed" data indicates the surveyed locations of infrastructure installed as part of the physical works to be handed over to Council.

The ADAC XML file is a complete and detailed digital record of "As- Constructed" Plan information and is used by Council to populate various information systems including Geographical Information System (GIS) and Asset Management System. The final "As-Constructed" data should accurately reflect material types, specifications and other asset-specific information.

Note: Specific details regarding the preparation and presentation of any required "As-Constructed" drawings and plans accompanying the ADAC XML file should be sourced from the Council.

For capital works that are delivered either by Council's internal delivery mechanisms or external contractors, the as-constructed data accompany any associated bundle of "As-Constructed" plans, drawings, schedules, operating manuals, certifications, warranty and associated information reflecting newly constructed infrastructure which demonstrate new infrastructure has been constructed to relevant standards and best practice under Registered Professional Engineer of Queensland (RPEQ) supervision. This may include donated civil infrastructure and associated assets handed over to the Receiving Entity, usually a Local Authority, Water, Power or Telecommunications Utility.

4   AS-CONSTRUCTED REQUIREMENTS

4.1   General As-Constructed Requirements

As-constructed drawings must:

1. Represent a true and correct record of the constructed works, including a record of all assets constructed, repaired, refurbished, replaced, disposed or decommissioned.

2. Illustrate the asset configuration or construction features and characteristics.

3. Include accurate geometry data, to the minimum accuracy levels defined in this document and in accordance with tolerances specified under the Council's Engineering Standards – Capricorn Municipal Development Guidelines (CMDG).

4. For all assets constructed, refurbished or replaced, include asset characteristic/attribute data that is compliant with the Council's Asset Data Standard.

5. Show the asset connectivity or association with existing infrastructure.

6. Conform to Council's requirements for as-constructed drawings as described in this document and in accordance with Council's Engineering Standards – Capricorn Municipal Development Guidelines (CMDG).

7. Be provided in an electronic format in accordance with the as-constructed file format requirements specified within this Section 6 of this document.

On receipt of the "As-Constructed" documentation, data format and conformance check to confirm the completeness and validity of the details. Should anomalies, errors or missing information be identified during these checks, the as-constructed file(s) may be returned to the provider for correction and resubmission in accordance with applicable conditions, potentially delaying the asset handover.

4.2   Datum Information and Spatial Accuracy

Data contained in the ADAC XML file(s) must reflect the survey details of the assets exactly as found in the real world and be reflected in the "As-Constructed" drawings. Unless otherwise specified, survey details must be derived from permanent survey marks (PSMs), where available, with Map Grid of Australia (MGA Zone 56 – GDA 2020) co-ordinates and the relevant UTM Zone for the survey area. All Australian Height Datum (AHD) levels to be to fourth order standard as defined by ICSM[1] Standard for the Australian Survey Control Network Special Publication 1 (SP1) Version 2.2 December 2020.

The positional accuracy standards specified in this document apply for submissions under the high format complexity.

When a submission falls under the low format complexity, all reasonable efforts should be used to obtain the greatest possible accuracy level, including utilising orthorectified aerial and measured offsets from known reference points.

For certain asset types, the minimum positional accuracy is stated within this document to make allowance for the practicalities of capturing the location of a small number of assets within a non-urban or inaccessible area.

This is not to be confused with the construction tolerances and requirements specified in the Capricorn Municipal Development Guideline, (CMDG), Australia & New Zealand Standards (AS/NZ Standards) and any other relevant policies / standards listed in the decision notice.

5   ADDITIONAL INFORMATION (WHEN APPLICABLE)

5.1   Maintenance Agreements

Copies of all maintenance agreements that were a requirement of any related Council approval process for infrastructure that is to be Council owned but maintained by another party or that is owned by another party, but Council maintained are required.

5.2   Buildings & Site Improvements

Council site-related building and maintenance works (e.g., buildings, shade structures, playgrounds, monuments, communications, and air conditioning units) would generally include the following:

Architectural: Electronic copies of PDF and AutoCAD drawings for the built structures including structural drawings, site layout, soil reports, footings, energy efficiency, building classification and compliance certificates, structural calculations, construction standards and specifications.

Services: Electronic copies of PDF and AutoCAD drawings for the built structure services including electrical, mechanical, hydraulic, plumbing, gas, drainage, water reticulation and fire; provided in layers that clearly identify the principal contractor; contract number, revision number of the document.

Operation & Maintenance Manual (including asset/equipment register): One electronic copy for the installed assets, including the relevant warranty periods, models and serial numbers.

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[1] 1 Intergovernmental Committee on Surveying & Mapping - www.icsm.gov.au

Maintenance Planning & Consumables**:** Electronic copy detailing painting, finishes, floor covering schedules (e.g., product colour code/descriptions).

Note: The above information should cover details of all assets that were incorporated in the relevant building approval processes.

5.3   Reservoirs, Water and Sewage Treatment Plants, Sewage and Water Pump Stations

Operation & Maintenance Manual (including asset/equipment registers)*:* One electronic copy for the installed assets.

Services**:** Electronic copies of PDF and AutoCAD drawings of all civil, mechanical/electrical works. The layers must clearly identify the principal contractor, contract number and revision number of the document.

Note: Either the technical drawings or the manuals should outline individual civil, mechanical or electrical component details including brands, model and serial numbers, where the information has not already been provided in the attribute details of ADAC xml file. Asset equipment registers must state the make, model and company purchased from. Where relevant, asset information must include the make, model and company purchased from.

5.4   Artificial Wetland

Electronic copies of PDF and AutoCAD design drawings of the artificial wetlands.

5.5   Stormwater Quality Improvement Device (SQID) - treatment plants and gross pollutant traps

Electronic copies of PDF and AutoCAD design drawings of the SQIDs.

5.6   Earthworks

For any developments that involved ground surface cutting and/or filling, the As Constructed submission must include the Spot heights and any digital elevation models and/or line work in digital AutoCAD format over the affected allotments.

6   AS-CONSTRUCTED FILE FORMATS

6.1   File Format Requirements for As-Constructed Submissions

Council accepts 3 types of as-constructed file formats, depending on the nature of works undertaken:

1. ADAC XML

2. Electronic drawing file with ADAC attributes

3. Mud map / sketch with asset characteristic list

A more detailed description of each file format has been provided in Sections 6.2.2, 6.2.3 and 6.2.4 of this document, with examples of sample and as constructed drawings in Appendix B. The below matrix provides guidance on what file formats are accepted by Council, based on the nature of the works undertaken

Format Complexity	Works Undertaken	Accepted As Constructed Formats
High	• Contributed Assets – Major (approved OPW and 12 or more assets delivered) • Capital Works Internal Delivery – Major (where design drawings are required) • Survey capture	✓ ADAC XML ✓ Electronic Drawing Files with ADAC Attributes ✖ Map/Sketch with ADAC attributes
Low	• Contributed Assets – Minor (approved OPW and less than 12 assets delivered) • Contributed Assets – No OPW • Capital Works: Internal Delivery – Minor (where design drawings aren't required) • Capital Works: External Contract Minor (where design drawings aren't required) • Maintenance Works	✓ ADAC XML ✓ Electronic Drawing Files with ADAC Attributes ✓ Map/Sketch with ADAC attributes

6.2 ADAC XML

6.2.1 Introduction to ADAC XML

ADAC XML files are an accompaniment to the "As-Constructed" documentation required by Council and form a necessary part of the final approval and handover of associated civil assets and infrastructure donated or handed over to Council or delivered via capital works.

Compliant ADAC XML files contain a structured and precise digital record of the assets described in the "As-Constructed" plans and other associated engineering documentation. Details include survey-accurate cadastral and boundary references, geometries and relative levels as well as detailed records of the new assets including accompanying attribute information.

ADAC XML files may also be used as a cross-check on accuracy and completeness of the "As-Constructed" information provided. The digital files afford further confirmation of compliance with development approval conditions as well as helping to verify engineering specifications and other design-related requirements.

Depending on the tools[2] (XML generator) being used to generate the ADAC XML, compliant files are initially 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 essential that the "As-Constructed" drawings are created using complete and survey-accurate information to correctly identify the assets and the precise locations being represented in the ADAC XML file.

On receipt of the "As-Constructed" documentation, Council will undertake data format and conformance checks on the ADAC XML file to confirm the completeness and validity of the details. Should significant anomalies, errors or missing information be identified during QA checks, the ADAC

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[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 on the choice and application of the products available can be sought from providers of most software design suites and survey tools.

XML file(s) may be returned to the provider for correction and resubmission in accordance with applicable conditions potentially delaying the asset handover process.

Once accepted by Council, ADAC XML data file(s) are uploaded to various internal information systems and used to assist in the long-term management of infrastructure. The detailed asset information and location may also be made available in the future to external agencies via digital formats.

Please also note that some asset types are common to multiple asset classes (e.g. lighting fixtures designed and used for the purposes of either street or park lighting). In those cases, recording assets in a different asset class to the actual service class (Open Spaces vs Transport) is valid and appropriate when generating the ADAC XML file.

6.2.2   General Requirements

The ADAC XML file shall be produced using the most recent ADAC XML schema release (e.g. Ver 5.01) and should be "validated" for compliance before being submitted to Council. Details on the data schema (attributes and mandatory status) noting asset classes and sub-classes to be addressed by the ADAC capture process can be found throughout this document.

Council is conscious of the potential limitations 3rd Party ADAC XML generators may have based on their version and therefore will except older ADAC XML schema versions; 4.0, 4.1 & 4.2 where necessary.

The ADAC XML files are to be provided to Council in the format and by the means specified by Council.

For further information on ADAC or ADAC XML files, please visit the ADAC website: https://www.ipweaq.com/adac.

6.2.3   Creation OF ADAC XML File(s))

In producing compliant ADAC XML files, information on the following asset classes (Section 7), will need to be captured according to the approved ADAC data schema. Vendors of ADAC XML generators are routinely provided with updates to the ADAC schema free of charge and have taken steps to have these updates incorporated into their products for release to customers in a timely manner.

While the ADAC XML files are created from the survey-accurate "As-Constructed" information, particular attention must be given to how the receiving entity wishes to have particular elements captured and recorded for each individual asset class. The following details are provided to assist with the capture of ADAC data when using proprietary ADAC XML generators either during the "As- Con" or "As-Built) survey pickup or when capturing the ADAC asset information as part of the creation of the "As-Constructed" plans and associated drawings in civil design (software) suites.

The physical nature of assets will determine where and how individual assets are captured within the ADAC XML file. For example, footpath or a pathway would usually be captured as individual and separate sections reflecting any physical 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 (ADAC XML generators) used in the creation and provision of the compliant ADAC XML files. Assistance and advice on the use of any software package should be sourced from the provider of the product who is familiar with general ADAC requirements, processes and the most current data model (ADAC XML schema version).

6.3   Electronic Drawing File with ADAC Attributes

Submission of As-constructed information within an electronic drawing file may be DWG or DXF formats. All assets covered under the As-Constructed Data Standard, both above and below-ground, must be contained within the electronic file (unless otherwise specified within this document – Section 6.1). In addition, to all assets and their corresponding geometry being represented, the full ADAC attribution must be supplied.

These include, but are not limited to:
• Project attribution
• Global asset attribution, and
• Specific asset attribution.

Refer to Section 8 of this document for further information of ADAC attribution. The attribute information can be supplied within the electronic drawing file itself (i.e. included in attribute blocks), or it can be supplied in a separate file (i.e. an excel spreadsheet).

Important to note that additional electronic drawing files may be required for some assets and infrastructure. For example longitudinal sections must be submitted for water supply and sewerage infrastructure assets or road segments.

6.4   Map / Sketch with Asset Characteristic List

A map /sketch with associated asset characteristic list, is the lowest level of accuracy, to match the corresponding asset accepted for as constructed information and may only be supplied under certain circumstances (refer Section 6.1 of this document). An allowance for a map / sketch with asset characteristic list has been made to cater for scenarios where the supply of an ADAC XML or electronic drawing would be either:

• Cost-impractical (i.e. for small value construction works), and/or

• Where submission of the as-constructed information to a greater accuracy level would be of minimal benefit to Council.

6.4.1   Map / Sketch Requirements

Some of the qualities of acceptable maps /sketches are:

1.   The background of the sketch should contain either aerial imagery, or cadastral / surveyed boundaries

2.   All assets constructed, repaired, renewed, replaced, disposed or decommissioned are identified on the map / sketch and given a unique ID number.

3.   The geometry or location should be described based on offsets to other known reference points, such as property boundaries, permanent survey marks and/or other existing asset features. Offset distances should be in metres, to one decimal place.

4.   Must be supplied in an electronic format such as PDF, JPEG, Word.

Figure 1 Example Map

Figure 2 Example Sketch

6.4.2   Asset Characteristic List Requirements

An asset characteristic list is a table or file which contains the required attribute information associated with a map or sketch. The characteristic list may be a table embedded in the map / sketch, or it may be included in a separate file, such as a spreadsheet.

An asset characteristic list must:

1. Be supplied in electronic format.

2. Contain attribute information for each feature, as defined in the Asset Data Standard and as documented under Section 8 of this document for all assets constructed, refurbished or replaced. Attribute information is not required to be provided for assets disposed or decommissioned unless it would be required to identify / distinguish those assets.

3. The attribute information for each feature must be linked, via an ID number, to the map / sketch

7   PHOTO REQUIREMENTS

Council requires photographs to be supplied for assets as part of the as constructed package of information. These photographs may be used for subsequent identification of the asset or may be used as part of asset capture to record information which is not otherwise able to be provided through the Asset Data Standard.

7.1   Information Privacy

Asset photographs should not contain any recognisable persons or vehicle number plates within them. Where this is not possible, the Information Privacy Act 2009 requires that a photo consent form is signed by the person within the photo, and the consent form must be supplied with the photo.

7.2   Image Quality and Metadata Requirements

- Where the as-constructed data contains several different assets of the same type (i.e. multiple shelters were constructed within a park), each photograph should be linked to the corresponding asset/object ID.

- Photographs must be date-stamped with the date that the photo was captured.

7.3   Photo Capture Guidelines

- Photographs of entire assets are to be taken, where practical, to indicate shape, material and other relevant attributes of each asset. Refer figure 3 for an example of an asset photo for a table.

- A photo of a long asset (such as barrier continuous) should clearly illustrate material and style, and not necessarily the entire object. Refer figure 4 for an example.

- Where assets consist of multiple components, a photograph of each component may be required if each cannot be clearly illustrated in a single photo. For example, figure 5 illustrates 2 separate photos for a memorial and the plaque on it.

- Where assets are too large to clearly indicate shape, material and other relevant attributes in one photograph, a photograph of a representative portion is required. Refer figure 6 for an example of a photo of a light, displaying the properties of both the light and the pole.

Figure 3 - Asset photo for a Table

Figure 4 - Materials and Style

Figure 5 - Memorial and Plaque

Figure 6 - Light and Pole properties

Important Note: Additional photos may be required as a condition of any approved contract with Council.

7.4   Photo Requirements

Appendix A: Photo Requirement specifies where asset photos are required as part of asset handover.

8   ASSET CAPTURE DETAILS

These guidelines have been designed from the perspective of being broad enough to suit all stakeholders yet specific enough to be of practical use.   In preparing the guidelines it has been accepted that the lowest common capture of an asset is the physical nature of the asset. This approach underpins ADAC's primary goals and requirements of *Asset Registration and Valuation, Maintenance Scheduling, Risk Management and Renewals Planning* once the specific asset data is processed by Council.

While the ADAC XML files are created from the survey accurate As Constructed information, Council has specific data submission requirements which are detailed in Sections 9.1 to 17.23 of this document.   The detail provided in these sections is intended to assist with the capture of ADAC data when using proprietary ADAC XML generators either during the As Constructed or As Built survey pickup or when capturing the ADAC asset information as a part of the creation of the As Constructed plans and associated drawings in civil design (software) suites. The following section details the complete list of asset types in all asset classes within the current ADAC schema (Ver 5.01).   Software vendors will find these details helpful in configuring their various ADAC data capture tools while users and receiving agencies will be able to consider the specifics of asset data capture by Service Class and Asset Type.

Details noted in the tables below include:
- allowable geometries; and
- the spatial relationships with other asset types.

It should be noted that certain assets require fields to be populated based on their configuration i.e., Stormwater Pits if rectangular length and width is required only and if circular diameter is required only.

On receipt of the As Constructed information, Council will undertake data format and conformance checks on the ADAC XML file to confirm the completeness and validity of the details. Should significant anomalies, errors or missing information be identified during these checks, the ADAC XML file(s) may be returned for correction and re-submission prior to Council acceptance.

Once accepted by Council, ADAC XML data file(s) are uploaded to various internal information systems where the data is foundational to the on-going management of the assets. The detailed asset and location data may also be made available in the future to external agencies via digital formats.

8.1 Project Attributes

The following attribute data is included within the header information and is required to be included in all ADAC XML files submitted to Council.

ADAC Element	Attribute Description/Sub Attribute
ExportDateTime	Should be auto populated from the XML generating software.
Name	The project or development name and stage.
Owner	Are assets for the whole project owned by Council or another entity.
Receiver	Populated with "Gladstone Regional Council"
WorksApprovalID	Development Application Number or Project Number
DrawingNumber	Council drawing number of the as constructed plans. This may not be known at the time of compilation.
DrawingRevision	Date the drawing was revised. ISO 8601 is the accepted format.
ConstructionDate	The accepted date of construction for the whole project. Usually the project completion date. ISO 8601 is the accepted format. Date may be used to calculate remaining life in an asset management system.
CoordinateSystem	Records the particulars of the horizontal and vertical coordinate systems for the whole project.
HorizontalCoordinateSystem	Must be **MGA Zone 56**.
HorizontalDatum	Must be **GDA 2020**.
VerticalDatum	Must be **AHD**
IsApproximate	Must be **False**
OriginMark	Should be **Nil** as Is Approximate must be False.
Notes	None
DrawingExtents	The rectangular coordinate envelope enclosing the project area
	SouthWest
	NorthEast
Description	Populated with "As Constructed Submission"
ProjectStatus	The reason for the ADAC file creation. This is not the same as Asset status, which is at the asset level. Submission Status is usually related to the development assessment process or to data transfer between entities or systems
Software	Details of the software product used to create the ADAC data set. Should be auto populated from the XML generating software
	Product
	Version
Surveyor	Structure containing information from the certifying surveyor.
	SurveyorName
	DateFinalSurvey
	DateApproved
Engineer	Structure containing information from the certifying engineer.
	EngineerName
	DateApproved

8.2   Global Attributes

These are attributes common to all feature types in the ADAC schema. The following table lists Council's mandatory fields for each asset.

Attribute	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

ADACID   Must be populated and unique to each individual asset.

Owner   Each asset must have an owner allocated i.e.

- Council
- Private
- State (State Government Authority)

DataQuality   Is mandatory for all subsurface information and must adhere to AS5488.

Construction Date   Is a critical element within the XML, as this date is used to identify when the asset is completed and accepted by Council. This date should represent when the following key components are met:

- Construction of all works are completed.
- All necessary inspections and tests have been carried out and passed.
- Essential documents and information have been provided and accepted by Council.

Notes   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 pick lists 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.

Status   Must be populated for each asset as it 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. The removal of redundant assets must be included in the xml file.

Please note the descriptions for each status below:

Status	Description
Newly Constructed	Newly constructed asset being passed to GRC or other 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.

Notes: This field can be utilised for an asset type description where ADAC does not have a suitable enumeration.

8.3   Cadastre assets

8.3.1   Cadastral Connection

Asset Capture: Simple linear feature capturing the cadastral connections as deduced from observations and the survey reference mark(s).

Spatial Relationship: Must be coincident to the vertices that define the Cadastre Lot boundary features and relevant Permanent Survey Markers.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Connection	Bearing	The bearing in decimal degrees clockwise from North in the coordinate system of this project.	Y
	Distance_m	The distance in metres on the coordinate system of this project.	Y

8.3.2   Easement

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

Spatial Relationship: May share boundaries with Watercourse Reserve, Lot Parcels or Road Reserve. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers."

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Easement	LotNo	The lot number as described on the originating survey plan	Y
	PlanNo	The plan number of the originating survey plan.	Y

8.3.3   Lot Parcels

Asset Capture: Multi-patched area feature (polygon) representing the boundary of a titled or proposed Cadastral Lot.

Spatial Relationship: May share boundaries with Road Reserves, Watercourses or Easements.

Node points between shared boundaries must be coincident i.e. no overlaps or "slivers."

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Lot	LotNo	The lot number as described on the originating survey plan	Y
	PlanNo	The plan number of the originating survey plan.	Y
	CancelledLotPlan	The lot on plan cancelled by this boundary if applicable.	N
	TitledArea_sqm	The area in square metres enclosed by the boundary, as described by the survey. plan.	N

8.3.4   Road Reserve

Asset Capture: Multi-patched area feature (polygon) representing a gazetted or soon to be gazetted Road reserve boundary.

Spatial Relationship: May share boundaries with Watercourse Reserve, Lot Parcels, other Road Reserve or Easements. Node points between shared boundaries must be coincident i.e. no overlaps or "slivers."

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Road Reserve	Name	Dedicated name of Road Reserve where the asset is located.	Y

8.3.5   Survey Mark

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

Spatial Relationship: May be used in a Cadastral Connection (as in lot parcels, noted above).

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
SurveyMark	MarkName	The name by which the survey mark may be uniquely identified from control records.	Y

8.3.6   Watercourse Reserve

Asset Capture: Multi-patched area feature (polygon) 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."

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Watercourse Reserve	Name	Dedicated name of Watercourse Reserve where the asset is located	Y

8.3.7   Chainage Line

Asset Capture: Not required to be captured.

8.4 SURFACE

8.4.1 Contour

Asset Capture: Linear feature capturing a single contour feature.

Spatial Relationship: Not applicable.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Contour	Status	The status of this contour, whether the surface level is existing or proposed	Y
	Elevation_m	The elevation of this contour relative to the vertical datum for this project	Y

8.4.2 Spot Heights

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

Spatial Relationship: Not Applicable.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Spot Heights	Status	The status of this contour, whether the surface level is existing or proposed	Y
	Elevation_m	The elevation of this contour relative to the vertical datum for this project	Y

8.4.3 Breaklines

Asset Capture: Not required to be captured.

8.4.4 Profile Lines

Asset Capture: Not required to be captured.

8.5 Open Space Assets

8.5.1 Open Space Area

Asset Capture: Multi-patched area feature (polygon) representing the "footprint" of the Open Space area and enclosing all 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 solid green line in the example shown in figure 7.

Spatial Relationship: Not applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is ±1m.

Figure 7 - Open Space Activity Area Components

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
OpenSpaceArea	Name	The official name or description of the Open Space area (e.g.: Millennium Esplanade, Marley Browne Sporting Complex)	Y
	Type	The type of Open Space area e.g.: Recreational, Bushland, Sporting Complex	Y

8.5.2 Activity Area

Asset Capture: Multi-patched area feature (polygon) representing different activity areas within the parent area feature. 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 in figure 8 representing activity areas for dedicated purposes.

For sports fields, line marking does not need to be represented within the as-constructed data.

Spatial Relationship: Feature must be totally within the Parent Open Space Activity Area feature.

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is ±1m.

Figure 8 - Activity Points and Barriers

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ActivityArea	Use	The type of use for the Activity Site e.g.: Animal, Fitness, Play, Sport	Y
	Type	The type of Activity Site. e.g.: Sports Field	Y
	Material	The material type of Undersurfacing e.g.: Bark, Rubber, Grassed	Y
	Thickness_mm	Thickness of material in millimetres.	Y
	Area (m2)	Area in square metres	Y*

* Denotes additional mandatory requirement for GRC

8.5.3 Activity Point

Asset Capture: Simple point feature representing individual activity assets that correlate to the Activity area of which these assets fall within. 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 8.

Spatial Relationship: Feature must be totally within the defined Activity Area feature.

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is ±1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ActivityPoint (includes Playground equipment, exercise equipment and Water Pool Play Equipment)	Use	The use for the asset (play equipment)	Y
	Type	The type of asset (e.g. Double swing set)	Y
	Material	The predominant material type for the asset.	Y
	Theme	The theme of the asset (i.e., is the play equipment a pirate theme, animal theme etc.)	N
	Units	The number of components for the asset (relates to Play Equipment – 3 or more component)	N
	Manufacturer	The Manufacturer of the unit	Y
	ModelNumber	The standard code, model number or part number for the unit	Y

8.5.4   Artwork

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

Spatial Relationship: Not Applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is ±1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Artwork	Type	The type of Artwork e.g.: Entry Statement, Memorials, Plaques, Sculptures & Statues	Y
	Material	The predominant material type of Artwork e.g.: Timber, Aluminium	Y
	Height_m	The height of the Artwork in metres	N
	Length_m	The length of the Artwork in metres	N
	Width_m	The width of the Artwork in metres	N
	Depth_m	The depth of the Artwork in metres when it is located inground	N
	Diameter_m	The diameter of the Artwork in metres	N
	Quantity	The number of items incorporated into the artwork asset record	N
	Brand	The brand of the artwork	N
	SupplierName	The supplier's name of the artwork	N
	SerialNumber	The serial number as provided by the manufacturer	N

8.5.5   Barbecue

Asset Capture: Simple point feature representing the centre of the barbeque at surface level. The slab the barbeque is installed on is considered part of the asset and does not need to be separately captured.

Any hot water units, taps, lighting or shelters associated with the barbeque should be captured as separate features.

Spatial Relationship: Not Applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is ±1m.
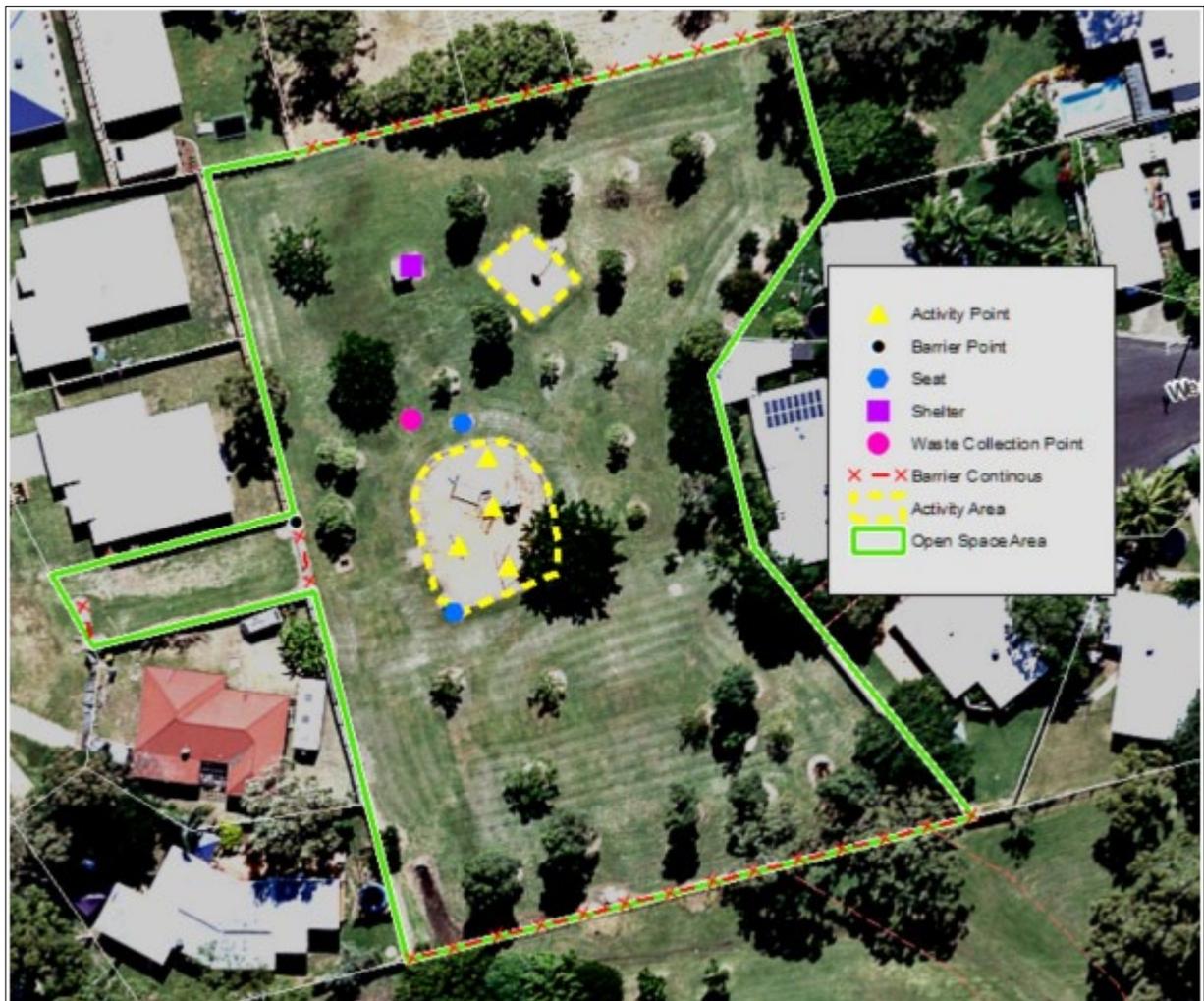
ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Barbecue	EnergySource	The Source of energy for the Barbecue. i.e.: Mains, Bottled, Solar	Y
	Plates	The number of plates fitted in the Barbecue structure.	Y
	SurroundingMaterial	The material type of the surround structure i.e.: brick, steel and Timber	Y
	TopMaterial	The material type of the top structure i.e.: Tiled, marble, steel	Y
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.5.6   Barrier Continuous

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing a barrier type asset e.g. fences, bollards, runs, pedestrian fall protection and gates. It is recommended, but not mandatory, that each vertex represents an upright, particularly for bollard runs. This allows geometry to be exploited to identify the individual features if necessary.

Please refer to the dashed red line in the example shown in figure 7.

When capturing gates, please specify the gate configuration in the **Notes** field. Gate configurations include:

- Single
- Double
- Boom Gate
- Sliding / Roller

Spatial Relationship: Open Space Barrier Feature must be within or coincident with the boundary of the Open Space Area feature.

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is +0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BarrierContinuous	Type	The type of Barrier e.g.: general fence, bollard fence, gate vehicular	Y
	UprightMaterial	The material type of Barrier Uprights e.g.: Timber, Aluminium	Y
	LinkMaterial	The material type for the fence upright/posts	Y
	TopMaterial	The material for the top rail (if one exists)	Y
	Length_m	The length of the barrier in metres	Y
	Height_m	The height of the barrier in metres	Y
	UprightNumber	The number of items included in the asset record (e.g., the number of uprights in a run)	Y

* Denotes additional mandatory requirement for GRC

8.5.7   Barrier Point

Asset Capture: Simple point feature representing the centre of an asset. Please refer to black dot in figure 9. Road guide posts are not to be captured as Barrier Points

Spatial Relationship: Not Applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is +0.5m.
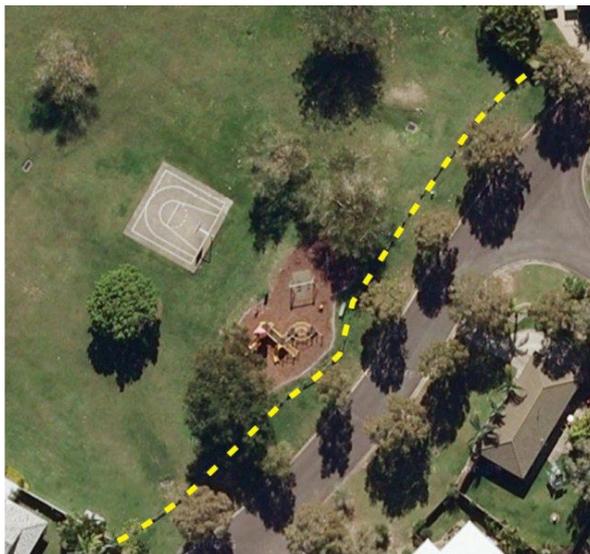
Figure 9 - Barrier Points

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BarrierPoint	Type	The type of Barrier Point eg: Bollard, Locking Post	Y
	UprightMaterial	The material type of Barrier Uprights eg: Timber, Aluminium	Y
	Height_m	The height of the barrier in metres	Y*

* Denotes additional mandatory requirement for GRC

8.5.8 Bicycle Fitting

Asset Capture: Simple point feature representing the centre of an asset at surface level. 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.

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is +0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BicycleFitting	Type	The type of Bicycle fitting	Y
	Material	The material type of Bicycle fitting e.g.: Timber, Aluminium	Y
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.5.9 Boating Facility

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

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Activity Areas is +1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BoatingFacility	Type	The type of Boating Facility e.g.: jetty, pier, ramp, pontoon etc)	Y
	AssetSubType	The component of the boating facility asset (e.g., structure, piles, subgrade, erosion protection)	N
	Material	The predominant material type for the asset	Y
	Length_m	The length of the boating facility in metres.	N
	Width_m	The width of the boating facility in metres.	N
	Area_m2	Area of the boating facility in square metres.	N
	NumberOfLanes	Number of lanes (Boat Ramp Only)	N

8.5.10 Building

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

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Buildings is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Building	PrimaryUse	The primary use of the building (i.e., amenities, shed, grandstand, bandstand, office, etc)	Y
	SecondaryUse	If the building supports emergency response (evacuation, recovery hub and backup hubs)	N
	AsbestosStatus	Is there any asbestos in the building (i.e., not contains, not confirmed etc)	N
	SubStructureMaterial	The predominant material type for the sub structure	N
	SuperStructureMaterial	The predominant material type for the super structure	N
	RoofMaterialType	The predominant material type for the roof structure	N
	GutterType	The type of guttering attached to the building	N
	FloorType	The predominant material type for the floor structure	N
	WindowType	The type of windows installed in the building	N
	NumberOfLevels	The number of storeys in the building	N
	Length_m	The length of the building in metres.	N
	Width_m	The width of the building in metres.	N
	GrossFloorArea_m2	Area of the building in square metres.	Y*
	EmergencyResponseEquipment	The emergency response equipment available at the building. Free text format.	Y*
	CycloneRating	The cyclone rating of the building	Y*
	FireRating	The fire rating of the building (XX XX XX format)	Y*
	WildlifeSensitiveArea	Is the asset located in a Wildlife Sensitive Area? (Y/N)	N

* Denotes additional mandatory requirement for GRC

8.5.11 Edging

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing the edging of an Activity Area or Landscaped Area (Examples include Sports Fields, Courts, Playgrounds, Animal Agility Areas, garden beds and hedges).

Spatial Relationship: No Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Edging is ± 20mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Edging	Material	The material type of edging	Y
	Length_mm	The length of the edging in millimetres.	Y
	Width_mm	The width of the edging in millimetres.	Y

8.5.12 Electrical/Communication Conduit

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing the centre of a conduit run at invert level.

Spatial Relationship: Conduit shown as a polyline starting and finishing at coincident points with each associated fitting.

Positional Accuracy: The minimum accepted horizontal accuracy for Electrical/Communication Conduits is ± 20mm.

The minimum accepted vertical accuracy for Electrical/Communication Conduits is ± 20mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ElectricalCommu nicationConduit	Type	The type of cable / conduit (i.e., Electrical or Communications)	Y
	Material	The material type for the cable	Y
	PrimaryUse	The Primary use of the Communication Conduit	Y*
	SecondaryUse	The secondary use of the Communication Conduit	Y*
	ThirdUse	The third use of the Communication Conduit	Y*
	Diameter_mm	The conduit diameter in millimetres	Y
	Length_m	The lineal length of the barrier in metres	Y
	Protection	The type of conduit protection used e.g.: Concrete encased, rubber mat, tape only	Y
	TraceWire	Is trace wire attached to the asset location?	N
	NumberOfConduits	The number of Conduits	N
	Subduct	Is there subducting in the conduits? Available in drawings (Y/N)	N
	Location	Location of the conduit (i.e. Inground, Submerged or Surface Mounted)	N*

Denotes additional mandatory requirement for GRC

8.5.13 Electrical/Communication Pit

Asset Capture: Simple point feature representing the centre of an Electrical/Communication pit on the top surface.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Electrical/Communication Pits is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ElectricalCommunicati onPit	Class	The load rating class of the pit.	N
	Type	The type of pit (i.e., electrical, communication, electrical & communication).	N
	Use	The use of the pit	Y*
	Material	The material used for the pit.	Y*
	LidMaterial	The material used for the Lid of the pit.	Y*
	LockablePit	Is the pit Lockable (Y or N)	Y*
	KeyType	If lockable - The key type for the lock.	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.5.14 Electrical/Communication Fitting

Asset Capture: Simple point feature representing the centre point of an electrical fitting such as audio speaker, transformer or power outlet.

Spatial Relationship: Must be coincident to Electrical/Communication Conduit polylines.

Positional Accuracy: The minimum accepted horizontal accuracy for Electrical Fittings is ± 50mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ElectricalCommunicationFitting	Type	The type of Electrical/Communication Component e.g.: Audio Speaker, Transformer, Power Outlet	N
	Base	The type of base (e.g.: Fixed or Slip)	Y
	Material	The material type of the component e.g.: Aluminium, Steel	Y
	EnergySource	The type of Power Source e.g.; Mains, Solar	Y
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*
	SerialNumber	The serial number as provided by the manufacturer	N
	Quantity	The number of items included in the asset record	N

* Denotes additional mandatory requirement for GRC

8.5.15   General Fixture

Asset Capture: Simple point feature representing the centre of an asset. Dog bag dispensers attached to 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.

For the asset capture of Dog Bowls, Drinking Fountains, Water Fountains, Hot Water System, Showers and Taps, refer to Service Fitting located within Asset Element **Water Supply**.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for General Fixtures is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
GeneralFixture	Type	The type of Fixture e.g.: Dog Bag Dispensers, Fish Cleaning Stations, Goal Posts, Planter Boxes, Flag Poles and Scoreboards	Y
	Material	The predominant material type of Fixture e.g.: Timber, Aluminium	Y
	Style	The style of the asset (e.g., for drinking fountain – general, with tap, with dog bowl)	Y
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.5.16   Landscape Area

Asset Capture: Multi-patched area feature (polygon) representing the "footprint" of a Landscaped area. Individual areas are required where the type of Landscaping changes (e.g. garden beds, enclosed shrubs, physical protection around mature trees etc.).

Spatial Relationship: Must be within the Parent Open Space Area feature.

Positional Accuracy: The minimum accepted horizontal accuracy for Landscape Areas is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
LandscapeArea	Type	The type of Garden/Landscape Area e.g.: Garden, Grass, Rem Vegetation	Y
	RootBarrier	A protective layer installed below ground to restrict and control root growth (Y/N)	Y
	Area_m2	The area of the Landscape Area in square metres	Y*
	Irrigated	Is Landscaped Area irrigated	Y

* Denotes additional mandatory requirement for GRC

8.5.17   Retaining Walls

Asset Capture: Complex linear feature (read: 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 8 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.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Retaining Walls is ± 200mm.

Figure 10 - Retaining Wall Example

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
RetainingWall	Use	Context of use for this wall. i.e. Terrestrial or Marine	Y
	Material	The material/type of Retaining Wall eg: Rock, Conc. Block, Conc. Crib	Y
	Construction	Construction design type for the retaining wall structure	Y
	Length_m	The length of the Retaining Wall in metres.	Y
	Height_m	The height of the Retaining Wall in metres.	Y
	Certified	Asset has been certified by a RPEQ	N

8.5.18   Seat

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

The following information is to be provided in the **Notes** field:

• Bus_Seat – enumeration value Yes or No

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Seats is ± 1m.

Figure 11 - Examples of Seats

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Seat	SeatType	The type of seat asset (e.g. with backrest, no backrest).	Y
	Places	The number of places/persons the seat is designed for (e.g., 2-person, 4-person etc).	Y
	Material	The material type of Seat eg: Timber, Aluminium	Y
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.5.19 Shelter

Asset Capture: Simple point feature representing the centre of an asset. Please refer to purple square in figure 7. 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. Please refer to figure 12.

                       Given the unique design of many shelters, photos should be included in the as-constructed package.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Seats is ± 1m.

Gable Pitched Shelter   *Skillion Shelter*   *Shade Sails*

Figure 12 - Examples of Shelters

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Shelter	Type	The type of asset (e.g., shade sail structure, shelter structure, hip roof shade structure)	Y
	ConstructionType	The type of shelter constructed e.g.: Prefab or Built insitu	Y
	FloorMaterial	The material for the floor construction	Y
	WallMaterial	The material for the wall construction	Y
	RoofMaterial	The material for the roof construction	Y
	Area_m2	The Area of the Shelter in square metres	Y*
	WildlifeSensitiveArea	Is the asset located in a Wildlife Sensitive Area	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.5.20   Sign

Asset Capture: Simple point feature representing the centre of the sign face, can be used for Open Space Signs or Road Signs. Poles associated with the sign do not need to be separately captured.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Signs is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Sign	Type	The type of sign (e.g., Standard Sign (MUTCD), Freestanding message sign etc.)	Y
	Material	The material type of sign	Y
	Structure	The type of structure this sign blade is fixed to.	Y
	Use	The Use of sign (e.g. regulatory, information, directional etc)	Y*
	SignText	Text content displayed on the sign face	N
	EnergySource	The type of Power Source (e.g., Mains, Solar, N/A) for the sign	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East) May be used to denote direction of facing.	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.5.21   Table

Asset Capture: Simple point feature representing the centre of a table. Tables with associated seating do not require the seating to be captured separately. Any slab the table

and/or associated seat are installed on, should be considered part of the asset and does not need to be captured separately. Please refer to figure 13.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Signs is ± 0.50m.

Figure 13 - Examples of Tables

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
Table	Type	The type of Unit eg: Table, Bench or counter.	Y
	SeatType	The type of seat asset (e.g.: with backrest, no backrest, low table seat, etc.) if existing	Y
	Places	The number of individuals the seating is designed for. This attribute may be used to help determine the capacity of a recreational facility if existing.	Y*
	Material	The material type of Table/Seat e.g.: Timber, Aluminium	Y
	Length_m	The length of the Table in metres	N
	Manufacturer	The Manufacturer of the unit	Y
	ModelNumber	The standard code, model number or part number for the unit	Y

* Denotes additional mandatory requirement for GRC

8.5.22   Tree

Asset Capture: Simple point feature representing the centre of an asset. All trees (regardless of location e.g. in park or road corridor) are required to be captured. Please refer to the blue dots in the example shown in figure 8

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Trees is ± 0.5m.
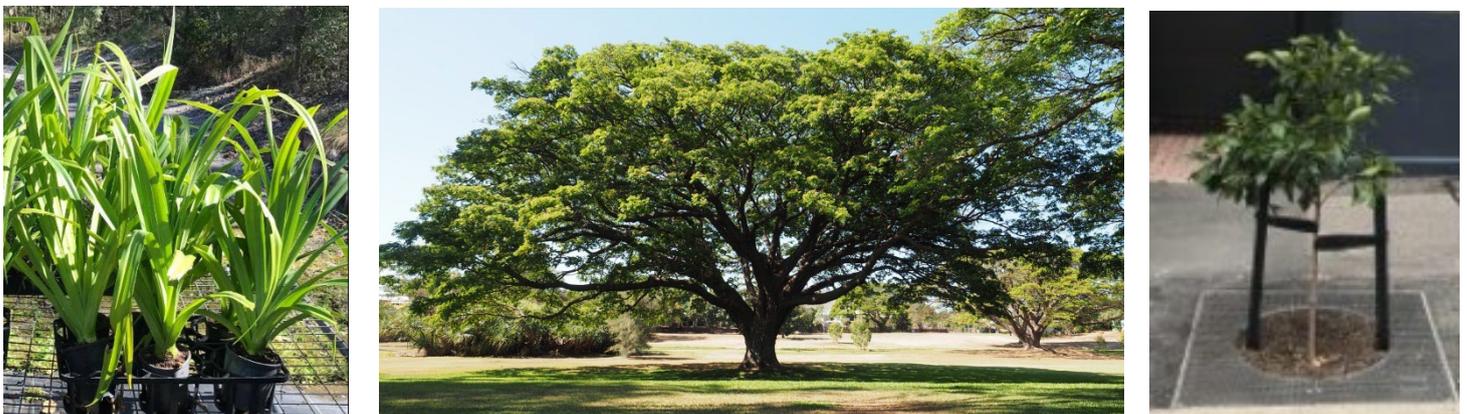
Figure 14 - Trees at various growth stages

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Trees	Species	A type of plant having certain characteristics that differentiate it from other members of the genus.	Y
	Genus	A taxonomic group of related plants (containing one or more species)	Y
	CommonName	The common name by which the species of plant is referred to	Y
	Significance	The significance of the tree (i.e., local, state, none)	Y*
	RootBarrier	A protective layer installed below ground to restrict and control root growth. (Y/N)	Y
	Situation	Where the tree is physically location (e.g., on verge, in Park etc)	Y
	Conflicts	Any potential conflicts due to the tree's location (e.g., powerlines)	Y
	Grate	A grate is a surrounding for a tree trunk that is set in pavement allowing water penetration. (Y/N)	Y
	Height	The height of the tree in metres	Y
	SizeClassification	The size grouping for the tree (i.e., Small (<1.0m) Tall, Medium (1.0m < 5.0m) or Large (>5.0m))	Y*

* Denotes additional mandatory requirement for GRC

8.5.23 Waste Collection Point

Asset Capture: Simple point feature representing the centre of an asset at surface level. Please refer to the pink dot in the example shown in figure 8. Includes any poles, stands or enclosures associated with a bin.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Waste Collection Points is ± 0.5m.

Figure 15 - Waste collection receptacles

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Waste Collection Point	Type	The type of Bin/Waste collection point e.g.: Std Litter Bin, Wheelie Bin Enclosure	Y
	Material	The material type of Bin/Waste collection point e.g.: Aluminium, Steel	Y
	Manufacturer	The Manufacturer of the unit	Y
	ModelNumber	The standard code, model number or part number for the unit	Y

* Denotes additional mandatory requirement for GRC

8.6   Sewerage Assets

8.6.1   Connections

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing the invert of the property connection. Enforced line direction from Inspection Opening to the Non-Pressure Pipe/Maintenance Hole due to gravitational flow. Please refer to figure 17 below.

For jump up connections, the Jump Up Invert, Top Level and Surface Level should be provided in the **Notes** field.

Single jumps up are to be located at the same point as a double jump up.

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.

Positional Accuracy: The minimum accepted horizontal accuracy for Connections is ± 10mm.

The minimum accepted vertical accuracy for Connections is ± 10mm.
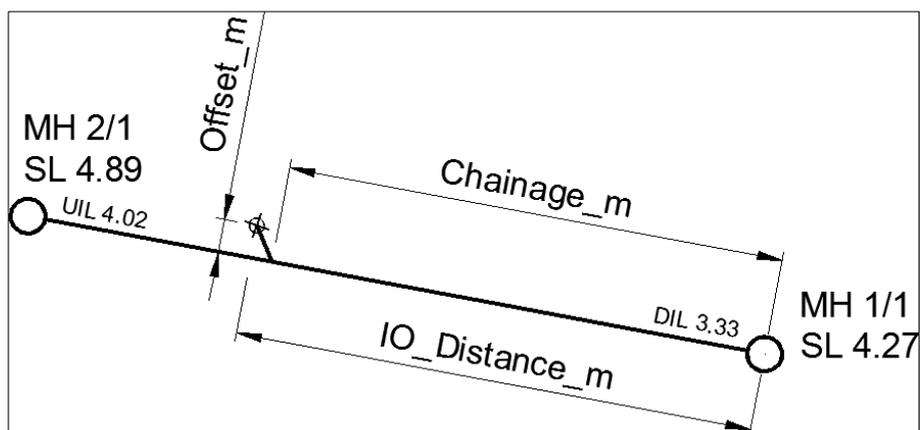
Figure 16 – Sewer Connection Location

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Connection	SurfaceLevel_m	Surface level of this feature (in metres against the vertical datum).	Y
	InvertLevel_m	Invert level of this feature (in metres against the vertical datum).	Y
	Use	The function of the house connection in the network.	N
	Diameter_mm	The nominal diameter of the connection conduit.	N
	Material	The material of the connection conduit.	N
	Class	The pipe class as specified by the manufacture.	N
	Length_m	The material length in metres of the house connection branch conduit.	N
	Type	Physical configuration of connection.	N
	Chainage_m	The distance in metres from the centre of the downstream maintenance hole to the point of connection of the offshoot branch.	Y
	Offset_m	The distance measured square from the centre of the sewer main to the point of connection.	Y
	LineNumber	The line identifier of the sewer main.	N
	DSMHID	Downstream maintenance hole identifier.	N
	IO_Distance_m	Distance from a point perpendicular to the inspection opening to the centre of the downstream maintenance hole along the axis of the sewer. main.	Y
	SO_Nearest_m	Perpendicular distance from the inspection opening to the nearest cadastral boundary.	Y
	SO_Other_m	Perpendicular distance from the inspection opening to the next nearest cadastral boundary.	Y
	Sediment_Trap	True indicates that the connection includes an inline sediment trap.	Y

* Denotes additional mandatory requirement for GRC

8.6.2   Fittings

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

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

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

Positional Accuracy: The minimum accepted horizontal accuracy for Fittings is ± 20mm.

The minimum accepted vertical accuracy for Fittings is ± 20mm

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Fitting	Type	The physical configuration of the fitting	Y
	Material	Fitting material	Y
	Lining	The internal corrosion protection material or method for the fitting.	Y*
	Protection	The external protection for the fitting.	Y*
	BodySize_mm	The nominal diameter of the major connecting pipe.	Y
	BranchSize_mm	The nominal diameter of the minor connecting pipe.	Y*
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

* Denotes additional mandatory requirement for GRC

8.6.3 Maintenance Holes (Including Inspection Openings at End-of-Line)

Asset Capture: Single point feature located at the centre of chamber on the top surface.

Note: Capturing centre of lid is appropriate only when the lid is centred over the chamber.

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 at 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 varies over the depth of the structure, take the largest

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Maintenance Holes is ± 10mm.

The minimum accepted vertical accuracy for Maintenance Holes is ± 10mm.

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
MaintenanceHole	Use	Use or purpose of this Maintenance Hole in the network	Y
	Length_mm	The length of a rectangular chamber in millimetres – rectangular only	Y
	Width_mm	The width of a rectangular chamber in millimetres – rectangular only	Y
	Diameter_mm	Nominal diameter for circular chamber in millimetres – circular only	Y
	Area_sqm	The total area (in square meters) of a custom sewer chamber where not circular or rectangular.	Y
	Depth_m	Depth of the sewer node, determined from Surface Level – Invert Level	N
	SurfaceLevel_m	The height of the top surface of the lid, hatch, rim or roof.	Y
	InvertLevel_m	The height of the top surface of interior floor/bottom.	Y
	FloorConstruction	Method of chamber floor construction.	Y
	FloorMaterial	Material type for chamber construction	Y
	WallConstruction	Method of chamber wall construction.	Y
	WallMaterial	Material type for chamber wall construction	Y
	RoofMaterial	Material type for chamber roof construction	Y
	Lining	Material type of chamber lining	N
	LidMaterial	Chamber lid configuration and material	Y
	DropType	Chamber drop types	Y
	CatchmentPS	The identifier of the pump station that this node flows to.	N
	LineNumber	The identifier of the line that this node connects to	N
	MH_Number	The identifier of this maintenance hole or pit.	Y
	Chainage_m	The distance upstream from end of line.	N
	TieDistance_m	The tie distance in metres to a cadastral corner	N
	OffsetDistance_m	The offset distance in metres from a cadastral boundary	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

* Denotes additional mandatory requirement for GRC

8.6.4   Meter

Asset Capture: Single point feature representing the centre of a meter.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Meter is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Meter	Type	The physical configuration of the valve	Y
	EquipmentType	Type of equipment i.e. Electronic, inferential	N
	SerialNumber	The manufacturers serial number, as stamped or fixed on the meter.	Y
	Diameter_mm	The nominal bore diameter of the valve	Y
	InstallationDate	Installation Date of the meter. ISO 8601 is the accepted format.	Y
	Rotation	Rotation angle (cartesian - anti-clockwise 0 degrees = East)	N
	Manufacturer	The Manufacturer of the unit	N
	ModelNumber	The standard code, model number or part number for the unit	N

* Denotes additional mandatory requirement for GRC

8.6.5   Non-Pressure Pipes

Asset Capture: Complex linear feature (read: polylines including curves but not Bezier curves) representing the invert of the pipe asset. Enforced line direction from Gravity Upstream (read: higher AHD level) to Gravity Downstream (read: lower AHD level) due to gravitation flow in each individual pipe.

The gravity upstream and downstream ends of an individual pipe are captured at the intersection between the pipe material and the inside edge of the wall of the chamber. Please refer to figure 17 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, embedment or direction etc. then it must be broken and captured separately. Sewer pipes should not be broken by connections.

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

• "STW" - discharge to stormwater system

• "OPEN" - discharge to water course

Spatial Relationship: Not Applicable

Positional Accuracy: The minimum accepted vertical accuracy for the non- pressure pipe is ± 20mm.
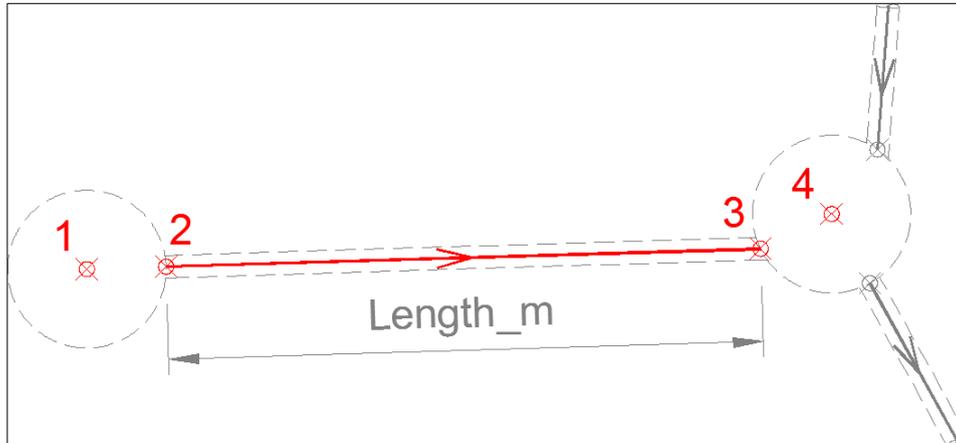
Figure 17 – Non-Pressure Pipes

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
PipeNonPressure	LineNumber	The sewer line identifier	N
	Use	The function of this pipe in the network.	Y
	Diameter_mm	Nominal bore diameter in millimetres.	Y
	Material	Pipe material	Y
	Class	As specified by manufacturer - refers to the wall thickness and performance of the material.	Y
	Lining	The internal corrosion protection method employed on the pipe material.	N
	Protection	The protective material enveloping the pipe.	N
	JointType	Pipe to pipe join method.	Y
	US_InvertLevel_m	Invert level of this pipe end (in metres against the vertical datum).	Y
	DS_InvertLevel_m	Invert level of this pipe end (in metres against the vertical datum).	Y
	US_SurfaceLevel_m	Surface level (in metres against the vertical datum) vertically above this pipe end.	Y
	DS_SurfaceLevel_m	Surface level (in metres against the vertical datum) vertically above this pipe end.	Y
	Alignment_m	Average offset distance in metres from cadastral boundary to the main.	N*
	Embedment	Embedment type from WSAA Sewerage Codes.	N
	RockExcavated	Value indicating whether rock was excavated from the pipe channel.	N
	PipeGrade	Pipe grade as a percentage.	N
	Length_m	Actual material length of the pipe. Not the horizontal length of the geometry.	Y

* Denotes additional mandatory requirement for GRC

8.6.6 Pressure Pipes

Asset Capture: Complex linear feature (read: polylines including curves but not Bezier curves) representing the invert of the pipe asset. Enforced line direction from Pump active asset to Discharge Maintenance Hole due to pumped flow.

Pipes to be captured based on their <u>physical and spatial properties</u> 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: Must be coincident to Pressure pipe point features in the pumped sewerage network.

Positional Accuracy: The minimum accepted horizontal accuracy for Non-Pressure Pipes is ± 50mm.

The minimum accepted vertical accuracy for Non-Pressure Pipes is ± 50mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
PipePressure	Use	The function of this pipe in the network.	Y
	Diameter_mm	Nominal bore diameter in millimetres.	Y
	Material	Pipe material	Y
	Class	The pipe class as specified by the manufacture.	Y
	Lining	The internal corrosion protection method employed on the pipe material.	N
	Protection	The protective material enveloping the pipe.	N
	JointType	Pipe to pipe join method.	Y
	Alignment_m	Average offset distance in metres from cadastral boundary to the main.	N
	Depth_m	Nominal depth in metres to the top of the pipe.	Y*
	Embedment	Embedment type from WSAA Sewerage Codes.	N
	RockExcavated	Value indicating whether rock was excavated from the pipe channel.	N
	Length_m	Actual material length of the pipe. Not the horizontal length of the geometry.	Y*

* Denotes additional mandatory requirement for GRC

8.6.7 Valves

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

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

Positional Accuracy: The minimum accepted horizontal accuracy for Valve is ± 50mm.

The minimum accepted vertical accuracy for Valve is ± 50mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Valve	Use	The function of this valve in the network.	Y
	Type	The physical configuration of the valve	Y
	Lining	The internal corrosion protection method employed on the pipe material	N
	Diameter_mm	The nominal bore diameter of the valve	Y
	Protection	The protective material enveloping the valve.	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	Manufacturer	The Manufacturer of the unit	N
	ModelNumber	The standard code, model number or part number for the unit	N

* Denotes additional mandatory requirement for GRC

8.7   Stormwater

8.7.1   End Structure

Asset Capture: Simple point feature representing the top of the headwall/end wall.

Fences surrounding the end structure should be captured separately as Barrier Continuous.

Wing Wall - Set to nil if the End Structure does not have an end wall.

Spatial Relationship: Headwall "floats" adjacent to the end of a Stormwater pipe feature. Please refer to figure 19.

Positional Accuracy: The minimum accepted horizontal accuracy for End Structures is ± 50mm.

The minimum accepted vertical accuracy for End Structures is ± 50mm.

Figure 18 - Example of Headwall

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
EndStructure	StructureID	The identifier for this end structure. Usually the textual identifier it would be labelled with on the face of a plan.	Y
	StructureLevel_m	The surface level of the structure in metres against the vertical datum for the project.	N
	Type	The Type of asset (i.e. headwall, trash screen, flood gate)	N
	EndWallType	The type of stormwater end wall structure	N
	EndWallSize	Define the number of cells and sizes penetrating the End Structure ie. 3/750 or 2/1200x900 or 2/900x600+1/600.	N
	EndWallLength_m	Represents the length in metres of the end wall.	N
	EndWallHeight_m	Represents the height in metres of the end wall.	N
	EndWallThickness_m	Represents the Thickness in metres of the end wall.	N
	EndWallMaterial	The predominant construction material of the end wall structure.	N
	EndWallConstruction	The method of construction of the end wall structure.	N
	LWW_Length_m	Represents the length in metres of the left wing wall.	N
	LWW_Height_m	Represents the height in metres of the left wing wall.	N
	LWW_Thickness_m	Represents the thickness in metres of the left wing wall.	N
	LWW_Material	The predominant construction material of the left wing wall.	N
	LWW_Construction	The method of construction of the left wing wall – if existing	N
	RWW_Length_m	Represents the length in metres of the right wing wall.	N
	RWW_Height_m	Represents the height in metres of the right wing wall.	N
	RWW_Thickness_m	Represents the thickness in metres of the right wing wall.	N
	RWW_Material	The predominant construction material of the right wing wall.	N
	RWW_Construction	The method of construction of the right wing wall – if existing	N
	Apron_Width_m	Represents the width in metres of apron on the End Structure.	N
	Apron_Thicknes_m	Represents the thickness in metres of apron on the End Structure.	N
	Apron_Area_m2	Represents the area in square metres of apron on the End Structure.	N
	Apron_Material	The predominant construction material of apron on the End Structure.	N
	Apron_Construction	The method of construction of apron on the End Structure – if existing.	N
	GrateType	Type of grate used, if applicable.	N
	TideGate	Type of tide or flood gate used, if applicable.	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

Denotes additional mandatory requirement for GRC

8.7.2 Fitting

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

The following information is to be provided in the **Notes** field:

- Material – enumeration value Aluminium, Fiberglass or Steel

- Height_mm - (if rectangular)

- Width_mm - (if rectangular)

- Diameter_mm - (if circular)

Spatial Relationship: Must be coincident to the end point a Stormwater pipe feature.

Positional Accuracy: The minimum accepted horizontal accuracy for Fittings is ± 50mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Fitting	FittingType	The type of stormwater fitting. (E.g. End Cap, Tide Gate, Frog Flap, Duckbill Valve)	Y
	Rotation	Rotation angle (Cartesian - anti- clockwise 0 degrees = East)	N

Denotes additional mandatory requirement for GRC

8.7.3 Flow Management Device

Asset Capture: Complex linear feature (polylines including curves but not Bezier curves).

The following information is to be provided in the **Notes** field:

Weir_Function – enumeration value Diversion, Flood Structure, Maintain Water Levels or Tidal Barrier.

SQID refers to Stormwater Quality Improvement Device

Spatial Accuracy: Not Applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Flow Management Devices is ± 50mm

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Flow Management Device	SQID_Id	The string identifier of the device, as it would appear on a plan.	N
	Type	Stormwater Flow Management Device Type	Y
	Material	The predominant material of the Stormwater Flow Management Device.	Y
	Length_m	The Length in metres of the Flow Management Device	N
	CrestElevation_m	Crest level in AHD meters	N
	Weir_Function	Weir type (Diversion, Flood Structure, Maintain Water Levels or Tidal Barrier)	N

Denotes additional mandatory requirement for GRC

8.7.4   GPT Complex / GPT Simple / Non GPT Simple

Asset Capture: Single point feature located at the <u>centre of chamber</u> on the top surface.

Note: Capturing centre of lid is appropriate only when the lid is centred over the chamber.

Known as Gross Pollutant Traps (GPTs), these 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

- GPT Non-Simple which represents basic and minor sand filtration storage.

Spatial Relationship: GPT Complex and Non GPT Simple assets must be coincident to pipe features as per Pits/Manhole features. However GPT Simple asset's spatial location must correlate with a Pit/Manhole asset as they are housed within those structures and can be removed for maintenance or relocation.

Positional Accuracy: The minimum accepted horizontal accuracy for GPTs is ± 50mm.

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
GPTComplex	SQID_Id	The string identifier of the device, as it would appear on a plan.	N
	Construction	Commercial or custom	N
	Manufacturer	The manufacturer if applicable	Y*
	ModelNumber	The model if applicable	Y*
	Length_mm	Size Rectangular	N
	Width_mm	Size Rectangular	N
	Diameter_mm	Circular diameter in millimetres	N
	Function1	The first function of the WSUD point. Usually, Gross Pollutant Capture will be the most important function.	Y
	Function2	The second function of the WSUD point, if applicable	N
	Function3	The third function of the device, if applicable	N
	US_PipeDiameter_mm	The upstream pipe diameter in millimetres	N
	DS_PipeDiameter_mm	The downstream pipe diameter in millimetres	N
	SurfaceLevel_m	The surface level at the top of the device	N
	US_InvertLevel_m	Invert level of this pipe end (in metres against the vertical datum).	N
	DS_InvertLevel_m	Invert level of this pipe end (in metres against the vertical datum).	N
	CleanoutLevel_m	The level to which the device must be cleaned out, in metres against the vertical datum of the project.	N
	Depth_m	The depth, in metres, of the device.	N
	SumpDepth_m	The depth, in metres, of the sump, if applicable	N
	HasFilterMedia	True if the device has filtration media or a filter capsule installed.	N
	HasBasket	True if the device has a litter basket installed.	N
	HasBoards	True if the device has drop-boards or penstock installed.	N
	DesignFlow_m3s	Design Flow in cubic metres per second	N
	MaxContaminantVolume_m3	Maximum contaminant retention volume in cubic metres.	N
	MaxInternalVolume_m3	Maximum internal volume in cubic metres.	N
	MaintenanceCycle_mnths	The minimum maintenance cycle in months (refer to specifications)	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

Denotes additional mandatory requirement for GRC

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
GPTSimple	SQID_Id	The string identifier of the device, as it would appear on a plan.	N
	Construction	The construction method	N
	Manufacturer	The manufacturer if applicable	Y*
	ModelNumber	The model if applicable	Y*
	TreatmentMeasure	Simple treatment measures fitted to existing infrastructure to intercept solid litter being transported in stormwater. (e.g. basket, net, vertical grate, horizontal grate)	N
	Function1	The first function of the WSUD point. Has a fixed value because all GPTSimple points are.	Y
	Rotation	Rotation angle (Cartesian - anti- clockwise 0 degrees = East)	N
	Length_mm	The length of the device in millimetres.	N
	Width_mm	The width of the device in millimetres.	N
	Material	Predominant material of device	N
	MaintenanceCycle_mnths	The minimum maintenance cycle in months. This is the revisit interval for clearing captured rubbish.	N

Denotes additional mandatory requirement for GRC

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
GPTNonSimple	SQID_Id	The string identifier of the device, as it would appear on a plan.	N
	Construction	The construction method	N
	Manufacturer	The manufacturer if applicable	Y*
	ModelNumber	The model if applicable	Y*
	TreatmentMeasure	Simple treatment measures fitted to existing infrastructure to intercept solid litter being transported in stormwater. (e.g. Aquifer storage tank, floating boon, rubble pit, sand filter etc.)	N
	Function1	The first function of the WSUD point. Has a fixed value because all GPTSimple points are.	Y
	Function2	The second function of the WSUD point, if applicable	N
	Function3	The third function of the device, if applicable	N
	Length_mm	The length of the device in millimetres.	N
	Width_mm	The width of the device in millimetres.	N
	MaintenanceCycle_mnths	The minimum maintenance cycle in months. This is the revisit interval for maintenance or inspection, if. applicable.	N
	Rotation	Rotation angle (Cartesian - anti- clockwise 0 degrees = East)	N

Denotes additional mandatory requirement for GRC

8.7.5   Pipe (including Culvert)

Asset Capture: Simple linear feature representing the invert of the pipe or midpoint of a box asset. One feature represents multiple-celled culverts/pipes; therefore the number of cells is to be recorded in the "Cells" field of the table structure. Enforced line direction from Gravity Upstream (read: higher AHD level) to Gravity Downstream (read: lower AHD level) due to gravitation flow. Pipe features are captured from the intersection of pipe material and chamber wall. Refer to figures 19, 20 and 21 below.

Figure 20 represents a single-celled pipe asset where vertices one and four represent the maintenance hole capture and vertices two and four are the intersection of the Pipe material and the chamber wall.

Figure 21 represents a triple-celled culvert asset from inlet to outlet. In this case there is a spatial relationship between each end of the pipe asset and the End Structure point feature.

Note: Please refer to Receiving Authorities Addendum to these Guidelines where multi-celled pipes are to be represented as individual lines.

Figure 22 represents an irregular shaped pit with multiple multi-celled pipes entering the pit asset and a large single-celled asset exiting the pit and outlets through an End Structure.

Spatial Relationship: Not required.

Positional Accuracy: The minimum accepted horizontal accuracy for Pipes is ± 50mm.

The minimum accepted vertical accuracy for Pipes is ± 50mm.
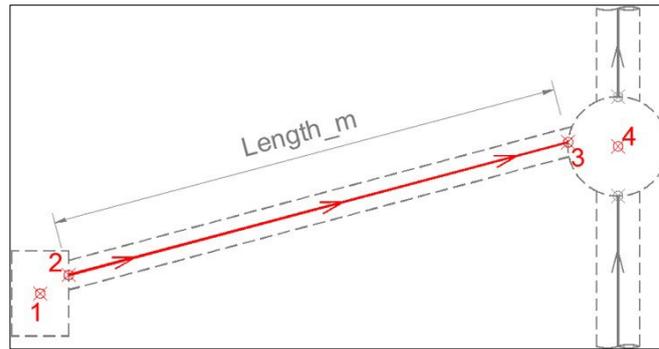
Figure 19 - Single-celled pipe asset
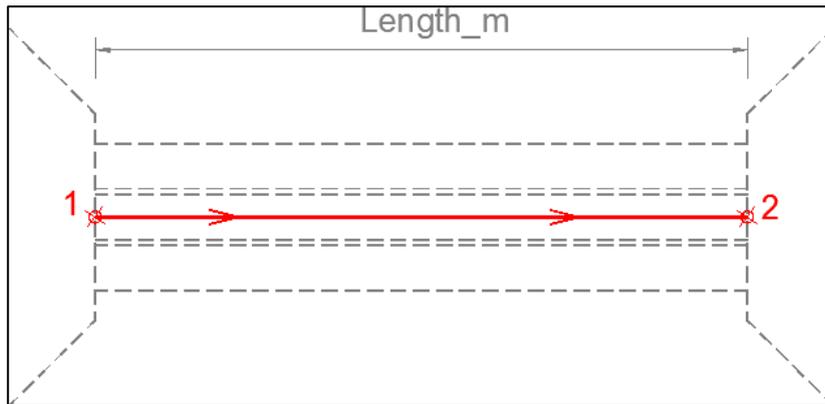
Figure 20 - Triple-celled culvert asset from inlet to outlet
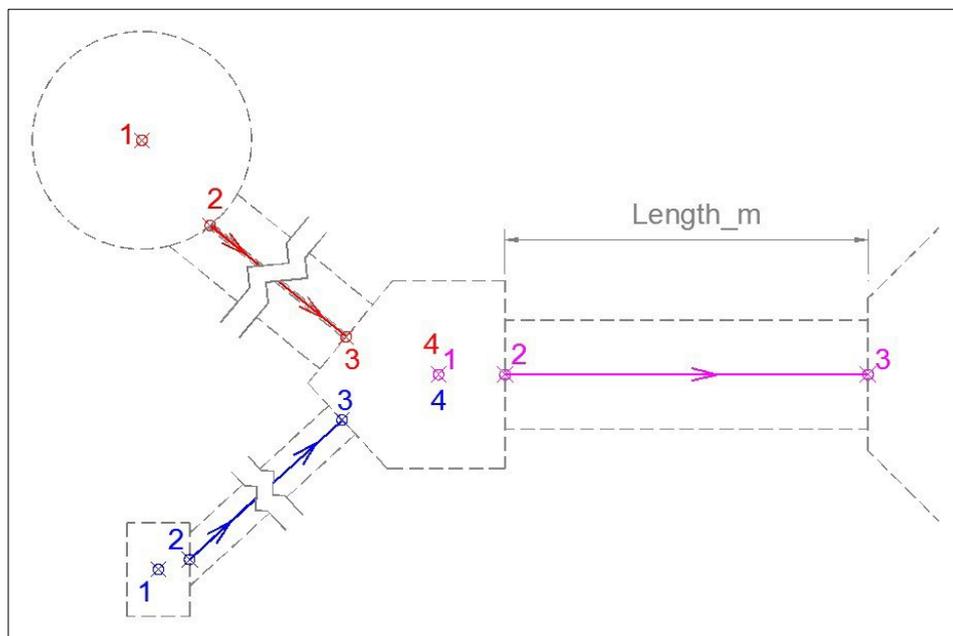
Figure 21 - Irregular shaped pit with multiple multi-celled pipes

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
Pipe	US_InvertLevel_m	Invert level in metres AHD of the upstream pipe end	Y
	DS_InvertLevel_m	Invert level in metres AHD of downstream pipe end	Y
	US_SurfaceLevel_m	Surface level in metres AHD vertically above the upstream pipe end	Y
	DS_SurfaceLevel_m	Surface level in metres AHD vertically above the downstream pipe end	Y
	Diameter_mm	The internal diameter of the pipe in millimetres – Circular only	Y
	JointType	The joint type of the pipe section – circular only	Y
	Height_mm	Height in millimetres of the internal cross section – box section only	Y
	Width_mm	Width in millimetres of the internal cross section – box section only	Y
	Material	The pipe wall material	Y
	Class	As specified by manufacturer - refers to the wall thickness and performance of the material.	Y
	Cells	The number of cells associated with this structure.	Y
	ConcreteCoverType	The cover type for the stormwater drains. (e.g. Standard, Saltwater)	Y
	Grade	Pipe gradient as a percentage. Derivable from invert levels and horizontal length.	N
	Length_m	Pipe length in metres.	Y*

Denotes additional mandatory requirement for GRC

8.7.6   Pit

Asset Capture: Simple point feature representing the centre of chamber of a pit or maintenance hole on the top surface. Please note: If the asset's Use = "Pit" then the InletType element must be populated. If the Lintel element is not nil, then the InletConfig element must be populated. InletConfig's Left/Centre/Right is referenced from the road crown looking at the lintel.

The StructureID as shown in the design drawing (figure 23) must be provided in the PitNumber field.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Pipes is ± 50mm.

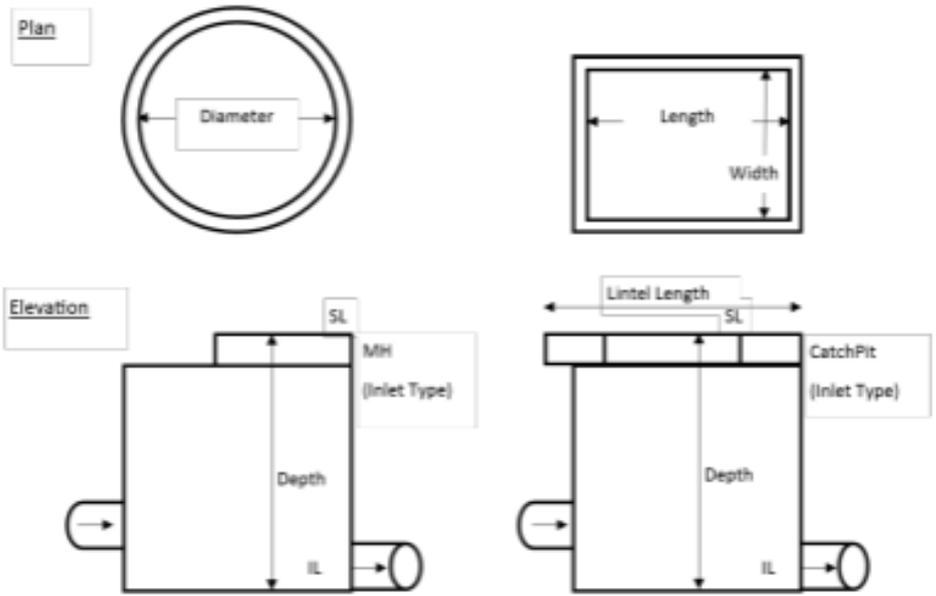The minimum accepted vertical accuracy for Pipes is ± 10mm.

Plan

Diameter

Length

Width

Elevation

SL

MH

(Inlet Type)

Depth

IL

Lintel Length

SL

CatchPit

(Inlet Type)

Depth

IL

Figure 22 – Structure ID

ADAC Element	Attribute	Attribute Description/Sub Attribute	Mandatory Y/N
Pit	PitNumber	The pit identifier.	Y
	Use	Purpose of the feature in the network.	Y
	ChamberConstruction	Method of chamber construction.	Y
	Length_mm	The length of the Pit in millimetres – rectangular only	Y
	Width_mm	The width of the Pit in millimetres – rectangular only.	Y
	Diameter_mm	The nominal diameter of the Pit in millimetres – circular only.	Y
	Radius_mm	Radius of the circular section of the largest part of the chamber in millimetres.	N
	Extension_mm	Length of the extended section of the largest part of the chamber in millimetres.	N
	LidType	The type of lid or grate covering the opening.	Y
	SurfaceLevel_m	Surface level of this feature (in metres against the vertical datum).	Y
	InvertLevel_m	Invert level of this feature (in metres against the vertical datum).	Y
	Depth_m	The depth of the structure in metres. May be user-entered, or auto- calculated as the difference between the surface level and the invert level of the pit.	Y
	PitMaterial	The material type for the pit	Y
	InletConfig	Positioning of the inlet against the pit.	Y
	InletType	The type of inlet employed – if existing lintel.	Y
	InletSize	Dimensions of the inlet e.g. Diameter or Length x Width – if existing lintel.	Y
	LintelConstruction	Method of lintel construction – if existing lintel.	N
	LintelLength_m	Represents the length in metres of the lintel – if existing lintel.	N
	OutletType	The type of outlet for this pit.	Y
	FireRetardant	True of false value indicating whether fire retardant measures are incorporated.	N
	Rotation	Rotation angle (Cartesian - anti- clockwise 0 degrees = East)	N

8.7.7   Scour Protection

Asset Capture: Single-patched area feature representing the footprint of a scour protection.

The Class is to be populated with "Scour Protection".

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Scour Protection is ± 100mm.

Figure 23 – Example of Scour Protection

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ScourProtection	Class	The class of the Scour Protection Asset	Y*
	Function	The function of the Scour Protection	Y*
	Material	Material types for the Scour Protection	Y*
	Length_m	The length of the Scour Protection in metres.	Y*
	Width_m	The width of the Scour Protection in metres.	Y*
	Area_m2	The area of the Scour Protection in square metres.	Y*

Denotes additional mandatory requirement for GRC

8.7.8   Surface Drain (Including Open Drain)

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 25. Major Surface Drain 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.

The following information is to be provided in the **Notes** field:

• Average_Depth_m

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

Positional Accuracy: The minimum accepted horizontal accuracy for Surface Drains is ± 1m

Figure 24 – Asset Capture Details of Surface Drain including Open Drain

Figure 26 Width Collection indicates where to collect the width of the channel for different channel configurations and materials.
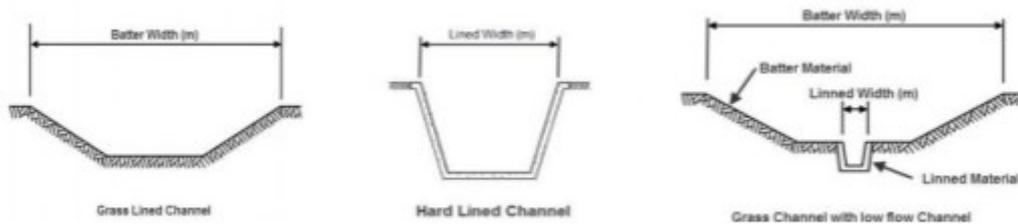
Figure 25 – Width collection for Surface drain including Open Drain

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
SurfaceDrain	Type	The type of drain or channel.	Y
	DrainShape	Cross-sectional shape of the channel.	Y
	LiningMaterial	The material that the channel is lined with.	Y
	LinedWidth_m	The width, in metres, of the lined portion of the channel if applicable.	N
	BatterMaterial	The material that the drain batter is lined with. A null value may be supplied where the drain has no batter.	N
	BatterWidth_m	The total width, in metres, from lip of batter to opposite lip of batter. A null value may be supplied where the drain has no batter.	N
	US_InvertLevel_m	Invert level in metres AHD of the upstream drain end.	Y
	DS_InvertLevel_m	Invert level in metres AHD of the downstream drain end.	Y
	AverageGrade	The average gradient over the entire length of the feature, as a percentage.	N
	Length_m	The material length, in metres, of the centreline of the channel.	Y

* Denotes additional mandatory requirement for GRC

8.7.10   WSUD Area

Asset Capture: Water Sensitive Urban Design 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 27 demonstrates the capture of a WSUD and
                        associated infrastructure, including a Vehicle Access (red polygon) and a gate (blue
                        hatched line).

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for WSUD Areas is ± 1m.

Figure 26 - Capture of WSUD and associated infrastructure

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
WSUD Area	SQID_Id	The unique ID assigned to the device.	Y
	TreatmentMeasure	The type of treatment measure employed (e.g. Bioretention Basin, Sedimentation Basin etc.)	Y
	Function1	The first function of the WSUD area. The device must have at least one function.	Y
	Function2	The second function of the WSUD area, if applicable.	N
	Function3	The third function of the WSUD area, if applicable.	N
	PondingArea_m2	Area of Temporary Ponding or Extended Detention in square metres.	Y
	PondingDepth_m	Average depth of Temporary Ponding or Extended Detention in metres.	N
	FilterArea_m2	Area of filter media in square metres.	N
	FilterDepth_m	Depth of filter media in metres.	N
	TransitionDepth_m	Depth of the Transition Layer in metres.	N
	DrainageDepth_m	Depth of the Bioretention Drainage Layer in metres.	N
	VegetationArea_m2	The vegetated area in square metres (maybe zero). Area of vegetated portion of constructed wetland (macrophyte zone)	N
	VegetationDepth_m	Average depth in metres of vegetated portion of constructed wetland (macrophyte zone).	N
	CoarseSedimentationArea_m2	Maximum area in square metres of ponding (for coarse sediment capture) before bypass.	N
	SedimentationVolume_m3	Volume in cubic metres of sediment capacity in cubic metres	N
	MinSurfaceLevel_m	Minimum surface level in metres within structure (above or below water surface level).	N
	PermanentPondLevel_m	Water surface level in metres during normal dry weather.	N
	OutletLevel_m	The surface level in metres of the bypass, or spillway, or other overflow outlet structure.	Y*
	DesignFlow_m3s	The maximum design flow of the feature in cubic metres per second	N
	HasSpillway	Whether the feature has a spillway	Y
	MaintenanceCycle_mnths	The minimum maintenance cycle in months (refer to specifications)	N

Denotes additional mandatory requirement for GRC

8.8 Supplementary

8.8.1 Point Feature / Polyline Feature / Polygon Feature

Asset Capture: Simple Point, Complex Polyline or Multipatch Area feature (depending on the feature type) representing objects or assets that add clarity or context to the strict ADAC features. Where applicable, please refer to the attached "Addendum to the ADAC Generic Guidelines" for direction regarding Supplementary features.

Spatial Relationship: Not applicable.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
PointFeature PolylineFeature PolygonFeature	Class	User specified class names may be written here to identify the feature type. Not to be used for features that appear elsewhere in the ADAC Model.	Y
	Note	General purpose descriptive note.	N
	TextValue	A collection of named attributes. This element must be present but may be empty. Attributes of supported types may occur in any number and any order, but application developers are encouraged to exercise consistency in the use of supplementary attributes. It is recommended that supplementary features given the same class are also given the same list of named attributes in the same order, so as to facilitate easier passage into receiving systems. Attribute names should be chosen with the requirements of receiving systems in mind.	Y
	IntegerValue		Y
	DecimalValue		Y*
	DateValue		N
	TimeValue		Y
	DateTimeValue		Y

Denotes additional mandatory requirement for GRC

8.9   Transport

8.9.1   Bridge Extent

Asset Capture: Multi-patch region/polygon feature representing the Bridge Extent. Bridge Extent describes the envelope or footprint for the whole structure and all of its parts

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

Positional Accuracy: The minimum accepted horizontal accuracy for Bridge Extent is ± 100mm.

Figure 27 – Examples of Bridges

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BridgeExtent	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	Name	Road name or nearest road where bridge resides, or the recognised name of the bridge.	N
	Use	Predominant use of bridge.	Y
	Type	Type of bridge construction.	Y
	CrossingType	The layout and configuration of this structure.	Y
	Spans	Number of spans.	Y
	MinimumClearance_m	Minimum clearance in metres.	N
	PredominantMaterial	Predominant Material of bridge.	Y
	DesignLoad	Design load of bridge as per AS5100.	N

* Denotes additional mandatory requirements for GRC

8.9.2   Bridge Deck

Asset Capture: Multi-patch region/polygon feature representing the bridge deck. Footprint of single deck unit between abutments and supports.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Bridge Decks is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BridgeDeck	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	Material	Material types for Bridge deck.	Y
	NomWidth_m	Nominal Width of deck in metres.	Y
	DeckLength_m	Length of Bridge deck between joints at abutments in metres.	Y

* Denotes additional mandatory requirements for GRC

8.9.3   Bridge Superstructure

Asset Capture: Multi-patch region/polygon feature representing the bridge superstructure. Represents a single superstructure between abutments and supports.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Bridge Superstructure is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BridgeSuperstructure	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	Material	Material types for the Superstructure.	Y

* Denotes an additional mandatory requirement for GRC

8.9.4   Bridge Abutment

Asset Capture: Multi-patch region/polygon feature representing the extent of one abutment for a bridge assembly. Represents the extent of one abutment for a bridge assembly.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Bridge Abutments is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BridgeAbutment	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	Material	The predominant material of the abutment.	Y

* Denotes additional mandatory requirements for GRC

8.9.5   Bridge Pier

Asset Capture: Multi-patch region/polygon feature representing the bridge pier. Represents a single supporting structure that supports deck spans.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Bridge Abutments is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BridgePier	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	Material	Predominant Pier material type.	Y

* Denotes additional mandatory requirements for GRC

8.9.6   Containment Class

Asset Capture: Containment Class of Parapet/Railing as per AS5100. Single line feature.

Spatial Relationship: Must be coincident to Bridge Deck.

Positional Accuracy: The minimum accepted horizontal accuracy is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ContainmentClass	BridgeID	Unique identifier, used to associate components of the same bridge assembly.	N
	ContainmentClass	Containment Class of Parapet/Railing as per AS5100.	N

* Denotes an additional mandatory requirement for GRC

8.9.7 Flush Point

Asset Capture: Simple point feature representing the outlet of Sub-soil drains into Drainage Pits/Maintenance Holes.

Spatial Relationship: Must be coincident to Subsoil Drain assets.

Positional Accuracy: The minimum accepted horizontal accuracy for Flush Points is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
FlushPoint	Function	The function of the flushing out point	Y

* Denotes additional mandatory requirement for GRC

8.9.8 Bus Stop

Asset Capture: Simple point feature representing the centre of the Bus Stop.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Bus Stops is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BusStop	BusStopID	Translink Bus Stop identification Number – if available	N
	AssetType	The type of Bus Stop asset (i.e., Bus Shelter, Bus Pullover Area, or Boarding Point (Hardstand))	Y*
	Material	The predominant material type for the asset	Y
	Length_m	The length of the Bus Stop in metres.	N
	Width_mm	The width of the Bus Stop in millimetres of the	N
	Area_m2	The hardstand area of the Bus Stop in square metres.	N
	RouteType	The type of route (e.g., school transport network, urban network, long distance haul, etc.)	Y
	DDACompliant	Is the Bus Stop DDA compliant?	Y
	Seat	Is there a seat at the Bus Stop? (Y/N)	N
	Shelter	Is there a shelter at the Bus Stop? (Y/N)	N
	Lighting	Is there lighting at the Bus Stop? (Y/N)	N
	HardStandType	The material type for the hard stand area	N
	WheelchairSymbol	Is there a wheelchair symbol at the Bus Stop? (Y/N)	N
	SignType	The type of sign located at the bus stop (e.g., J Pole, Blade)	N
	LineMarking	Is there line marking at the Bus Stop? (Y/N)	N
	KerbRamp	Is there a Kerb Ramp installed at the Bus Stop? (Y/N)	N
	TimetableCases	Are there timetable cases at the Bus Stop? (Y/N)	N
	TGSIBoardingPoint	Are there Tactile Ground Surface Indicators (TGSI) installed at the Bus Stop? (Y/N)	N
	NoOfBins	The number of bins installed at the Bus Stop	N
	NumberOfBicycleFittings	The number of bike racks/rails installed at the Bus Stop	N
	NumberOfTimetableCases	The number of timetable cases installed at the Bus Stop	N

Denotes an additional mandatory requirement for GRC

8.9.9   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.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Parking is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Parking	Name	Parking area name	Y
	NoOfCarparks	Number of individual vehicle spaces.	Y
	OnOffStreet	Value indicating whether the parking is an uninterrupted part of the road pavement, or a separate area with road access.	Y
	SurfaceType	SurfaceType	N
	SurfaceNomWidth_m	Surface Nominal Width in metres	N
	SurfaceThickness_mm	The Surface Thickness in millimetres.	N
	SurfaceArea_m2m	The Surface Area in square metres.	Y*
	PavementType	Pavement construction type	Y
	PavementGeoTextile	Pavement geotextile type.	N
	BaseLayerType	Construction type of the base layer if existing	Y
	BaseLayerDepth_mm	Base layer depth in millimetres – if existing	Y
	BaseLayerArea_m2	Pavement Area in square metres.	Y*
	BaseLayerWidth_m	Pavement Width in metres.	N
	BaseStabilisation	Base Layer stabilisation method – if stabilised	N
	SubBaseLayerType	Construction type of the sub-base layer if existing	Y
	SubBaseLayerDepth_mm	Sub-base layer depth in millimetres – if existing	Y
	SubBaseStabilisation	Sub- Base Layer stabilisation method – if stabilised	N
	SubBaseLayerArea_m2	Subbase area in in square metres.	N
	SubBaseLayerWidth_m2	Subbase width in metres	N
	LowerSubBaseLayerType	Construction type of the lower sub-base layer – if existing	Y
	LowerSubBaseLayerDepth_mm	Depth of lower sub-base layer – if existing	Y
	LowerSubBaseStabilisation	Lower Sub-base layer stabilisation in millimetres if existing	N
	FormationArea_m2	Formation Area in square metres.	Y*
	FormationWidth_m2	Formation Width in metres.	N
	SubgradeCBR	The California bearing ratio, used to indicate strength of the road subgrade underneath pavement.	Y*
	SubgradeStabilisation	Stabilisation	N

Denotes additional mandatory requirement for GRC

8.9.10   Path Structure

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

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

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

Positional Accuracy: The minimum accepted horizontal accuracy for Path Structures is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
PathStructure	Use	Intended traffic use of the structure.	Y
	Structure	Type of pathway structure.	Y
	SurfaceMaterial	Surface material of the structure.	Y
	SubStructureMaterial	Material of the sub structure.	Y
	Width_m	Nominal width of the pathway in metres.	Y
	Length_m	The length in metres of the asset	Y*
	Area_m2	Area in square metres	Y*
	NumberOfTreads	The number of step treads – if stairs exist	N

* Denotes additional mandatory requirement for GRC

8.9.11   Pathway

Asset Capture: Complex linear feature (read: 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.

If the pathway has a name, please specify in Notes field.

Please refer to the green and red dash/dot line in figure 29. The green represents an existing pathway asset whereas the red denotes a newly constructed section of Pathway.

Spatial Relationship: May be coincident to a Kerb Ramp point feature as well as changes in surface types or widths must be coincident points.

Positional Accuracy: The minimum accepted horizontal accuracy for Pathways is ± 0.5m.

Figure 28 – Examples of Pathway Assets

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Pathway	Use	Intended traffic use of the structure.	Y
	Structure	Type of pathway structure. A fixed value of In Ground is required for this sub type	Y
	SurfaceMaterial	Surface material of the structure.	Y
	Width_m	Nominal width of the pathway in metres.	Y
	Depth_mm	The nominal depth of the pathway material in millimetres.	Y
	Length_m	The length of the pathway in metres.	Y*
	Area_m2	The area of the pathway in square metres	N
	Position	Location of the pathway (i.e., road, park etc.)	N

* Denotes additional mandatory requirement for GRC

8.9.12   Pavement

Asset Capture: Multi-patch region/polygon feature representing the area of Pavement. Asset capture is based on physicality therefore separate regions/polygons are required if any part of the pavement profile changes i.e. Surface, Base, Sub-Base, Lower Sub-Base and/or Subgrade. Please refer to the solid blue transparent hatch in figure 30 for a typical representation of Pavement capture. Also the solid green transparent hatch in figure 33.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Pavements is ± 100mm.

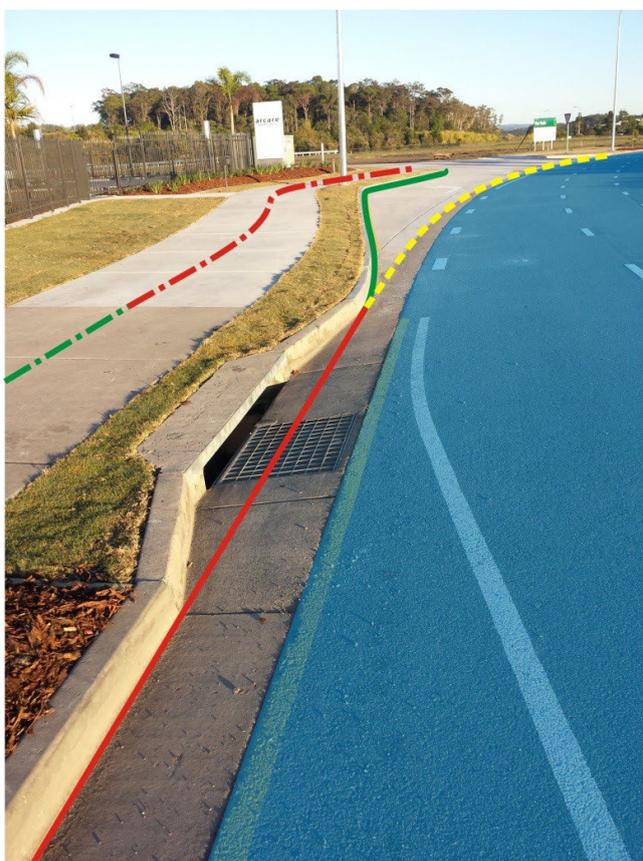*Figure 29 – Examples of Pavement Structure*

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Pavement	Name	The gazetted, or proposed, road name.	Y
	Number	The unique ID number assigned to the Road.	N
	SegmentNumber	The Segment ID number (based on the number of segments for a road)	N
	SegmentLength	The length in metres of the segment of road	N
	SegmentFunction	The type of segment (e.g., road segment, floodway segment, bridge segment etc)	N
	SegmentType	Sealed, unsealed, unformed track	N
	StartChainage	Point where segment starts (chainage in m)	N
	EndChainage	Point where segment ends (chainage in m)	N
	NoOfLanes	The number of lanes associated with the road segment	N
	SurfaceType	The surface type of the road or street if existing	Y
	SurfaceArea_sqm	The Area in square metres of Road Surface	Y*
	SurfaceThickness_mm	The surface thickness in millimetres	Y
	SurfaceNomWidth_m	The nominal width of the surface of the road or street as a decimal number in metres – if existing	Y
	PavementType	Pavement construction type	Y
	PavementGeoTextile	Pavement geotextile type. Road Pavement Geotextile Types As per MRS11-27 Table 3.	N
	Pavement Area	Pavement Area in square metres	N
	Pavement Width	Pavement Width in Metres	Y*
	BaseLayerType	Construction type of the Base Layer	Y
	BaseLayerDepth_mm	Base Layer depth exists in millimetres	Y
	BaseLayerStabilisation	Base layer stabilisation method – if stabilised	Y
	SubBaseLayerType	Construction type of the sub-base layer – if existing	Y
	SubBaseLayerDepth_mm	Sub-base Layer depth in millimetres – if existing	Y
	SubBaseLayerStabilisation	Sub-base layer stabilisation method – if stabilised	Y
	SubBaseLayerArea_m2	Subbase area in in square metres.	N
	SubBaseLayerWidth_m2	Subbase width in metres	N
	LowerSubBaseLayerType	Construction type of the Lower sub-base layer – if existing	Y
	LowerSubBaseLayerDepth_mm	Lower Subbase Layer depth exists in millimetres – if existing	Y
	LowerSubBaseStabilisation	Lower sub-base layer stabilisation method – if existing	Y
	PavementGeoTextile	Pavement geotextile type. Road Pavement Geotextile Types As per MRS11-27 Table 3.	N
	FormationArea_m2	Formation Area in square metres	N
	FormationWidth_m2	Formation Width in metres	Y*
	SubgradeCBR	The California bearing ratio, used to indicate strength of the road subgrade underneath pavement.	Y*
	SubgradeStabilisation	Subgrade stabilisation method.	N

Denotes additional mandatory requirement for GRC

8.9.13 Kerb Ramp

Asset Capture: Simple point feature representing a Kerb ramp. Typically captured in the centre
                        of Kerb Ramp where it transitions to a Kerb/Road.

Spatial Relationship: May be coincident with a Road Edge feature

Positional Accuracy: The minimum accepted horizontal accuracy for Kerb Ramps is ± 100mm.
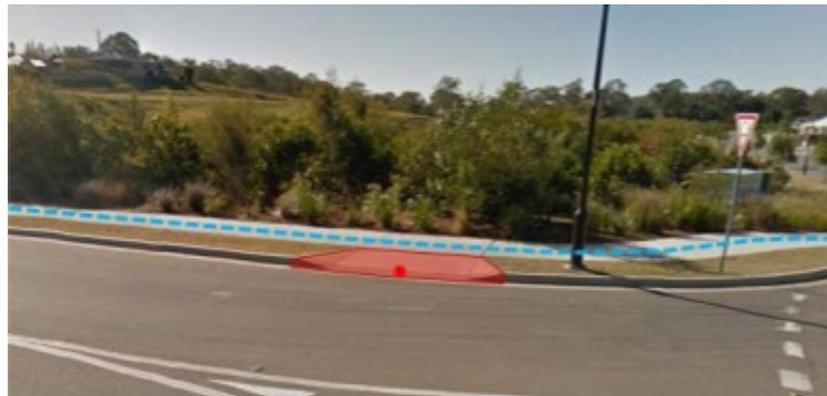

Figure 30 – Example of Kerb Ramp Asset

Figure 31 – Example of Kerb Ramp Structure

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
KerbRamp	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	Depth_mm	The nominal depth of the kerb ramp material in millimetres.	N
	Area_m2	The area of the Kerb Ramp Area in square metres.	N
	RampGrade	The gradient of the ramp	N

8.9.14 Road Edge

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves)
                        representing the lip of kerb. In case of inverts, edge of concrete furthest from
                        road centreline. Refer to figure 33. Kerb around Road Islands are to be
                        represented as a Road Edge feature.

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.

Positional Accuracy: The minimum accepted horizontal accuracy for Road Edges is ± 50mm.

Figure 32 – Example of Road Edge Structure

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
RoadEdge	Type	Road edge configuration	Y
	Material	Material of Road Edge.	Y
	Width_mm	Width in millimetres of the Edge feature.	Y
	Length_m	Length in metres of edge material.	Y*
	PavementExtension_mm	The pavement extension, in millimetres, behind the back of kerb.	Y

* Denotes additional mandatory requirement for GRC

8.9.15   Road Island

Asset Capture: Multi-patch region/polygon feature representing the area of Island/LATM bounded by the back of Kerb features. Asset capture is based on physicality therefore separate regions/polygons are required if the Type of Island or Infill changes. Please refer to the solid orange and green transparent hatches figure 34 for Road Island asset capture.

Spatial Relationship: Must be coincident to other regions representing road islands where there is a common boundary i.e. no slivers and/or overlaps. Must be coincident to any kerb (Road Edge) surrounding the Road Island.

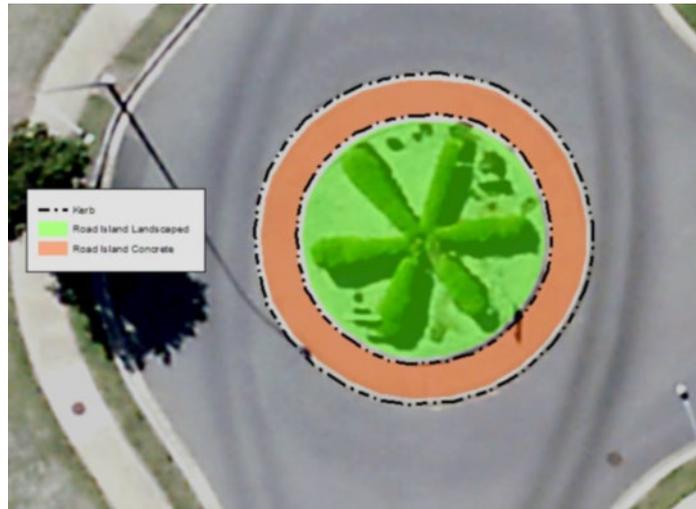Positional Accuracy: The minimum accepted horizontal accuracy for Road Islands is ± 50mm.

Figure 33 – Road Island Structure

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Road Island	Type	Type of Road Island	Y
	Use	Intended Traffic use of the structure	N
	Area_m2	The area, in square metres, of the infill.	Y
	InfillType	Type of Road Island Infill	Y
	Material	The material type for the surround	Y*
	OnOffStreet	Is the asset on-road or off-road	Y*
	Length_m	The length of the Road Island in metres	Y
	Width_m	The width of the Road Island in metres	Y
	Height_m	The height of the Road Island in metres	N

* Denotes additional mandatory requirement for GRC

8.9.16   Road Pathway

Asset Capture: Complex linear feature (read: polylines including curves but not Bezier curves) representing the centre longitudinal axis of a road pathway (on-road cycleway). Refer figure 36 – White and Green Dashed Lines. The structure and Surface Material are to be recorded for the different types of road pathways as defined below in figure 35.

Spatial Relationship: Not Applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Road Pathways is ± 50mm.

Structure = Bicycle Awareness Zone
Surface Material = Yellow Bicycle Symbol

Structure = Exclusive Bicycle Lane
Surface Material = White Bicycle Symbol

Structure = Exclusive Green Bicycle Lane
Surface Material = Green Lane

Figure 34- Structure and Surface Material of Roadways

Figure 35 - Axis of a Road Pathway

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
RoadPathway	Use	Intended traffic use of the structure. A fixed value of Cycle Way is applied to this sub type.	N
	Structure	Type of pathway structure. A fixed value of On Road is required for this sub type.	N
	SurfaceMaterial	Surface material of the structure. A fixed value of Road Pavement is applied to this sub type.	N
	Width_m	Nominal width of the marked pathway in metres.	N
	Length_m	The length of the marked pathway in metres.	N
	Area_m2	The area of the Marked Pathway in square metres.	N

* Denotes additional mandatory requirement for GRC

8.9.17   Road Safety Barrier

Asset Capture: Complex linear feature (polylines including curves but not bézier curves) representing a road safety barrier asset (guardrail).

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Road Safety Barriers is ± 200mm.

Figure 36 – Road Safety Barriers

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
RoadSafetyBarrier	Type	The type of road safety barrier employed.	Y
	LeadingEndTreatment	The type of Leading End treatment.	Y
	TrailingEndTreatment	The type of Trailing End treatment.	Y
	StandardHeight_m	Is barrier height standard?	N
	Height_m	Nominal height of the barrier in metres.	N
	Length_m	Nominal length of the barrier in metres including terminals.	Y
	MotorcyclistProtectionType	The type of motorcyclist protection rail.	Y
	PedestrianProtectionSheeting	Has pedestrian protection sheeting been installed?	N
	BridgeTransition	Is this a bridge transition?	N
	StandardPostSpacing	Is the post spacing standard?	N
	PostSpacing_m	Spacing of posts in metres.	N
	PostType	The type of post installed with road safety barrier.	N
	RailType	The type of rail installed with road safety barrier.	N
	HorizontalAlignment	Horizontal alignment of road safety barrier.	N
	NumberOfBollards	Number of bollards.	N

* Denotes additional mandatory requirement for GRC

8.9.18   Subsoil Drain

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

Spatial Relationship: Must be coincident to Flush points.

Positional Accuracy: The minimum accepted horizontal accuracy for Subsoil Drains is ± 200mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
SubSoilDrain	Use	The use (orientation) of the drain.	Y
	Type	The type (configuration) of the drain.	Y
	Length_m	The length in metres of the drain.	Y*

* Denotes additional mandatory requirement for GRC

8.10 Water Supply Assets

8.10.1 Fittings

Asset Capture: Single point feature representing the centre point of the fitting. Please refer to the yellow circles in figure 38 for representations of a Tee and Tapping Band connected to reticulation mains (redlines) and a service pipe (green line). For a taper, record the larger diameter in the BodySize_mm attribute and the smaller diameter in the BranchSize_mm

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

Positional Accuracy: The minimum accepted horizontal accuracy for Fittings is ± 100mm.
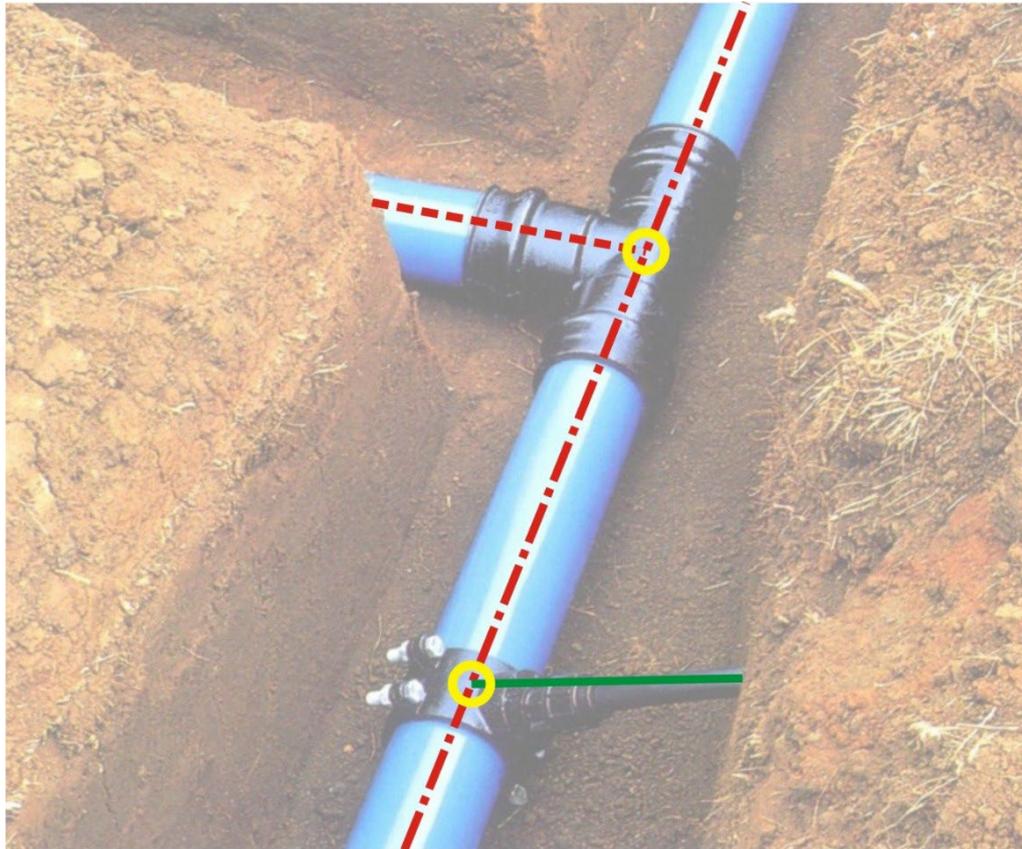
Figure 37 – Fittings Components

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Fitting	Type	The fitting types.	Y
	Material	The fitting material.	Y
	Lining	The internal corrosion protection method employed on the fitting material.	N
	Protection	The external corrosion protection method employed on the fitting material.	N
	BodySize_mm	The nominal diameter of the largest pipe entering the fitting in millimetres.	Y
	BranchSize_mm	The nominal diameter of the smallest pipe entering the fitting in millimetres.	Y
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	WaterQuality	The quality of the water being carried by the network to which the fitting is a part	N

* Denotes additional mandatory requirement for GRC

8.10.2 Hydrants

Asset Capture: Single point feature representing the centre of the vertical hydrant branch.

Spatial Relationship: Must be coincident to a pipe asset.

Positional Accuracy: The minimum accepted horizontal accuracy for Hydrants is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Hydrant	Use	The purpose of the hydrant in the network.	Y
	Diameter_mm	The nominal bore size of the hydrant.	Y
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	WaterQuality	The quality of the water being delivered through the hydrant.	N

* Denotes additional mandatory requirement for GRC

8.10.3   Irrigation Fittings

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

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

Positional Accuracy: The minimum accepted horizontal accuracy for Irrigation Fittings is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
IrrigationFitting	Type	The fitting types.	N
	BelowGround	Is the system below ground? (Y/N)	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	ChannelName	The name assigned to any irrigation channel	N

8.10.4   Maintenance Holes (Pits)

Asset Capture: Single point feature located on the centre of the chamber on the top surface. If required to capture the polygon feature, please utilise the Supplementary Polygon feature (refer to Supplementary Features above). The Structure ID as shown in the design drawings must be recorded in the ADACID 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 varies over the depth of the structure, take the largest.

Spatial Relationship: Not applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Maintenance Holes is ± 100mm.

The minimum accepted vertical accuracy for v Maintenance Holes is ± 20mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
MaintenanceHole	Use	Purpose of Water maintenance hole.	Y
	WaterQuality	The quality of water in the maintenance hole	N
	Length_mm	Nominal length of the chamber in millimetres – Rectangular only	N
	Width_mm	Nominal width of the chamber in millimetres – Rectangular only	N
	Diameter_mm	Nominal diameter for circular chamber in millimetres.	N
	SurfaceLevel_m	The height of the top surface of the lid, hatch, rim or roof in metres.	N
	InvertLevel_m	The height of the top surface of interior floor/bottom in metres.	N
	FloorConstruction	Method of chamber construction.	N
	FloorMaterial	Material type for chamber floor construction.	N
	WallConstruction	Method of chamber wall construction.	N
	WallMaterial	Material type for chamber wall construction.	N
	RoofMaterial	Material type for chamber roof construction.	N
	LidMaterial	Chamber lid configuration and material.	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

Denotes additional mandatory requirement for GRC

8.10.5   Meters

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

Spatial Relationship: Not applicable

Positional Accuracy: The minimum accepted horizontal accuracy for Meters is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Meter	SerialNumber	The manufacturers serial number, as stamped or fixed on the meter.	Y
	Type	Configuration of the meter.	N
	Diameter_mm	The nominal bore diameter of the meter in millimetres.	N
	Dials	The number of dials on the reading face.	N
	Type	The type of water meter asset (i.e., Water meter, Flow Meter (Network), Volumetric Meter, etc.)	Y*
	Manufacturer	The Manufacturer of the unit	Y
	ModelNumber	The standard code, model number or part number for the unit	Y
	InitialReading	The reading on the meter face at the time of installation.	N
	PrivateBooster	True, Meter is associated with a private pressure boosting system.	N
	OffsetSide	Is the offset from the left or the right-side boundary when looking from the road.	N
	Offset_m	The distance in metres to measure along the frontage from the indicated side.	N
	InstallationDate	Installation Date of the meter. ISO 8601 is the accepted format.	Y
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	WaterQuality	The quality of the water being metered.	N

* Denotes additional mandatory requirement for GRC

8.10.6   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. Please refer to the red and green polylines in figure 38. The red lines represent reticulation pipes whereas the green line represents a service pipe. Note: the dash/dot polyline is not broken at the fittings as the physical specification of the pipe does not change.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Pipes is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Pipe	Use	The purpose of this feature in the network.	Y
	WaterQuality	The quality of the water being carried by the pipe.	Y
	Alignment_m	Average Offset from cadastral boundary to the main in metres.	N
	Diameter_mm	Nominal diameter of the pipe in millimetres.	Y
	Material	The pipe material.	Y
	Class	The pipe class as specified by the manufacture.	Y
	Lining	The internal corrosion protection method employed on the pipe material.	N
	Protection	The external corrosion protection method employed on the pipe material.	N
	JointType	Pipe jointing method employed.	Y
	Depth_m	The nominal depth in metres to the top of the pipe.	N
	Embedment	Embedment types.	N
	Length_m	Material length of the pipe in metres.	Y
	Water System	The water pressure zone for each asset	N

Denotes additional mandatory requirement for GRC

8.10.7   Reservoir Tank

Asset Capture: Simple point feature representing the centre of a Reservoir tank at invert level.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Pipes is ± 1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ReservoirTank	Class	The Class is to be populated with "Reservoir Tank".	N
	WaterCategory	The type of the water in the network.	N
	Material	The material that the reservoir tank is made from.	N
	TankLining	The material of the tank lining.	N
	Diameter_mm	Internal Diameter of the reservoir in millimetres.	N
	Volume_ML	The effective volume of water the reservoir is sized for in Megalitres.	N
	HeightAboveGround	The height above ground in metres.	N
	TopWaterLevel	In metres AHD.	N
	BottomWaterLevel	In metres AHD.	N
	FloorLevel	In metres AHD.	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

8.10.8   Service Fittings

Asset Capture: Single point feature representing the centre point of the fitting. Includes Dog Bowls, Drinking Fountain Decorative, Filling Station, Showers, Tap, etc.

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

Positional Accuracy: The minimum accepted horizontal accuracy for Reservoirs is ± 100mm.

Figure 38 – Example of Drinking Fountain with Dog Bowl and a Tap in a Park

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ServiceFitting	Type	The fitting types.	Y
	BelowGround	Is the system below ground? (Y/N)	N
	WaterSaver	Does the fitting employ waste minimisation technology (Y/N)	Y
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	WaterQuality	The quality of the water being carried by the network to which the fitting is a part	N

* Denotes additional mandatory requirement for GRC

8.10.9   Storage Tanks

Asset Capture: Single point feature located on the centre of the chamber at invert level. If required to capture the polygon feature, please utilise the Supplementary Polygon feature (refer to Supplementary Features Section 8.8 above)

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

Positional Accuracy: The minimum accepted horizontal accuracy for Storage Tanks is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
StorageTank	Material	The material that the storage tank is made from.	Y
	LocationID	Smart ID that locates the asset within the facility (typically a Pump Station or Treatment Facility)	N
	Type	The type of Storage Structure (e.g., Pump Well, Bioreactor, Water Storage Tank/Reservoir etc.)	Y*
	Source	The source of water in the tank.	Y
	Diameter_m	Nominal diameter of the asset in metres – Circular only	N
	Length_m	The length of a rectangular storage structure in metres.	N
	Volume_m3	The effective volume in cubic metres.	Y
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N

* Denotes additional mandatory requirement for GRC

8.10.10 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.

Positional Accuracy: The minimum accepted horizontal accuracy for Valves is ± 100mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Valve	Use	The purpose of the valve in the network.	Y
	Type	The type of valve	Y
	Diameter_mm	The nominal bore diameter of the valve in millimetres.	Y
	Manufacturer	The Manufacturer of the unit	N
	ModelNumber	The standard code, model number or part number for the unit	N
	Rotation	Rotation angle (Cartesian - anti-clockwise 0 degrees = East)	N
	WaterQuality	The quality of the water in the network the valve is part of.	N

Denotes additional mandatory requirement for GRC

8.11 Site Improvements

8.11.1 Bores and Wells

Asset Capture: Simple point feature representing the centre of a Bores or Wells System.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Bores and Wells is ± 0.5m

Non-ADAC Element	Attribute	Attribute Description	Mandatory Y/N
BoresandWells	Type	The type of asset (e.g., bore, bore hole)	Y
	Use	The purpose of the bore/well (e.g., water extraction, groundwater monitoring, gas extraction)	Y
	Depth	The nominal depth of the bore/well in millimetres	Y
	Diameter	The diameter in millimetres of the asset	Y
	Material	The material for any casing within the bore/well	Y
	Telemetry	Does the station have telemetry fitted? Y/N	Y
	Registered Bore Number	The number provided by Department of Regional Development Manufacturing and Water	Y

Denotes additional mandatory requirement for GRC

8.11.2 Communication Cabinet

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Communication Cabinet	Mounting Type	The mounting type of the communication cabinet	Y
	Cabinet Size	The size of the cabinet (Usable height)	Y
	Number Of Rack Units	The number of Rack Units	Y
	Fibre Access Node	Is there a Fibre Access Node (Y or N)	Y

8.11.3 Control Systems

Asset Capture: Simple point feature representing the centre of a Control System.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Control Systems is ± 0.5m

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
ControlSystems	Type	The type of instrumentation asset (e.g., Indicator, Transmitter, Switch etc.)	Y*
	Asset Sub Type	The relevant component of an asset type (e.g., Scada includes antenna, RTU, VSD, PLC, etc.)	Y*
	Product	The type of product that the instrumentation relates to (i.e., raw sewage, recycled water, etc.)	Y*
	Quantity	The quantity of items included in the asset record	N
	SerialNumber	The serial number as provided by the manufacturer	Y*
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.11.4 Fire Management

Asset Capture: Complex linear feature (polylines including curves but not Bezier curves) representing a fire management.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Fire Management is ± 1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
FireManagement	Type	Fire Management feature type (e.g. fire trail, fire control line)	Y*
	TrailAccessType	The Trail Access Type	N
	SurfaceMaterial	Surface Material of the fire trail or control line.	Y*
	Length_m	The length of the Fire Management in metres.	Y*

Denotes additional mandatory requirement for GRC

8.11.5 Instrumentation

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

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Instrumentations is ± 200mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Instrumentation	AnalyserType	The type of instrumentation asset (e.g., Indicator, Transmitter, Switch etc.)	Y*
	FlameExplosionRating	Flame / Explosion Rating as per Aus Standard	N
	Communication	Communication	N
	MeasurementRange	Measurement Range	N
	InstrumentationType	Instrumentation Type	Y
	Control	Instrumentation Control type	N
	CableLength_m	Cable Length in metres	N
	ProbeLength_mm	Probe Length in millimetres	N
	HazardousZone	Hazardous Zone	N
	ReadingRange	Reading Range	N
	Diameter_mm	Diameter in millimetres.	N
	ExCertification	Ex Certification	N
	IPRating	IP Rating	N
	HACCPInstrument	HACCP Instrument (Y/N)	N
	Quantity	The quantity of items included in the asset record	N

* Denotes additional mandatory requirement for GRC

8.11.6 Land Stabilisation

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a land stabilisation.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Land Stabilisation is ± 1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
LandStabilisation	Material	The material used for Land Stabilisation.	Y*
	NumberofAnchor	Number of anchors	N
	Area_m2	The area of Land Stabilised in square metres.	Y*

* Denotes additional mandatory requirement for GRC

8.11.7 Light

Asset Capture: Simple point feature representing the centre of a light.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Lights is ± 200mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Light	Type	The type of lighting asset (i.e., street, path, sports, etc.)	Y*
	EnergySource	The type of Power Source (e.g., Mains, Solar)	Y*
	PoleTypeBase	The type of pole that the light fitting(s) attached to (i.e. bollard, GM Poles etc.)	Y*
	PoleHeight_m	The height in metres of the pole asset	N
	PoleDiameter_mm	The diameter in millimetres of the pole asset	N
	OutreachLength_m	The length of the pole extension arm/outreach, in metres	N
	LampType	The type of lamps installed in the light (i.e., fluorescent, LED etc.)	N
	Quantity	Number of lights on a light pole	N
	Lux	Unit of measurement of light level intensity	N
	WildlifeSensitiveArea	Is the asset located in a Wildlife Sensitive Area? (Y/N)	Y*

* Denotes additional mandatory requirement for GRC

8.11.8   Monitoring Station

Asset Capture: Simple point feature representing the centre of a monitoring station.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Monitoring Station is ± 1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
MonitoringStation	StationType	The function(s) of the monitoring station.	Y*
	Telemetry	Does the station have telemetry fitted?	Y*
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.11.9   Pipework Other

Asset Capture: Complex linear feature (polylines including curves but not Bezier curves) representing a pipework other. Represents Pipes associated with Air, Gas, Leachate, Sand Backpass and minor sewer / water pipes that do not form part of the water/sewer network.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Pipework Other is ± 50mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Pipework Other	Use	The use of Pipe.	Y*
	Material	The Pipe material type	Y*
	Lining	Internal corrosion protection method employed on the pipe material	N
	Diameter_mm	The nominal diameter of the pipe in millimetres.	Y*
	Length_m	The length of the pipe in metres.	Y*

* Denotes additional mandatory requirement for GRC

8.11.10 Platform

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a platform.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Platform is ± 100mm.

Figure 39 – Example of Platform

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Platform	Function	The primary purpose of the Platform.	Y*
	DeckMaterial	Predominant material of the platform deck.	Y*
	SubstructureMaterial	Predominant material of the platform substructure.	Y
	MaximumHeight_m	The maximum distance between the deck and the ground in metres.	N
	Area_m2	Area in square metres.	N
	HandrailType	NA if no handrail	N
	DeckReducedLevel	Level in metres AHD.	N
	DesignLoad	Design load of platform (where relevant to bridge as per AS5100)	Y

* Denotes additional mandatory requirement for GRC

8.11.11 Prepared Surface

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a prepared surface.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Prepared Surfaces is ± 200mm.

Figure 40 – Example of Prepared Surface

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
PreparedSurface	Function	The purpose of the Prepared Surface.	Y*
	Material	The material of the prepared surface	Y*
	Length_m	Length of the surface in metres.	N
	Width_m	Width of the surface in metres	N
	Area_m2	The area of the Surface in square metres.	Y*

* Denotes additional mandatory requirement for GRC

8.11.12 Pump

Asset Capture: Simple point feature representing the centre of a pump.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Pumps is ± 200mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Pump	SerialNumber	The serial number as provided by the manufacturer - it defines size of motor, diameter of impellers and the materials of which it is constructed	Y*
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*
	PumpType	The type of Pump.	Y*
	PowerRating_kW	The Power rating of the Pump in Kilowatts.	Y*
	WaterQuality	The quality of the water being delivered through the pipe.	N
	YearOfManufacture	The calendar year in which a unit was manufactured	N
	PumpWeight	The weight of the pump	N
	GuideRailType	The type of guide rail system fitted for removing pump from a pit	N
	HeadDuty_m	The height to which a pump can raise product (water, sewage etc) straight up	N
	DesignedFlowRate_L min	The operating condition that the pump is designed to operate at most of the time in Litres per minute.	N
	PumpSpeed	Is the pump Fixed speed or Variable speed?	N
	VSD	Is there a Variable Speed Drive (VSD) fitted to control of the pump motor speed (Y/N)	N
	MotorPole	The number of poles of the motor	N
	DischargePipeSize	The diameter, in millimetres, of the pump discharge pipe	N
	DischargePipeLength	The length, in metres, of the pump discharge pipe	N
	ImpellorConfig	The configuration of the impellor (i.e., Open or Closed Vane)	N
	ImpellorMaterial	The material type for the impellor	N
	ImpellorDiameter_m m	The diameter of the impellor, in millimetres	N
	EngineNumber	The engine number as provided by the manufacturer	N
	NumberOfCylinders	The number of cylinders in the pump	N
	FuelTankVolume_L	The volume, in litres, of the pump fuel tank (where applicable)	N
	PumpVoltage	The operating voltage required for optimal performance	N
	Frequency_Hz	The frequency of the pump motor	N
	MotorRatingHigh_k W	The maximum rating for the motor	N
	MotorRatingLow_k W	The minimum rating for the motor	N
	LoadCurrentHigh_A	The maximum current drawn while operating at full load and rated voltage	N
	LoadCurrentLow_A	The minimum current drawn while operating at full load and rated voltage	N
	RunCurrentHigh_A	The maximum current drawn to run freely with no-load after starting up	N
	RunCurrentLow_A	The minimum current drawn to run freely with no-load after starting up	N
	SpeedHigh_RPM	The maximum drive speed of the pump drive shaft	N

	SpeedLow_RPM	The minimum drive speed of the pump drive shaft	N
	FlangeMaterial	The material type for the flange	N
	FlangeSize_mm	The size in millimetres of the flange	N

Denotes additional mandatory requirement for GRC

8.11.13 Solar Array

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a solar array.

Spatial Relationship: Not Applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Solar Array is ± 1m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
SolarArray	Panels	Number of Panel connected together	Y*
	Watts	The maximum power the panel delivers in Watts.	Y*
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.11.14 Swimming Pool

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a swimming pool.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Swimming Pools is ± 0.5m.

Figure 41 – Examples of Swimming Pools

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
SwimmingPool	Type	Type of the Swimming Pool.	Y*
	IndoorOutdoor	Confirm the pool is indoor or outdoor.	Y*
	Material	The type of material the Pool is made of.	Y*
	BoomType	Boom Type of the Swimming pool.	Y*
	PoolFinish	The finish of the Swimming Pool	Y*
	Length_m	The length of the Swimming Pool in metres.	Y
	Width_m	The width of the Swimming Pool in metres.	Y
	MinDepth_m	The minimum depth of the swimming pool in metres.	N
	Volume_m3	The volume of the swimming pool in cubic metres.	Y*

Denotes additional mandatory requirement for GRC

8.11.15 Diving Structure

Asset Capture: Simple point feature representing the centre of a diving structure.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Diving Structures is ± 0.5m.

Figure 42 – Example of Diving Structure

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
DivingStructure	StructureType	The type of the diving structure.	Y*
	StructureMaterial	The predominant material of the diving structure.	Y*

Denotes additional mandatory requirement for GRC

8.11.16 Traffic Signal Controller Box

Asset Capture: Simple point feature representing the centre of a Traffic Signal Controller Box.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Traffic Signal Controller Boxes is ± 200mm.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
TrafficSignalController Box	Type	The Traffic Signal Controller Box Type.	Y*
	IntersectionNumber	Intersection Number	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.11.17 Traffic Signal Pole

Asset Capture: Simple point feature representing the centre of a Traffic Signal Pole.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Traffic Signal Poles is ± 0.5m.

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
TrafficSignalPole	Type	The Traffic Signal Pole Type.	Y*
	SideOfRoad	Side of Road	N
	NumberOfAudioTactileButtons	Number of Audio Tactile Buttons.	N
	NumberOfCallRecordsButtons	Number of Call Records Buttons	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

Denotes additional mandatory requirement for GRC

8.11.18 Traffic Signal Lantern

Asset Capture: Simple point feature representing the centre of a Traffic Signal Lantern.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Traffic Signal Lantern is ± 0.5m.

Figure 43 - Example of Traffic Signal Lantern

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
TrafficSignalLantern	Diameter_mm	The diameter of the bulb in millimetres.	N
	Type	The type of Lantern configuration.	N
	BulbType	The type of Bulb.	N
	IntersectionNumber	Intersection Number	N
	Manufacturer	The Manufacturer of the unit	Y*
	ModelNumber	The standard code, model number or part number for the unit	Y*

* Denotes additional mandatory requirement for GRC

8.11.19 Vehicle Access

Asset Capture: Multi-patched area feature (polygon) representing the footprint of a vehicle access.

Does not include Fire Trails (these are captured under "Fire Management")

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Vehicle Access is ± 1m.

Figure 44 – Example of Vehicle Access

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
DrivewayStructure	Type	The type of Vehicle Access.	Y*
	Material	The material predominantly used in the Vehicle Access.	Y*
	Area_m2	The area in square metres for the vehicle access.	Y*

* Denotes additional mandatory requirement for GRC

8.11.20 Weighbridge

Asset Capture: Single-patched area feature representing the footprint of a weighbridge.

Spatial Relationship: Not applicable.

Positional Accuracy: The minimum accepted horizontal accuracy for Weighbridge is ± 1m.

Figure 45 – Example of Weighbridge

ADAC Element	Attribute	Attribute Description	Mandatory Y/N
Weighbridge	Material	The material predominantly used for the weighbridge.	Y*
	Length_mm	The length in millimetres of the asset	Y
	Width_mm	The width in millimetres of the asset	Y
	DesignLoad	The maximum load rating for the structure in tonnes	Y

* Denotes additional mandatory requirement for GRC

9 APPENDIX A: PHOTO REQUIREMENTS

9.1 Definitions

Mandatory: A photograph of the asset must be supplied as part of asset handover.

Desirable: If a photograph was taken of the asset during construction, then it should be included as part of asset handover, however there is no requirement to take a photo specifically for the purposes of asset handover.

Not Required: There is no requirement to take photographs of assets as part of asset handover.

Stock Photos: Stock photos are those where a commonly used fitting such as a light fitting, water valve, maintenance hole, etc. is installed within a location or network such as a park, sewer or water network, and location surrounds are difficult to capture across the asset type.

9.2 Requirement Matrix

ADAC Element	Asset Type	Photo Requirement	Stock Photo allowed?
Site Improvement	Activity Area	Desirable	No
	Animal Agility Equipment	Mandatory	Yes
	Barbeque	Mandatory	No
	Barrier Continuous	Mandatory	No
	Barrier Point	Mandatory	No
	Bicycle Fitting	Mandatory	No
	Boating Facility	Mandatory	No
	Building	Mandatory	No
	Cabling Pit	Mandatory	No
	Communication Cabinet	Mandatory	No
	Data Cabling	No	No
	Diving Structure	Mandatory	No
	Dog Bag Dispenser	Mandatory	Yes
	Drinking Fountain	Mandatory	No
	Electrical / Communication Conduit	No	No
	Electrical / Communication Fitting	Mandatory	No
	Electrical Meter	No	No
	Fish Cleaning Station	Mandatory	No
	Fire Management	No	No
	Fitness Equipment	Mandatory	Yes
	Grease Trap	No	No
	Irrigation System	Desirable	No
	Land Stabilisation	Desirable	No
	Landscape Area	Desirable	No
	Light	Mandatory	Yes
	Pipework Other	Desirable	No
	Planter Box	Mandatory	No
	Platform	Mandatory	No
	Playing Surface	Mandatory	No
	Play Equipment	Mandatory	No
	Pole	Mandatory	No
	Pool Filtration	Mandatory	N/A
	Pool Heating	Mandatory	N/A
	Pool Shell	Mandatory	No

	Prepared Surface	Mandatory	No
	Pump	Desirable	Yes
	Retaining Wall	Mandatory	No
	Scoreboard	Mandatory	No
	Scour Protection	Mandatory	No
	Seat	Mandatory	No
	Shelter	Mandatory	No
	Shower	Mandatory	No
	Sign	Mandatory	Yes
	Soft fall	Mandatory	No
	Solar Array	Desirable	No
	Spectator Seating	Mandatory	No
	Sports Equipment	Mandatory	No
	Sump	Desirable	No
	Switchboard	Mandatory	No
	Table	Mandatory	No
	Storage Tank	Mandatory	No
	Tap	Desirable	Yes
	Tree Area	No	N/A
	Waste Collection Point	Mandatory	No
	Water Feature	Mandatory	No
	Weighbridge	Mandatory	No
	Wheel Wash	Desirable	No
	Detention Basin	Desirable	No
Stormwater	Drainage Pipe	No	N/A
	Drainage Pit	No	N/A
	End Structures	Desirable	Yes
	Fittings	No	N/A
	Flood Monitoring Station	Mandatory	No
	GPT Complex	Mandatory	No
	GPT Simple	Mandatory	No
	Inlet Trench	Desirable	No
	Non GPT Simple	Mandatory	No
	Scour Area	Desirable	No
	Surface Drains	Desirable	No
	Water Body	Mandatory	No
	Weirs	Mandatory	No
	WSUD Area	Mandatory	No
	Road Segment	No	N/A
Transport Assets	Surface	No	N/A
	Pavement	No	N/A
	Parking Areas	Mandatory	No
	Kerb and Channel	Desirable	Yes
	Road Islands	Mandatory	No
	Bridges	Mandatory	No
	Kerb Ramps	Desirable	Yes
	Sub Soil Drains	No	N/A
	Flush Points	No	N/A
	Crash Barrier	Mandatory	No
	Vehicle Access	Mandatory	N/A
	Traffic Signal Controller Box	Mandatory	No
	Traffic Signal Pole	Mandatory	No
	Traffic Signal Lantern	Mandatory	No

	Major Culvert	Mandatory	No
	Path Structure	Mandatory	No
	Pathway	Mandatory	No
	Road Pathway	Mandatory	N/A
	Water Pipe	Desirable	Yes
Water Supply	Water Valve	Desirable	Yes
	Hydrant	Desirable	Yes
	Meter	Desirable	Yes
	Water Fitting	Desirable	Yes
	Water Maintenance Hole	Desirable	Yes
	Reservoir Tank	Desirable	Yes
	Water Service Connection	Desirable	No
	Water Pump Station	Desirable	No
	Pipes Non-Pressure	Desirable	Yes
	Pipes Pressure	Desirable	Yes
	Sewer Valve	Desirable	Yes
Sewer	Sewer Fittings	Desirable	Yes
	Sewer Connections	Desirable	Yes
	Sewer Maintenance Hole	Desirable	Yes
	Sewer Meter	Desirable	Yes
	Sewer Well	Desirable	Yes
	Sewer Pump Station	Desirable	Yes
	Treatment Plant	Desirable	No
	Treatment Plant Components	Desirable	No
	Cadastral Connection	Not Required	N/A
Cadastre	Chainage Line	Not Required	N/A
	Easement	Not Required	N/A
	Lot Parcels	Not Required	N/A
	Road Reserve	Not Required	N/A
	Survey Mark	Not Required	N/A
	Water Course Reserve	Not Required	N/A
	Stage Boundaries	Not Required	N/A
Supplementary	Contour	Not Required	N/A
Surface	Spot Heights	Not Required	N/A

10   APPENDIX B – EXAMPLES OFF AS CONSTRUCTED DRAWINGS
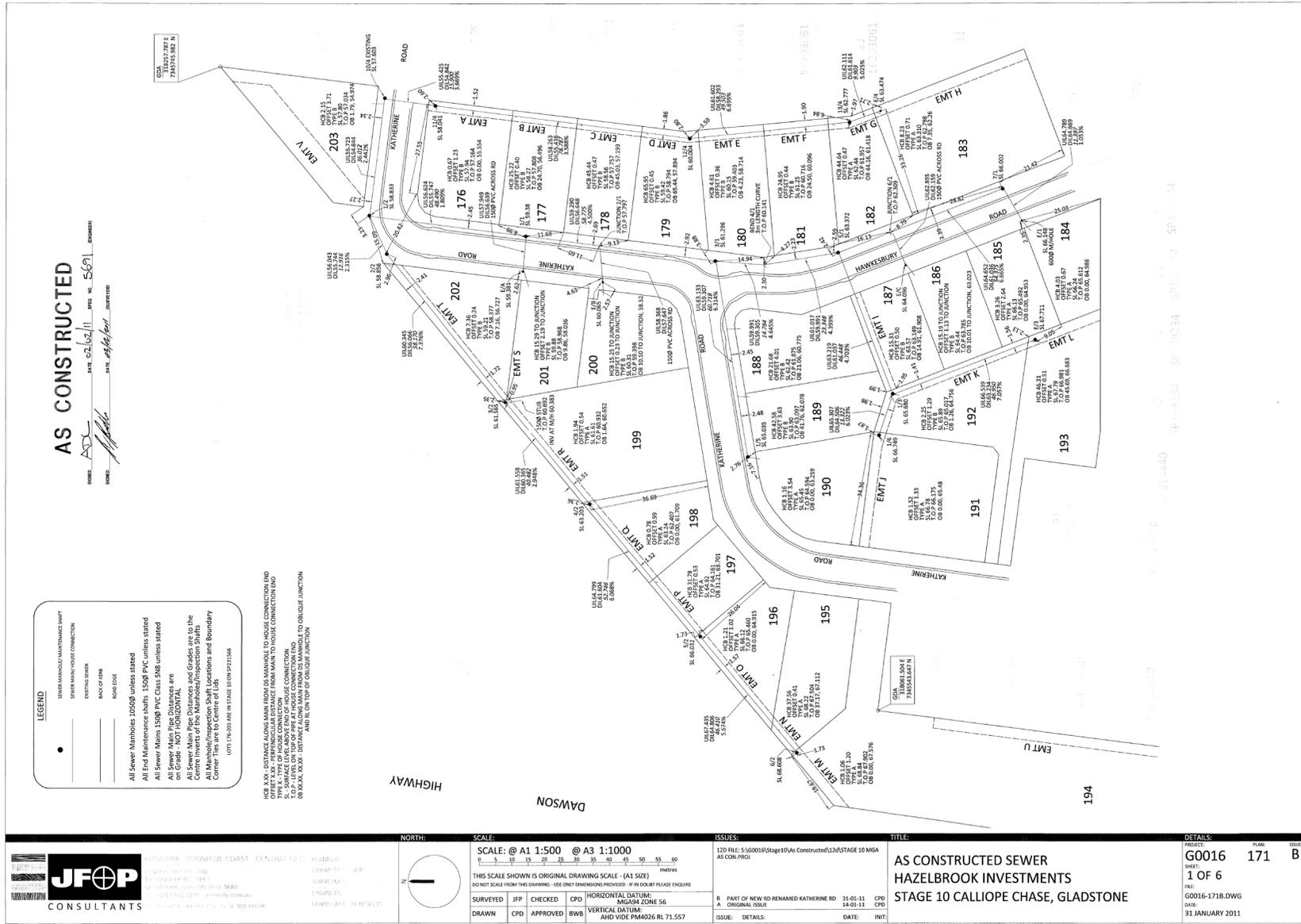
Figure 46 – Example of As Constructed of Sewer Layout

Figure 47- Sample Drawing - As Constructed Sewer Mains Layout

Figure 48 - Example of As Constructed Water Layout

Figure 49- Sample Drawing -As Constructed Water Supply Layout
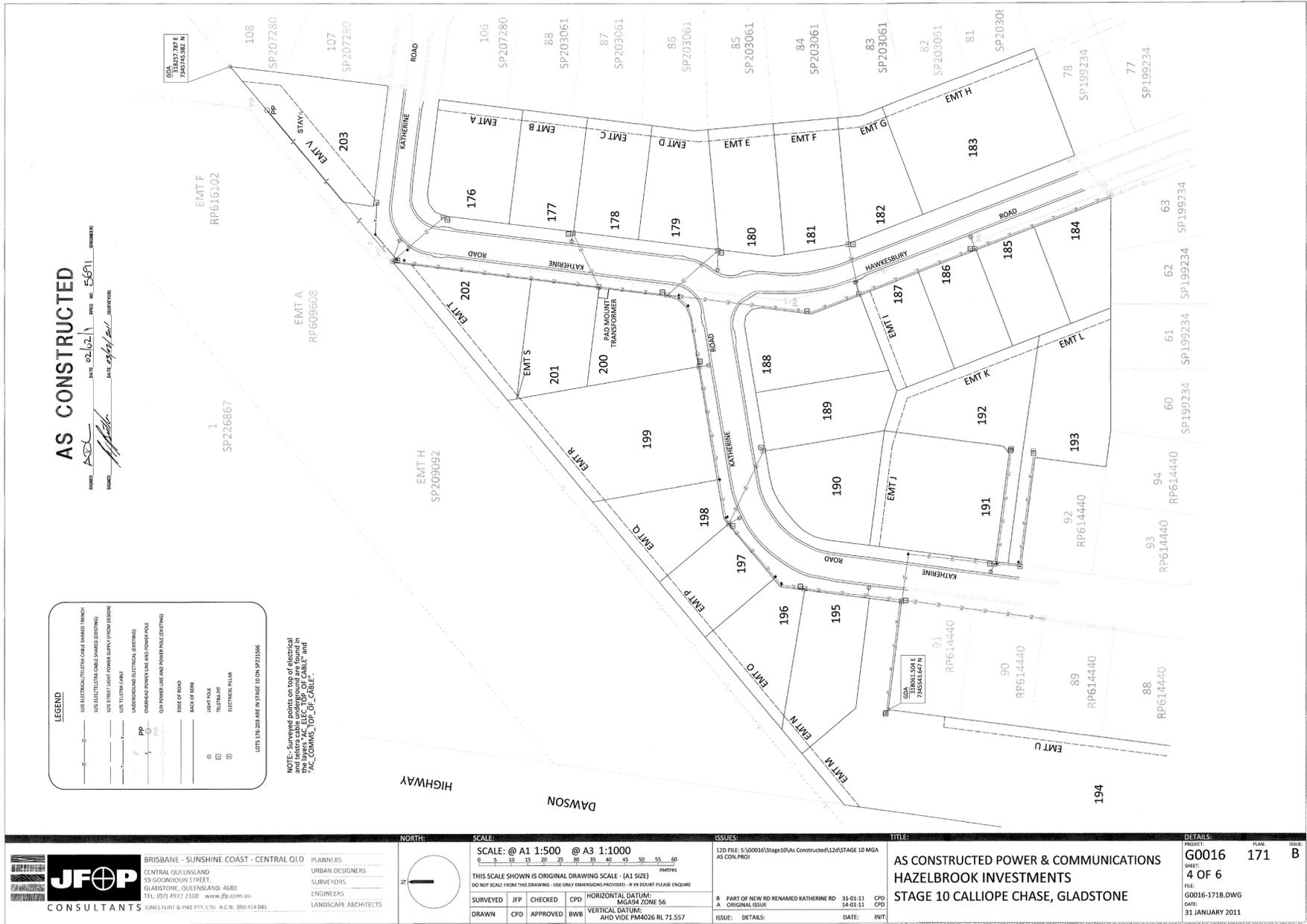
Figure 50 - Example of As Constructed Communications Layout

Figure 51- Sample Drawing - As Constructed Communications Layout
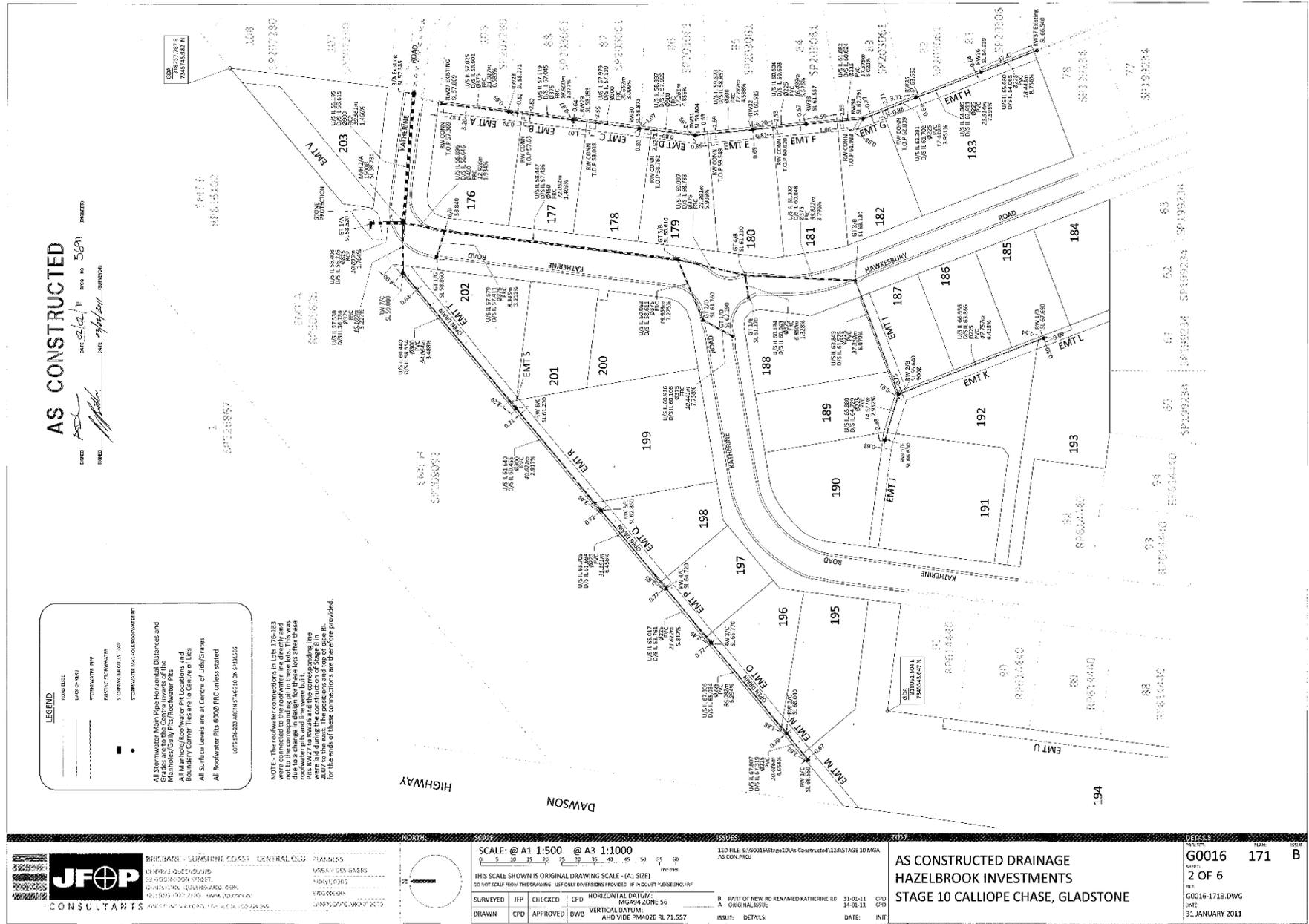
Figure 52 - Example of As Constructed Stormwater - Roads Drainage Layout
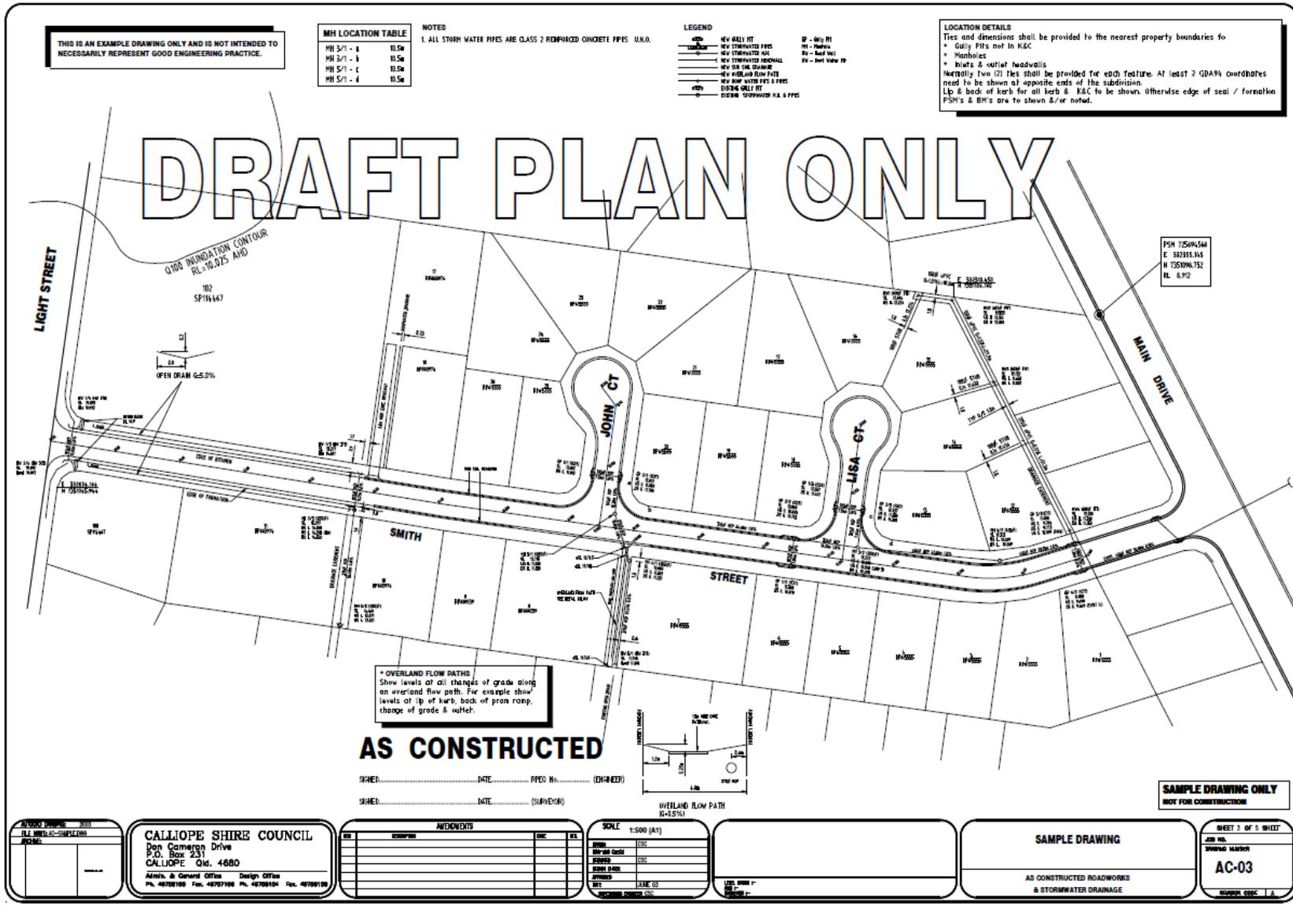
Figure 53 - Sample Drawing - As Constructed Stormwater -Roads Drainage Layout
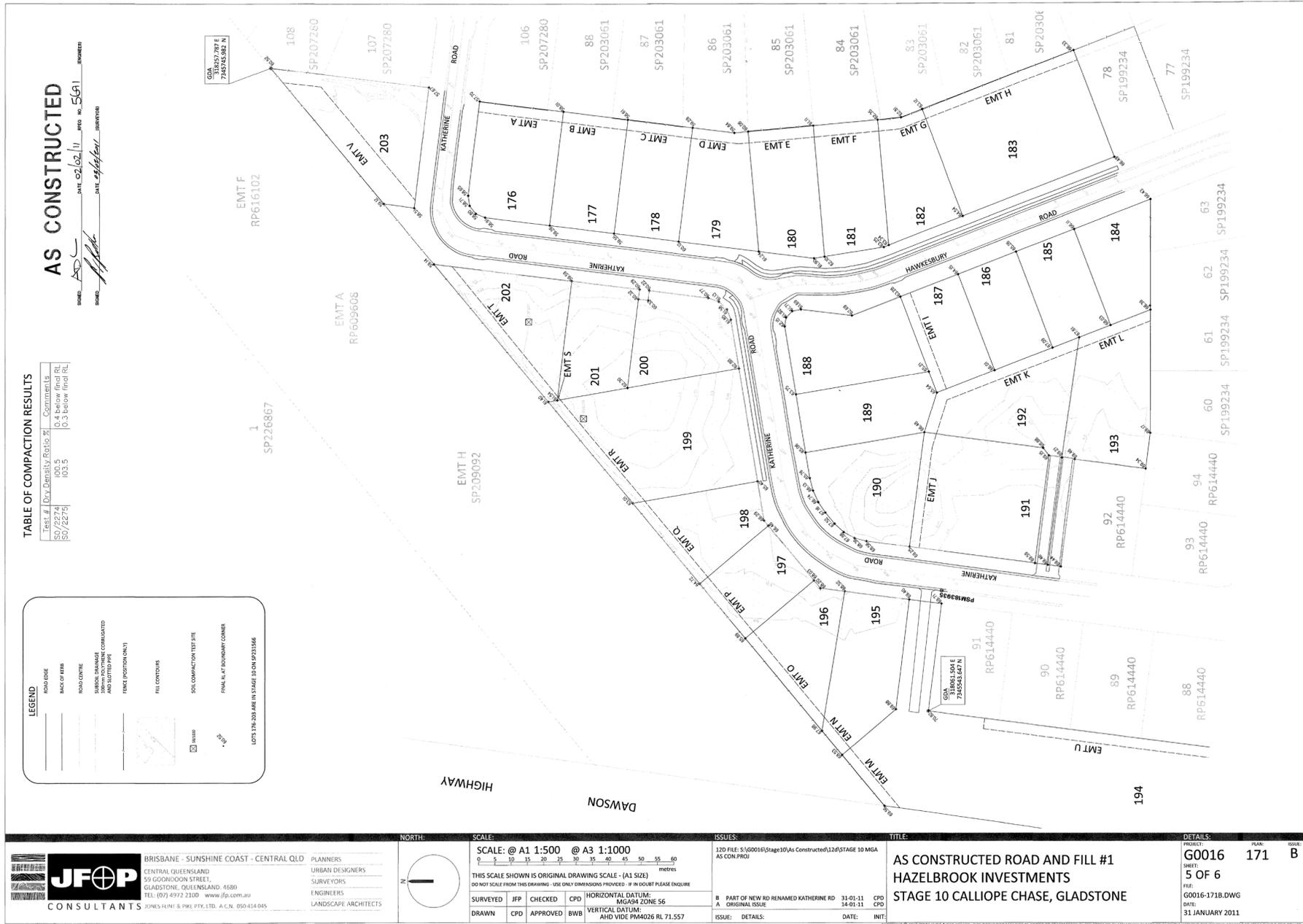
Figure 54 - Example of As Constructed Earthworks Cut and Fill Layout

Figure 55 - Sample Drawing - As Constructed Earthworks Cut and Fill Layout

Figure 56 - Sample Drawing - As Constructed - Bridge Capital Project Plan

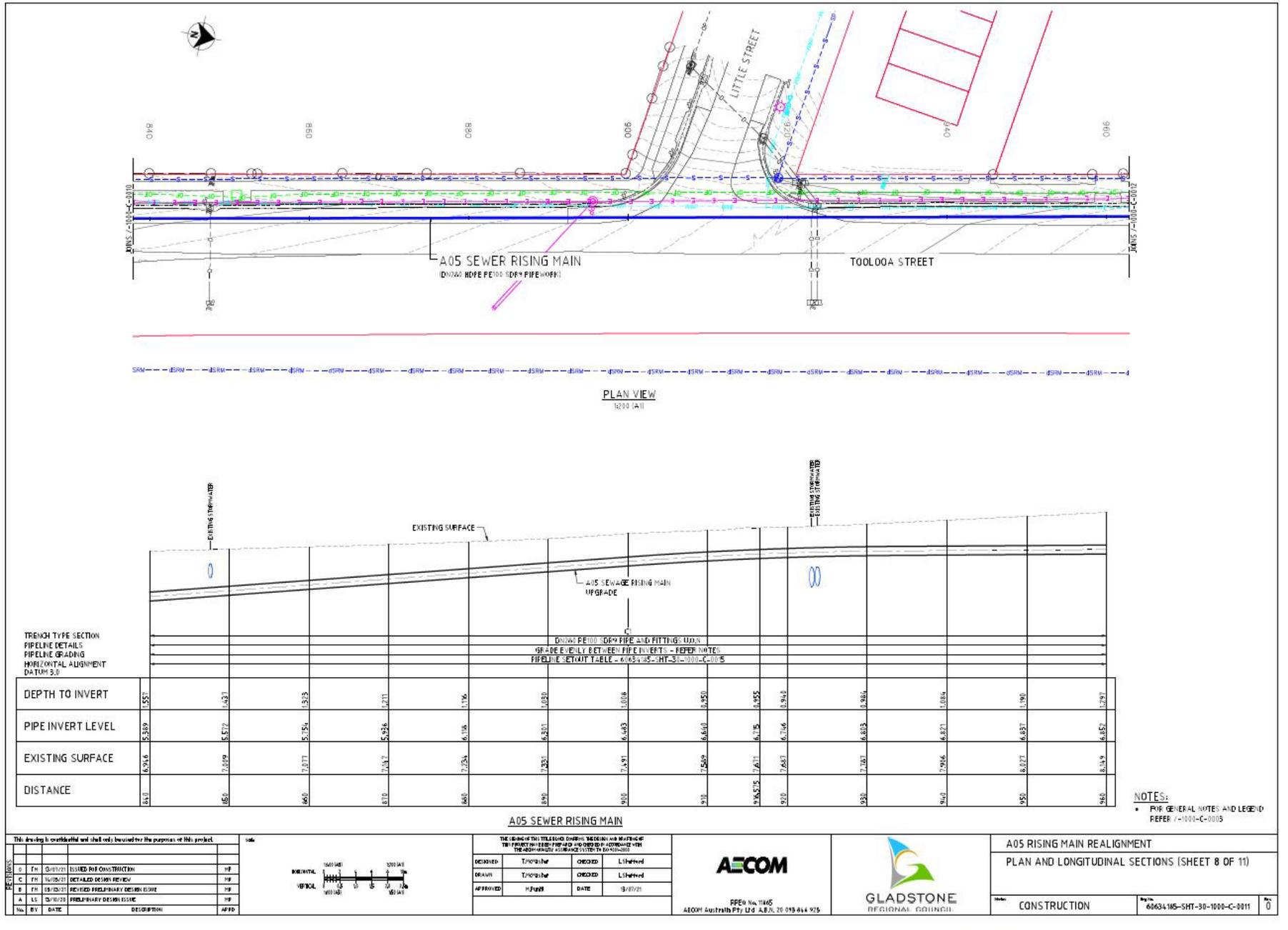*Figure 57 - Sample Drawing - As Constructed - Footpath and Road Capital Project Plan*

Figure 58 - Sample Drawing - As Constructed - Sewer Rising Main Capital Project Plan