ESDI008
Specifications for As-constructed Drawings and Information

NOTE: As-constructed Information submissions that do not meet these requirements will be returned to the provider for correction and resubmission at the provider's expense.

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Amendment History

Document Control	ESDI008 –Specifications for As-Constructed Drawings and Information			
Document ID : **ESDI008**				
Ver No	**Date**	**Revision Details**	**Author**	**Reviewer**	**Approver**
For revision iterations earlier than V2.0, refer archived versions of this document.					
v2.0	21/07/2025	Interdepartmental update (major review)	AS		
v2.01	06/08/2025	Added detail: Appendix B – Bridges. Water	AS		
V2.02	04/09/2025	Added asset capture requirements for Backflow Devices, Active Water Assets	AS		
V2.03	28/10/2025	Updated to reflect recent expectations for Sewer Pump Stations (non-network Assets)	AS		

Notes

1. Primary number changes to Versions (e.g. V1.00 to V2.00) will be made when the document undergoes its regular review and when significant changes are made to standards and guidelines for inspections, intervention levels or works.

2. Secondary number changes (V1.00 to V1.01) will apply to minor amendments that do not materially impact the documents and are intended only to clarify or update issues.

Contents

1.0 Executive Summary

1.1 Purpose

Council has prepared this specification in response to requests from internal, and external stakeholders for clear direction on data and drawing requirements for As-constructed information.

It establishes **clear and consistent expectations** for the preparation and certification of As-Constructed drawings and associated digital data, to ensure timely, complete, and accurate information is supplied to Council for integration into Council systems to support ongoing service delivery.

As-constructed information submissions that <u>do not</u> meet these expectations will be returned to the provider for correction and resubmission at the provider's expense.

1.2 Scope

This specification applies to all works delivered under:

- Donated (Developer Contributed) assets,
- Council internal works, and
- Contracted projects.

1.3 Using this Specification

Always refer to the latest version. Check the Amendment History on Page 2 to confirm you are using the current version.

All references to other documents shall be to the latest published edition (including any amendments) unless otherwise specified.

1.4 Key Terms and Abbreviations

Term	Meaning
ADAC	Asset Design & As Constructed (data standard by IPWEA)
Council	Gympie Regional Council
Consulting Engineer	RPEQ certifying engineer for design and construction
IPWEA	Institute of Public Works Engineering Australasia
Surveyor	Registered Surveyor under the *Surveyors Act 2003*
SPA	*Sustainable Planning Act 2009*
PSM	Permanent Survey Mark
PSP	Planning Scheme Policy (and requirements) 2013
RPEQ	Registered Professional Engineer of Queensland

2.0 As-constructed Requirements

At the completion of a capital project, or submission of on-maintenance request, Council requires submission of As-Constructed drawings and data which will generally mean a package of information which includes as a minimum:

- **Submission of a complete set of As-constructed Plans (PDF) certified by the Consulting Engineer, and**
- **Accompanying ADAC 4.2-compliant XML data**.

The As-constructed drawings and data may be either prepared by the Consulting Engineer or the Surveyor; but must comply with the requirements defined within this document.

2.1 General

The As-constructed information must be presented in a form that allows for the ready comparison between the design and "as-constructed" data by experienced staff, allows for an efficient means to include in council's mapping and asset management systems, and for the unambiguous interpretation and understanding by a wide range of users, including the public.

As such, the As-constructed drawings and documentation serves two distinct functions:

1) **Review**: to provide a means to check the constructed works against the approved design to ensure the design principles and criteria have been achieved; and
2) **Recording**: to provide an accurate record of the as-constructed assets and services, along with their locations, for integration into Council's asset, GIS, and asset management and maintenance systems.

2.2 Additional Requirements for Operational Works Associated with a Development Project

As-constructed submissions related to the Planning Scheme have additional requirements beyond this specification. See **Appendix C – On-maintenance As-constructed Checklist (Plan Sealing)** for details extracted from the Planning Scheme Policy 2013.

2.3 Rejection of Unsatisfactory Data

Drawings and documents may be rejected, even after the infrastructure works have been accepted, if Council determines they do not meet this specification. Some examples of non-compliance are drawings or data that:

- Contain errors
- Are incomplete
- Are provided in a non-compliant format

Any drawings or documents rejected by Gympie Regional Council are to be duly revised, re-certified and re-submitted to the Gympie Regional Council promptly.

Council reserves the right to recover any relevant costs from a consulting engineer and/or developer whom, in the opinion of the Chief Executive Officer has not performed satisfactorily in the preparation of As-constructed drawings and documentation.

2.4 Submission Format

2.4.1 Hardcopy

For Planning Scheme Submissions only, per the Planning Scheme Policy 2013 SC6.1.9.4.4 (7):

- Three copies of all plans at the designated scale required (A3 size preferred)

2.4.2 Electronic PDF

As-constructed drawings are to be submitted in electronic PDF format at a resolution suitable to reprint at full size (typically 150dpi). This file will be stored in council's record management system.

2.4.3 Electronic ADAC XML Format

Council is participating in the Asset Design As-Constructed (ADAC) initiative for the standardisation of the submission of As-Constructed drawings in digital format.

All PDF As-constructed drawings are to be accompanied by a compliant ADAC XML file, completed per the requirements of **Appendix D - ADAC XML Guidelines 4.20 Schema** containing the full extended of as-constructed works.

Electronic submission will only be accepted in ADAC XML format. No other formats will be accepted.

NOTE: At the time of publication, Council is aware of the need to adopt a more recent schema version and plans to do so as part of the current ERP project. Until further notice and an updated specification is issued, ADAC 4.20 remains the only accepted and validated schema.

3.2.3 Copyright

As constructed drawings become public property through their lodgement with council, copyright on these drawings is to be removed.

3.2.4 Exemptions

For smaller projects e.g. 2-3 lot subdivisions, this can be assessed at the 'Operational Work' stage, to be reviewed and confirmed if ADAC submission will be required. Drawings will require additional items to meet all of Council's specific requirements.

3.3 Drawing Standards and Presentation

Refer **Appendix A – Sample Drawings** for minimum ADAC version and supplying all mandatory information required therein.

3.3.1 Drawing Information

1) All information is to be retained within the borders of the page.
2) North point to be shown on all layout plans.
3) All layout plans to be on a background showing: lot boundaries, lot numbers, easements, kerb lines or edge of road (if no kerb), and other significant features.
4) Lot numbers and road names to be in accordance with the Survey Plan (the 'SP plan').
5) Existing infrastructure to be shown and differentiated from new services.
6) The extents of any existing infrastructure that has been removed or abandoned must be clearly shown.
7) Any complex arrangements or unusual fittings are to be detailed on the plans.
8) The linework representing the constructed works to be predominant and at least one thickness greater than background information (i.e. lot boundaries).
9) Property boundary linework shall not be broken when crossed by text. All text is to be located clear of linework, other text and any other drawing elements to ensure readability
10) The location of all infrastructures shall be shown with the use of dimensions or tabular description from property boundaries. There should be sufficient information to define the location of the infrastructure without ambiguity. Pipelines must be located sufficiently to show their alignment in relation to property boundaries. Location information to be in metres and shown to at least one decimal place (0.1m).
11) Plans are to contain no irrelevant information and be generally in accordance with the format and quality of the sample plans listed at **Appendix A – Sample Plans**.

3.3.2 Topographical Details

Changes to the surface of the land because of the engineering works must be surveyed with sufficient measurements to ensure an accurate representation of the new topography. Finished surface levels must, as a minimum, be collected at:

1) all cadastral corners,
2) invert of kerb or edge of bitumen, and crown of the road,
3) top and bottom banks including along open drains,
4) top and bottom of retaining walls,
5) along overland flow paths in roadways, pathways and parks,
6) detention basin crest levels, and spillway levels,
7) ground levels,
8) levels must be taken at intervals of not more than 20 metres.
9) The information is to be shown using contours with a suitable interval (typically 1 metre)) and spot heights at each point collected. Refer to the sample plans for the requirements of each drawing. On large lot developments some of these requirements may be relaxed over the areas of the development that have not been disturbed by the work.

3.3.3 Title block

Each As-constructed drawings sheet is to have a title block containing the following information:

1) project description
2) consulting engineer's name

3) surveyors name
4) scales including a scale bar
5) plan number and sheet number
6) schedule and date of amendments
7) date, and
8) Approved by Name, RPEQ number, and signature.

4.0 Survey Requirements

The level and location information required for the as constructed drawings must be collected by a Registered Surveyor or a suitably experienced and qualified person supervised by a Registered Surveyor.

4.1 Coordinate Datum

All coordinates should be based on either The Geocentric Datum of Australia 2020 (GDA 2020) and be projected to the Map Grid of Australia 2020 (MGA 2020) Zone 56. Or where this is not practical;

4.2 Meridian Datum

The meridian is to be on the azimuth of the Map Grid of Australia 2020 Zone 56.

4.3 Height Datum

All level data shall be reduced to the Australian Height Datum (AHD).

4.5 Control

As staged subdivisions extend into areas with limited survey control, there is a risk of degrading the positional accuracy of Council's Digital Cadastre Database (DCDB). To maintain the accuracy and integrity of the DCDB, sufficient survey control must be established for each new subdivision.

Key requirements are as shown:

- Permanent Survey Marks (PSMs) should be placed within the subdivision, in accordance with 'Cadastral Survey Requirements', Clause 3.28 Permanent Survey Marks.
- PSMs must be well-spaced to provide good coverage across the extent of the survey.
- PSMs must have MGA2020 Zone 56 coordinates and AHD levels to at least 4th Order horizontal and vertical standards for the Australian Survey Control Network Special Publication SP1.
- PSMs must also have a cadastral connection on the plan of survey to allow accurate positioning within the existing cadastre (i.e. the DCDB).
- Where coordinate and level information do not already exist, they must be submitted to the Department of Resources using the appropriate form for inclusion in the Survey Control Database, with a copy provided to Council along with the As-Constructed information.

4.4 Accuracy

The location and level information shown on the As-constructed drawings are to conform to the following accuracy limits:

- Level: ± 0.01 metre (Earthworks ± 0.10 metre).
- Horizontal: ± 0.05 metre.

5.0 Operations and Maintenance Manuals

Along with As-constructed PDFs and ADAC XML submissions, Operations and Maintenance Manuals must be provided for any assets or structures (e.g. pump stations, reservoirs, gross pollutant traps) that require specific maintenance procedures.

The manuals must include, at a minimum:

- Spare parts lists
- Electrical diagrams
- Maintenance schedules
- Any other relevant information needed to operate and maintain the asset throughout its life

Where applicable, the information supplied should also include sufficient information to identify:

- Make/model,
- Capacity
- Expected useful life

6.0 Photos (Internal Use Only)

Visual records of assets are an important means of confirming asset existence and supporting identification throughout the asset's life cycle. Photos must be provided as proof of practical completion for distinct assets.

Typically, photographed assets are those with a network measurement recorded as 'Each' or 'Quantity' in the asset register. Examples include:

- Park infrastructure
- Community infrastructure
- Sewer pump station assets
- Buildings
- Water, sewer, or stormwater infrastructure where surface structures are evident (e.g. manholes, inlets)

For practical reasons, linear and buried assets are generally not photographed, as they are usually captured through other means (e.g. accurate ADAC XML data). Examples include:

- Roads
- Kerbs
- Water, sewer, and stormwater reticulation

If you are unsure which category your asset falls into, please contact an Asset Officer for advice.

Appendix – A

Sample plans

D-02 – Method of Recording As Constructed Stormwater Data – ADAC
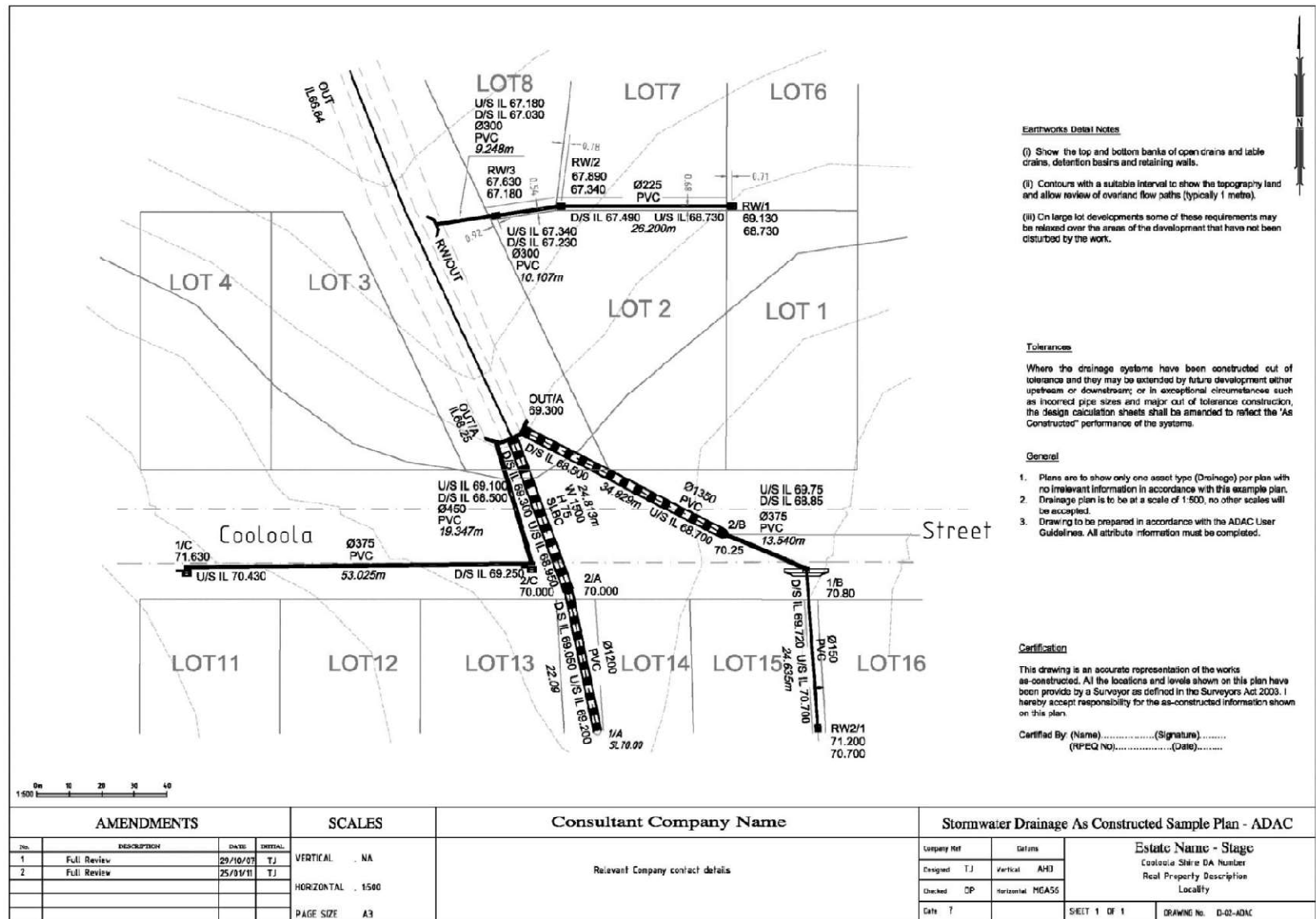
R-22 – Method of Recording As-constructed Road Data - ADAC

Road and Earthworks As Constructed Sample Plan - ADAC
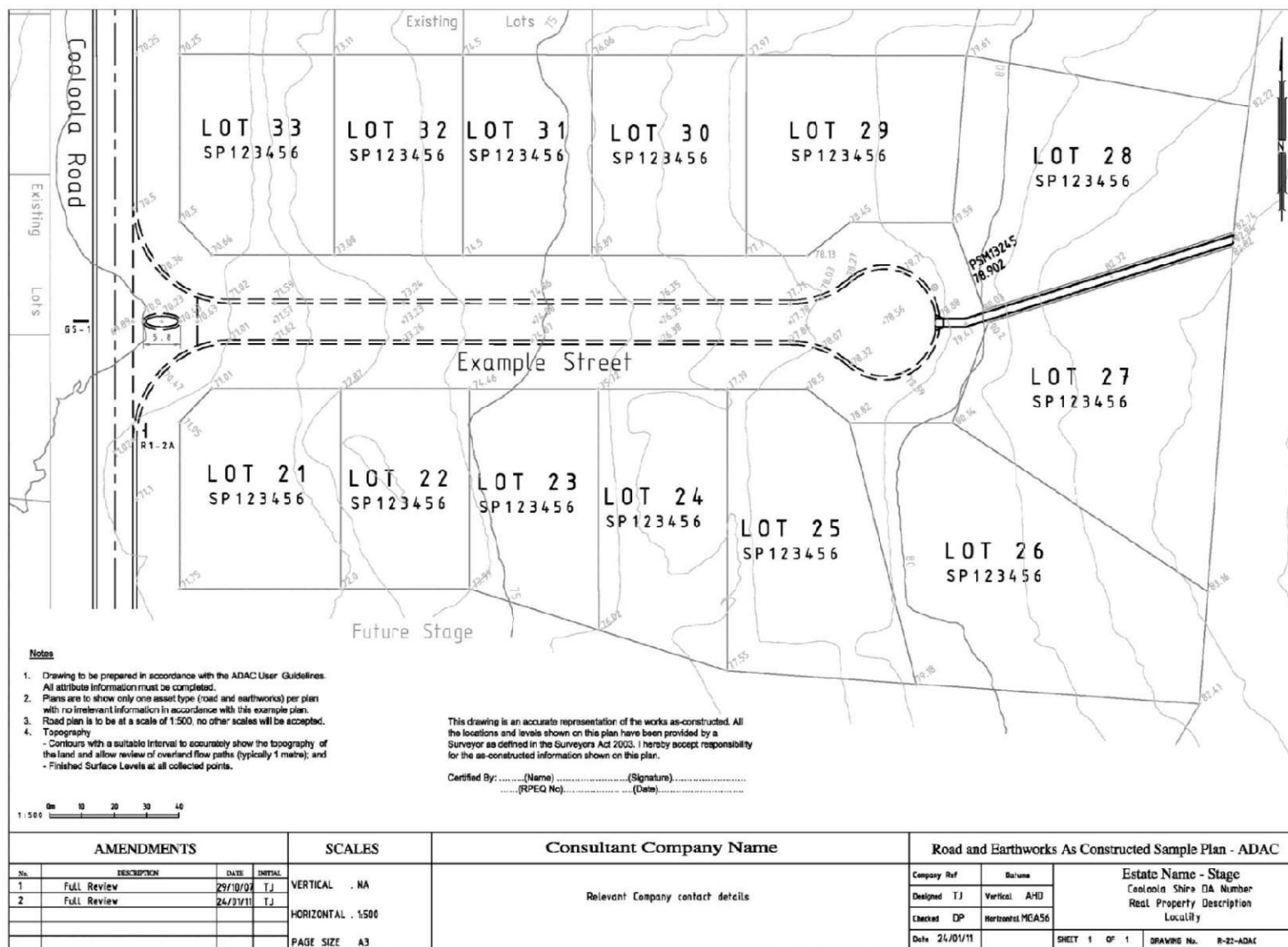
Sewerage As Constructed Sample Plan - ADAC
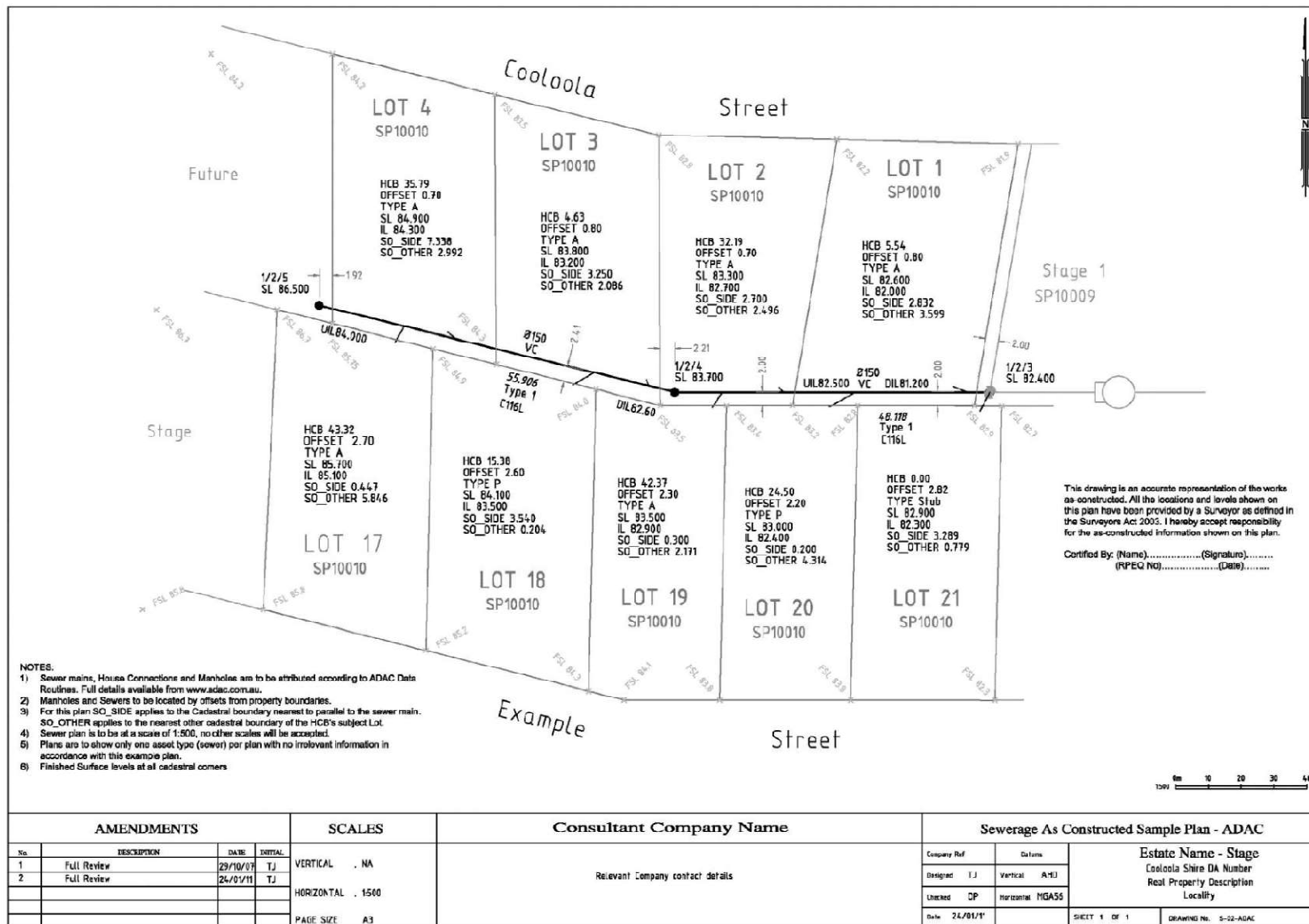
W-02 – Method of Recording As-Constructed Water Reticulation Data – ADAC

NOTES:
1) Drawing to be prepared in accordance with the ADAC User Guidelines. All attribute information must be completed.
2) Hydrants, pipe alignments and ends are to be located by offsets from property boundaries.
3) Plans are to show only one asset type (water) per plan with no irrelevant information in accordance with this example plan.
4) Water plans to be at a scale of 1:1000, no other scales will be acceptable.

This drawing is an accurate representation of the works as-constructed. All the locations and levels shown on this plan have been provided by a Surveyor as defined in the Surveyors Act 2003. I hereby accept responsibility for the as-constructed information shown on this plan.

Certified By: ....(Name) ....(Signature)..........................
.... (RPEQ No)...................... ...(Date)..............................

AMENDMENTS				SCALES		Consultant Company Name	Water As Constructed Sample Plan - ADAC		
No.	DESCRIPTION	DATE	INITIAL	VERTICAL . NA		Relevant Company contact details	Company Ref	Datum	Estate Name - Stage
1	Full Review	29/10/07	TJ				Designed TJ	Vertical AHD	Cooloola Shire DA Number
2	Full Review	25/01/11	TJ	HORIZONTAL 1:1000			Checked DP	Horizontal MGA56	Real Property Description
				PAGE SIZE A3			Date 10/2/2011		Locality
								SHEET 1 OF 1	DRAWING No. W-02-ADAC

Sample Survey Plan (SP) Layout

Note: Specifications for Survey Plans are not set by Council.

SP343748 V0 REGISTERED Recorded Date 30/04/2025 16:09 Page 1 of 2 Not To Scale
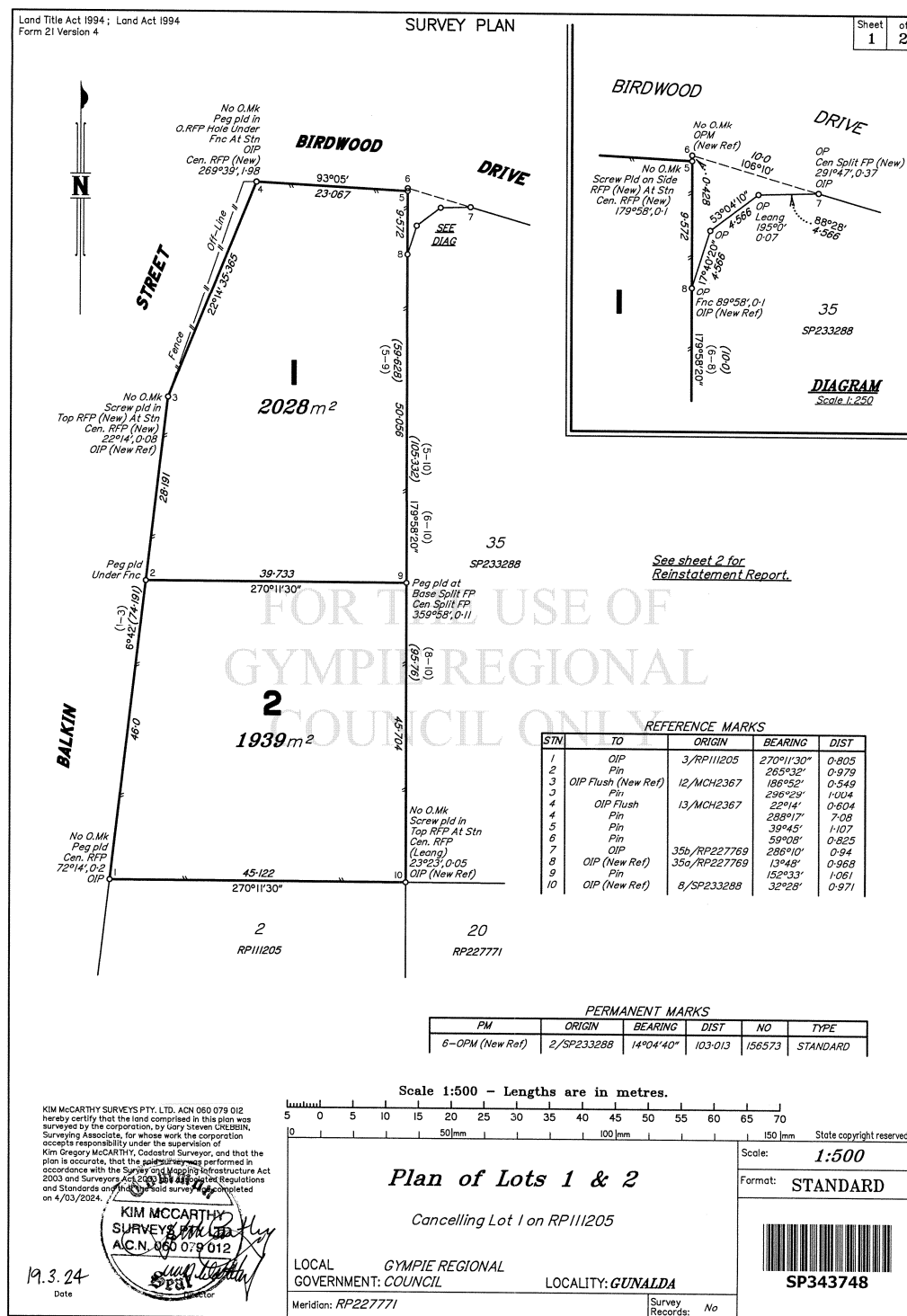
Appendix B – Additional Asset Data Requirements

While the mandatory fields in ADAC 4.20 suit a wide range of GIS and asset management applications, the following custom fields are currently being collected by asset management for internal business purposes for select Assets/Asset Classes.

Buildings (incl. Buildings Infrastructure)

Information Required to Insure the Asset

Required fields are highlighted in yellow and marked with an '*'. NB. This table applies to most insured assets under the LGM scheme regardless of asset type.

Required information (as applies)	To be completed for new listing	Example data
Insurance Policy Status*	Insured by GRC	Insured by GRC
Insurance Category*		Buildings
Date of Insurance Valuation*		1/07/2024
Insured Value*		$12,986,633.55
Insurance Other (Revenue)		$0.00
Insurance Contents		$1,653,750.00
Insurance Policy Notes		Civic Centre
Insurance Year Built*		1977
Insurance Number of Stories		2
Insurance Date of Last Professional Valuation		30/06/2022
Insurance Construction Type*		Unreinforced Masonry
Insurance Postcode*		4570
Insurance Impact on Council		Major
Insurance Impact on Community		Major
Insurance BCP for Location		Yes
Insurance Fire Protection		EL, FIP,FE,HR, FH
Insurance Security Protection at Building		Yes - Monitored
Insurance Building Declared Value		If differs from insured value
Street Address*		Unit 32/34 Mellor St, Gympie QLD 4570
Map Reference*		-26.18881:152.66639
General Comments		Lift Registration # P0030340 Vertical Platform Registration # W0046532AKA - Gympie Civic Centre
Locality (Urban/Rural)*		Urban

Table 1: Fields for insurance purposes (as represented by the LGM Assets property Insurance Form)

Calculation of Cost and Useful Life per Building Component Example

Date Commissioned	**19/07/2024**	(Practical Completion)

ITEM	Assetic Building Components	FINAL CONTRACT VALUE	% of total	Component Useful life
1	Interior - Fitout and Fittings	$231,290.37	38.1%	60
2	Interior - Floor Coverings	$15,435.91	2.5%	60
3	Services - Electrical	$166,148.91	27.4%	20
4	Services - Hydraulic	$8,651.26	1.4%	30
5	Services - Mechanical	$43,370.64	7.1%	30
6	Structure - Substructure	$3,310.00	0.5%	50
7	Structure - Superstructure	$5,954.61	1.0%	40
8	Prelims & Margin	$132,640.09	21.9%	-
GRAND TOTALS		**$606,801.79**	100.0%	

Typical Components to include above:

Lowest level of detail	Rollup into Typical Assetic Components	Condition	Example Weighted Condition
Site Preparation		4.00	
Substructure	**Substructure**	4.00	4.00
Columns		2.75	
Upper Floors		3.00	
Staircases		3.50	
External Walls & Windows		3.50	
External Doors	**Superstructure**	2.00	3.37
Roof Structure		3.00	
Roof Coverings	**Roof**	3.00	3.00
Internal Walls, Screens & Borrowed Lights		3.00	
Internal Doors		3.00	
Wall Finishes		3.00	
Ceiling Finishes		4.00	
Fitments		3.00	
Special Equipment	**Fitout and Fittings**	0.00	3.26
Floor Finishes	**Fitouts (Floor Coverings)**	4.00	4.00
Hydraulics	**Hydraulics**	5.00	5.00
Air Conditioning	**Air Conditioning**	2.00	2.00
Fire Protection	**Fire Protection**	2.00	2.00
Electric, Light & Power	**Electric, Light & Power**	4.00	4.00
Communications	Communications	0.00	0.00
Bed Lifts		0.00	
Goods Lifts		0.00	
Passenger Lifts	Transport Services	0.00	0.00
Special Services	Special Services	0.00	0.00
TOTAL			

Figure 1: Apportionment of Cost to Building Components – Typical Components and Approach

Active Assets (Pump Stations, Treatment Plants, etc.)

SEQ Water defines **Active Assets** as those assets other than pipelines, which contain electrical or mechanical equipment such as pumping stations, treatment plants, reservoirs and the like[1].

As ADAC generally does not support detailed attribution for some of these asset types, and the following minimum data collection points have been put forward by the business for storage against the asset.

Other Handover Documentation Package

The information package submitted at the as-constructed/on-maintenance stage shall include the following information for all active assets such as pumping stations.

- Complete as-constructed drawings, including:
    - General arrangement and site layout drawings and elevations
    - Structural drawings (showing location and interactions between all structural and site elements),
    - Mechanical drawings (details, elevations, bill of materials for valves, pumps, etc),
    - Electrical and/or Process ID drawings (more detail below)
- Vendor Manuals
- Operating Manual
- Maintenance Requirements
- Photos of each distinct constructed asset

Pumps

Preferable if the manufacturer manual is attached to Documents area against the individual asset for **Unstructured Attributes**.

Data Point to Capture	Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Brand	Brand	-	Y
Model	Model	-	Y
Power	Pump Motor Size (kW)	Pump Motor Size (kW) Unit	Y
Head (Duty)	Head Duty Point	Head Duty Point Unit	Y
Head (Pressure)	Pressure Water Head	Pressure Water Head Unit	Y
Weight	Pump Motor Weight	Pump Motor Weight Unit	Y
Serial no	Serial Number	-	Y
Unstructured Attributes (possible in TechOne EAM, as yet TBC)			
Motor IP Rating			N
Min Flow Rate L/s			N
Nom Flow Rate L/s			N

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[1] SEQ Water & Sewerage & Service Providers Technical Reference Group. (2025, March). SEQ WS&S D&C code – asset information specification (Version 3.03, p. 7). https://static1.squarespace.com/static/6344c3f4b466682ca4bf02b4/t/67e3b5a156186d2818b8436d/1742976433352/2025-03-26-AIS-Version-3-03.pdf

Max Flow Rate L/s			N
Nominal Head (m)			N
Maximum Head (m)			N
Nominal Speed RPM			N
Maximum Speed RPM			N
Current (amps)			N
Running Current (A)			N
Full Load Current A			N
Mass (KG)			N
Poles			N
Perf Curve Reference			N
Frame			N
Motor Nom. Speed RPM			N
Motor Max. Speed RPM			N

Motors

Preferable if the manufacturer manual is attached to Documents area against the individual asset for **Unstructured Attributes**.

Data Point to Capture	Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Brand	Brand	-	Y
Model	Model	-	Y
Serial no	Serial Number	-	Y
Power (kW)	Motor Power (kW)	Motor Power Unit	Y
Unstructured Attributes (possible in TechOne EAM, as yet TBC)			
Mass (KG)			N
Current (amps)			N
Running Current (A)			N
Ovrload Cur Setngs A			N
Full Load Current A			N
Insul Rsistnce Mohms			N
Poles			N
Motor IP Rating			N
Frame			N
Motor Mount Type			N
Motor Nom. Speed			N
Motor Max. Speed			N

Wet Well

Data Point to Capture	Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Volume	Volume	Volume Unit	Y
Depth	Depth	Depth Unit	Y
Length (if rectangular)	Length	Length Unit	Y
Width (if rectangular)	Width	Width Unit	Y
Diameter (if round)	Diameter	Diameter Unit	Y
Overflow point	Overflow Reduced Level	Overflow Reduced Level Unit	Y
Material	Primary Material	Code	Y
Unstructured Attributes (possible in TechOne EAM, as yet TBC)			
Overflow height	Overflow height (Numeric 2)		N

Valve Pits, and other all other surface structures (concrete pads, fences, driveways, etc.)

Data Point to Capture	Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Volume	Volume	Volume Unit	Y
Length (if rectangular)	Length	Length Unit	Y
Width (if rectangular)	Width	Width Unit	Y
Depth	Depth	Depth Unit	Y
Material	Primary Material	Code	Y

Valve (Reflux)

Data Point to Capture		Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Brand		Brand	Brand	Y
Model		Model	Model	Y
Serial no		Serial Number	Serial no	Y
Material		Primary Material	Code	Y

Flowmeters

Preferable if the manufacturer manual is attached to Documents area against the individual asset for any **Unstructured Attributes** such as flange pattern, no. of bolts, voltage, minimum and maximum flow, is held as non-structured data.

Data Point to Capture	Assetic Attribute Name 1	Assetic Attribute Name 2	Mandatory
Brand	Brand	Brand	Y
Model	Model	Model	Y
Serial no	Serial Number	Serial no	Y
Material	Primary Material	Code	Y
Unstructured Attributes (possible in TechOne EAM, as yet TBC)			
Size (DN)	Numeric 3 (Can change name)	Size (DN)	N

Switchboards/Electrical/ Telemetry

Electrical and telemetry assets are to be accompanied with information which may include the following:

- Piping and instrumentation (P&ID) diagrams
- Detailed switchboard drawings, showing equipment layout, circuit-diagrams c/w terminal and cable numbers, manufacturing details and materials and equipment schedules
- Single line diagram, showing fuse or circuit breaker ratings and cable sizes
- Common control diagram
- Detailed switchboard drawings, showing equipment layout, circuit-diagrams c/w terminal and cable numbers, manufacturing details and materials and equipment schedules
- PLC or RTU Logic diagrams
- Alarm and RTU I/O diagram

Sewer Pump Station ADAC XML Examples

See below examples of ADAC XML (PDF exports) for both a simple, and complex Sewer Pump Station.

NB. reminder that ADAC XML requirements are expected *in addition* to RPEQ-certified As Constructed drawings.

Example ADAC application:

Simple Sewer Pump Station

Example ADAC application:

Simple Sewer Pump Station (detail)
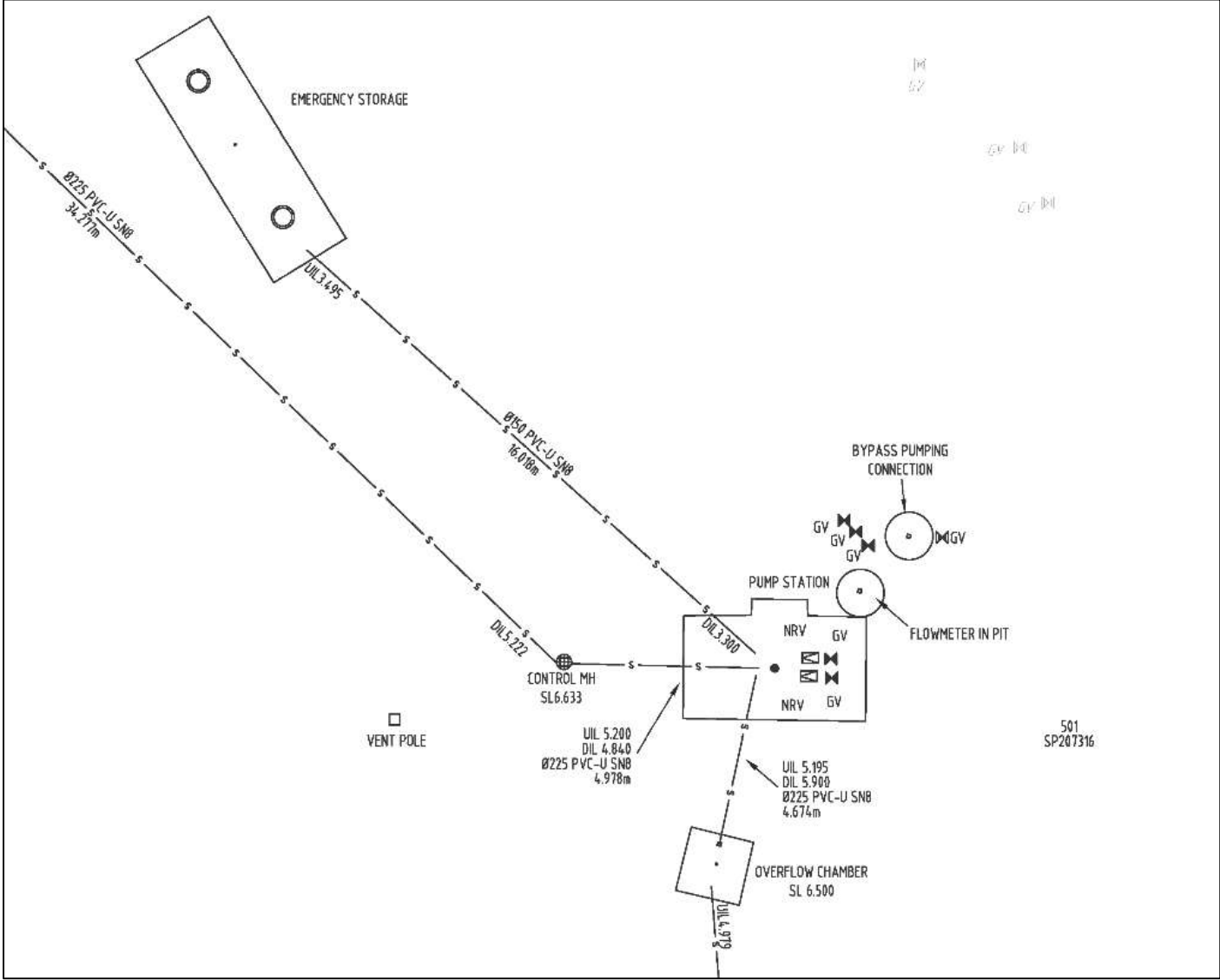
Example ADAC application:

Complex Sewer Pump Station

[Printed copies are uncontrolled. It is the responsibility of each user to ensure that any copies of system documents are the current issue.]

Complex Sewer Pump Station (detail) — labels shown:

- 1/SEW (Collection) MH Ø1500 (G) SL 53.565 IL 46.485
- PUMP STATION VALVE PIT (PRE CAST) Surface Level:53.650 Floor:51.835
- STEP
- 53.63
- Ø375 D 0.357% L 2.803m
- DN375 INLET VALVE PUMP STATION – WET WELL Surface Level:53.640 Floor: 43.410
- WATER METER SN#SNG2400400
- DN200 SLUICE VALVE
- DN200 NON RETURN VALVE
- DN300 VALVE
- DN375-300 REDUCER
- 2/SRM
- •22.5 BEND
- RISING MAIN USIL 51.989 DSIL 52.078 Ø200 DI PN35 -2.032% L 4.380m
- RISING MAIN USIL 51.936 DSIL 52.030 Ø200 DI PN35 -2.164% L 4.344m
- DN200 SLUICE VALVE
- RISING MAIN USIL 52.030 DSIL 52.040 Ø200 DI PN35 -2.155% L 0.464m
- RISING MAIN USIL 52.078 DSIL 52.088 Ø200 DI PN35 -2.155% L 0.464m
- DN200 NON RETURN VALVE
- RISING MAIN USIL 52.040 DSIL 52.082 Ø200 DI PN35 -2.041% L 2.058m
- RISING MAIN USIL 52.088 DSIL 52.083 Ø200 DI PN35 0.165% L 3.026m
- DN300-200 CONCENTRIC REDUCER
- RISING MAIN USIL 52.083 DSIL 52.082 Ø300 DI PN35 0.333% L 0.300m
- DN300-300-x200 FLANGED TEE
- RISING MAIN USIL 52.069 DSIL 52.066 Ø300 DI PN35 0.251% L 1.193m
- FLOW METER PIT Surface Level:53.59 Floor:51.705
- RISING MAIN USIL 52.082 DSIL 52.069 Ø300 DI PN35 0.414% L 3.140m

Bridges (Major Structures)

It is noted that ADAC version 4.20 currently in use by Council does not explicitly support detailed attribution for bridges. As such, the below requirements are adapted from both ADAC 5.0.2 but also reflect the level of detail stored in GRC's Asset Information System.

General Information: A single deck unit between abutments or supports.

Asset Capture: Multi-patch region/polygon feature representing the bridge deck.

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

Element Name	Attribute Description	Mandatory (Y/N)
Bridge Number	Unique identifier, used to associate components of the same bridge assembly.	Y
Primary Material	Material types for bridge deck.	Y
Deck Width (m)	Nominal width of deck in metres.	Y
Deck Length (m)	Length of bridge deck between joints at abutments in metres.	Y

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

Backflow Devices

It is noted that ADAC version 4.20 currently in use by Council does not explicitly support detailed attribution for Backflow Devices. These fields are determined based on the provided data from 11-06-2024 Backflow Device audit.

General Information: A type of water non-return valve, with regulatory maintenance requirements

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

Field	Value example	Mandatory in Assetic
Asset Category	Water Nodes	Y
Asset ID	WHV.128284	Y
Asset Name	Valve DCV 25, NO SERIAL	Y
Asset Class	Water	Y
Asset Subclass	Active	Y
Asset Type	Valve	Y
Asset Subtype (use)	Non-Return	Y
Maintenance Asset Sub Type	Water	Y
Maintenance Asset Type	Water	Y
Work Group	WBU	Y
Work Groups	WBU	Y
External ID	River Rd	Y
Code (for Replacement Cost)	Valve RPZ 25	Y
General Comments	11/06/24: Need to sign in and get key. Standard test.	Y
Date of Construction	24/11/2020	Y
Map Reference	-26.1911452 152.6614054	Y
Locality	Urban	Y
Location	23 River Rd, Gympie QLD 4570, Australia, Gympie	Y
Manufacturer	Valvcheq	Y
Model	N/A	Y
Ownership	Council	Y
Serial Number	0017820/2	Y
Valve Size	25	Y
Last Test Date	11/06/2024	Y
Node Type	Non-Return Valve	Y
Valve Type	Double check valve	Y
Actuation	Backflow Prevention Device	Y
Service Details	Containment, Zone, Individual	Y

Table 1: Backflow Prevention Device (Valve DCV/RPZ) attribute requirements

Appendix C – On-Maintenance Checklist and Statement of Compliance (As Con) Information

Per SC6.1.9.4.1 (2) of the PSP, On-Maintenance inspections **_will not be attended_** until all As-constructed information has been received, reviewed, and approved by Council per **ISDF013** and **PDF0100** below.

ISDF013 - As Constructed Statement of Compliance

INFRASTRUCTURE SERVICES DESIGN

STATEMENT OF COMPLIANCE
"AS CONSTRUCTED" INFORMATION

This form, duly completed and signed by an authorised RPEQ of the Consulting Engineer shall be submitted with the "As Constructed" information for Council acceptance.

Development Application Number: ....

Description of Development: ....

Applicant: ....

Consulting Engineer: ....

Authorised RPEQ: ....

Surveyor: ....

It is hereby certified that the "As Constructed" drawings and Asset Data Sheets submitted herewith have been prepared, checked and amended in accordance with the requirements of Gympie Regional Council published Standards and that the completed works comply with the requirements therein, except as noted below.

Compliance with the requirements of published Standards "As Constructed" and Asset Data Sheets	Compliance Yes/No	Non-compliance - refer to non-compliance report
Street Names		
Earthworks		
Roadworks		
Stormwater Drainage: • Minor Flow System and Structures • Major Flow System and Structures • Detention Basin		
Water Reticulation		
Sewer Reticulation		
Allotment Filling		
Landscaping		
Sewerage Pump Stations and Rising Mains		
Documentation including all Test Results		

Conscientiously believing the above statements to be true and correct, signed on behalf of:

Consulting Engineer .... RPEQ No. ....

RPEQ Name in full .... Position: ....

Signature .... Date: ....

PRIVACY STATEMENT: Gympie Regional Council collects personal information where it is directly related to a function or activity of Council and where the collection of such information may be reasonably considered as necessary for that purpose. It will only use personal information for that purpose, and will not disclose it, except as permitted under the Information Privacy Act 2009.

Page 1 of 2

ISDF013   Statement of Compliance – As Constructed   Reviewed: 09/05/2017

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NON - COMPLIANCE REPORT
"AS CONSTRUCTED" INFORMATION

Sheet.........of........

Development Application Number: .... Applicant: ....

Description of Development: .... Engineer: ....

RPEQ: .... Surveyor: ....

Drawing Numbers	Description of Non-complying Works	Proposed Action	Proposed Timeframe

If the consultant proposes that Council should accept the non-complying works, justification shall be provided. Where the Consultant proposed rectification works a timeframe shall be provided. Conscientiously believing the above statements to be true and correct, signed on behalf of:

Consulting Engineer: ....   RPEQ No.: ....

RPEQ Name in full: ....   Position: ....

Signature: ....   Date: ....

Page 2 of 2

ISDF013   Statement of Compliance – As Constructed   Reviewed: 09/05/2017

PDF0100 - On Maintenance Inspection and Documentation Checklist

On Maintenance Inspection and Documentation Checklist

PRIOR TO REQUESTING AN ON-MAINTENANCE INSPECTION, COMPLETE AND SUBMIT THIS CHECKLIST.

This form contains the requirements of the current Planning Scheme Policy, *SC6.1.4.5.4 Major Inspections*. This is not an exhaustive list, and the applicant may be required to include additional items where applicable.

NB. Sections marked with an asterisk* are compulsory.

Approval Details*

GRC OW Reference	
OW Details	Roadworks　Stormwater　Drainage Work　Earthworks　Driveway　Access Water　Sewer　Landscaping　Veg clearing　Other
Address / Stage	
Applicant / Principal	
Consultant	
RPEQ	
Contractor	

A. General*

Requirement	Acknowledged (Yes/No)	Comment/s
1. The Consulting Engineer is response for ensuring: 　a) approved works have been completed and ready for Council to inspect, prior to requesting an inspection. 　b) works are in accordance with the approved drawings. 　c) works are in accordance with Council's technical specifications. 　d) works are in accordance with accepted engineering and landscaping practice.		
2. As Constructed information must be submitted to Council a minimum of 5 business days prior to the proposed inspection. As-constructed requirements are detailed in **Section B** below.		
3. Council will not attend the On Maintenance Inspection unless; 　a) all As Constructed information has lodged to Council, and 　b) all bonding has been receipted by Council.		
4. Works will not be accepted On Maintenance until all As Constructed information has been assessed and approved.		
5. Failure to comply with the requirements may result in cancellation of the inspection and/or the charging of a re-inspection fee (as per current Fees and Charges).		

B. Certified As Constructed Drawings and Information*

Requirements (per ESDI008 Specifications for As-constructed Drawings and Information)	Attached (Yes / No)	Comment/s
1. ADAC 4.20 XML File		
2. DWG, and PDF output of the above ADAC 4.2 XML file		
3. RPEQ Certified As Constructed Drawings (i.e. stamped IFC set)		
4. Copy of Cadastral Survey Plan		
5. Surveyor's 3D model of constructed works		

C. All sites*

Requirement	Verified (Yes)	Comment/s
1. site is clean, tidy, free of rubbish, rocks, sticks, unauthorised stockpiles, etc.;		
2. allotment earthworks to be free draining and generally in accordance with the approved design;		
3. allotment embankment compaction test results submitted;		
4. water quality control measures in place and effective;		
5. integrity of environmentally significant areas including removal of noxious weeds;		
6. maintenance security deposit lodged; and		
7. all 'As-Constructed' information lodged with Council.		

D. Roadworks (if applicable)

Requirement	Verified (Yes)	Comment/s
1. Grades and profiles to road and footpaths		
2. Topsoiling and seeding to prescribed areas, with the road reserve turfed from the back of kerb to the property boundary in urban areas		
3. AC surfacing for texture and finish		
4. Street signs and line marking		
5. Survey pegs for lot boundaries in place		
6. Subsoil drains cleanout points and outlets		
7. Sheck conduit markers against RP pegs		
8. House numbers allocated and in place		

ESDI008   Specifications for As-constructed Drawings and Information - Gympie Regional Council   21/07/2025 v2.0

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E. Stormwater Drainage (if applicable)

Requirement	Verified (Yes)	Comment/s
1. roads, pipes, structures, flow paths clear of silt and debris;		
2. no ponding on roads, in pipes, structures, kerbs and flow paths;		
3. turfing and seeding to prescribed areas;		
4. pipes laid straight to grade and line;		
5. no damaged pipes or structures will be accepted by Council;		
6. no reinforcing steel exposed to cut off pipes;		
7. pipe penetrations to manholes finished off;		
8. quality of concrete work to meet Council standards;		
9. check for unsound render work;		
10. converter slabs mortar bedded;		
11. manhole lids to specification requirements;		
12. correct drops through manholes;		
13. gullies and grates to specification;		
14. overland flow paths to profile;		
15. inter-allotment drainage kerb outlets;		
16. inter-allotment drainage pipes and manholes clean and dry;		
17. inter-allotment drainage pipes laid true to grade;		
18. correct manhole sizes, lids, locations;		
19. manhole lids finished to match finished surface levels and slopes per specification;		
20. stormwater drainage easements surveyed and pegged satisfactorily;		
21. CCTV inspection results at completion of all works are to be presented 5 days prior to on-maintenance and off-maintenance inspections;		

F. Water Supply and Sewerage (if applicable)

Requirement	Verified (Yes)	Comment/s
1. water supply and sewer connection estimate obtained and paid;		
2. conduit markers;		
3. water main pressure test and water quality test results presented;		

Requirement	Verified (Yes)	Comment/s
4. hydrant and valve marker posts (when required) and pavement markings;		
5. sewer and manholes clean and dry (free of infiltration);		
6. sewer air test results presented;		
7. sewers laid true to line and grade;		
8. manhole locations;		
9. manholes to specification;		
10. manhole water test results presented;		
11. quality of concrete work/benching;		
12. manhole lids correct;		
13. manhole lids finished to match finished surface level and slope per specification;		
14. CCTV inspection results presented 5 days prior to any on or off maintenance inspection;		
15. water meter numbers and readings submitted for each lot. **Per ESDI008 requirements, this is to be included in the digital ADAC attribute information.**		
16. hydrant clearance below lid within specified tolerance		

G. Landscaping (if applicable)

Requirement	Verified (Yes)	Comment/s
1. plantings are as approved;		
2. no conflicts with underground services;		
3. visibility sight lines unimpeded by mature plants;		
4. tree guards and root barriers in place;		

H. Additional Items / Bonding of Uncompleted Works (if applicable)

Requirement	Verified (Yes)	Comment/s
1. PDF-070 Uncompleted Bond Works (UCWB) Letter received?		
2. PDF-054 Uncompleted Bond Works Form received with list of affected assets?		

On Maintenance Inspection and Documentation Checklist

Record of Compliant On-maintenance Inspection Procedure

I, the undersigned below, hereby acknowledge that all mandatory requirements per the Planning Scheme are met to Council's satisfaction.

Completed by: _____ **Date:** _____

Signature: _____

Appendix D – ADAC XML Guidelines 4.20 Schema

The current version in use is the IPWEA **ADAC XML 4.20 Schema**.

NB. the guidelines serve as a minimum requirement for asset data, and are to be read in conjunction with **Appendix B – Additional Non-ADAC data requirements**.

These standalone guidelines are also be available as separate download from the Gympie Regional Council website.

GUIDELINES FOR CREATION AND SUBMISSION OF ADAC XML FILES

ADAC XML Files to Accompany the

"As-Constructed" Bundle of Information

Version 1.4 (3rd October 2014)

TABLE OF CONTENTS

VERSION NO	DISCRIPTION & DISTRIBUTION	DATE	COMMENTS
1.0	INTERNAL REVIEW ONLY	30/06/2014	DRAFT FOR DISCUSSION
1.1	FIRST DRAFT - IPWEA ADAC CONSORTIUM	03/07/2014	DRAFT FOR DISCUSSION
1.2	SECOND DRAFT INCORPORATING SEQ COMMENTS - IPWEA ADAC CONSORTIUM	01/09/2014	DRAFT FOR DISCUSSION
1.3	THIRD DRAFT INCORPORATING CQ REGION COMMENTS – IPWEA ADAC CONSORTIUM	17/09/2014	DRAFT FOR DISCUSSION
1.4	FINAL DRAFT FOR RELEASE TO IPWEA	03/10/2014	FOR DISTRIBUTION

1.   PURPOSE

The purpose of this document is to provide practical guidelines and general assistance with respect to the creation and provision of compliant ADAC XML files. ADAC XML files are routinely required to accompany the usual bundle of "As-Constructed" plans, drawings, schedules and associated information reflecting new donated civil infrastructure and associated assets handed over to the Receiving Entity, usually a Local Authority, Water, Power or Telecommunications Utility.

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 a part of the physical works to be taken over by the Receiving Entity.

The final "As-Constructed" data should accurately reflect material types, specifications and other asset-specific information. The digital ADAC XML file is a complete and detailed digital record of "As-Constructed" Plan information and is used by the Receiving Entity to populate various information systems including GIS and Asset Systems.

Note: Specific details regarding the preparation and presentation of any required "As-Constructed" drawings and plans accompanying the ADAC XML file should prepared in accordance with the guidelines provided in per Gympie Regional Council's policy document ESDI008 *Specifications for As-Constructed Drawings*.

2.   INTRODUCTION TO ADAC XML

ADAC XML files are an accompaniment to the "As-Constructed" bundle of information required by the Receiving Entity and form a necessary part of the final approval and handover of associated civil assets and infrastructure donated or handed over via way of contractual arrangements.

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 a 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[1] (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.

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

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 Space vs Transport) is valid and appropriate when generating the ADAC XML file. This example would see street light fittings added to the ADAC XML file under the service class of Open Space.

On acceptance of the "As-Constructed" bundle of information, the Receiving Entity 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 to the provider for correction and resubmission in accordance with applicable conditions potentially delaying the progress of asset handover process.

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

3.   GENERAL REQUIREMENTS

The ADAC XML file shall be produced using the most recent ADAC XML schema release (e.g. Ver 4.1) 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 in Appendix A.

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

4.   DATUM INFORMATION

Data contained in the ADAC XML file(s) must reflect the survey details of the assets <u>exactly</u> as found in the real world and as accurately 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 – GDA 2020) co-ordinates and the relevant UTM Zone for the survey area. All AHD levels to be to fourth order standard as defined by ICSM[2] Standard for the Australian Survey Control Network Special Publication 1 (SP1) Version 2.0 October 2013.

5.   CREATION OF ADAC XML FILE(S)

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

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

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

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 a 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 particular software package should be sourced from the provider of the product who are necessarily familiar with general ADAC requirements, processes and the most current data model (ADAC XML schema version).

6.   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 the Receiving Entity.

The following section details the complete list of asset types in all asset classes within the current ADAC schema (Ver 4.1.0).   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 particular spatial relationships with other asset types.

Cadastre assets

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 PSMs.

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

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

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

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

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

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

SurveyMark
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).

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

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

OpenSpace assets

OpenSpaceArea

Asset Capture: Multi-patched area feature representing the "footprint" of the Open Space area and enclosing all relevant Open Space assets. Please refer to the dashed red line in the example shown below in figure 1.

Spatial Relationship: Not applicable

Activity Area

Asset Capture: Multi-patched area feature representing different activity area's within the parent area feature. Please refer to the dashed yellow line in the example shown below in figure 1 representing activity areas for dedicated purposes.

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

Activity Point

Asset Capture: Simple point feature representing individual activity assets that correlate to the Activity area of which these assets fall within. Please refer to the yellow dots in the example shown below in figure 1.

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

BBQ / Table / Seat / WasteCollectionPoint / BicycleFitting / Fixture / BarrierPoint / Shelter / Artwork / Tree / Sign

Asset Capture: Simple point feature representing the centre of an asset. Please refer to the blue dots in the example shown below in figure 1.

Spatial Relationship: These Open Space assets to be totally within the Open Space Area feature.

Figure 1

BarrierContinuous

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing a barrier type asset Eg fences, bollards, guardrails, pedestrian fall protection. It is recommended, but not mandatory, that each vertex represents an upright, particularly for bollard runs. This allows the geometry to be exploited to identify the individual features if necessary. Please refer to the dashed yellow line in the example shown below in figure 2.

Spatial Relationship: Open Space Barrier Feature must be within or coincident with the boundary of the Open Space Area feature.
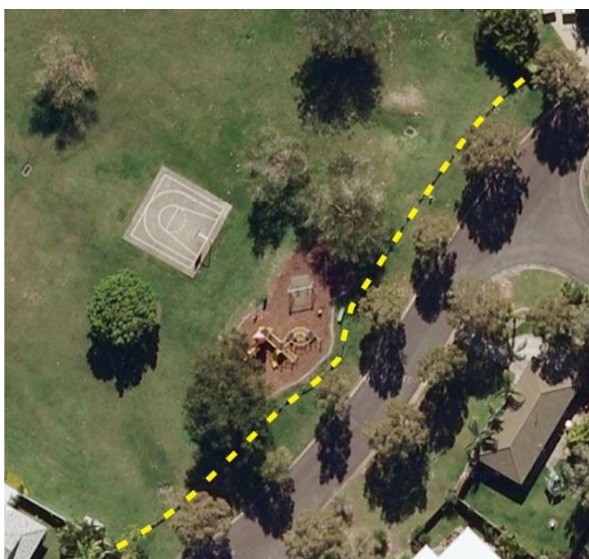
Figure 2

BoatingFacility

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

Spatial Relationship: Not applicable.

Building

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

Spatial Relationship: Not applicable.

ElectricalConduit

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

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

ElectricalFitting

Asset Capture: Simple point feature representing the centre point of an electrical fitting such as lighting, switch board or power outlet.

Spatial Relationship: Must be coincident to Electrical Conduit polylines.

LandscapeArea

Asset Capture: Multi-patched area feature 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.

RetainingWalls

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.

Spatial Relationship: Not applicable.

Sewerage Assets

Property Connections

Asset Capture: Complex linear feature (read: polylines including curves but not bézier curves) representing the invert of the pipe asset. Enforced line direction from Inspection Opening to the Non Pressure Pipe/Maintenance Hole due to gravitational flow. Please refer to Figure 3 below.

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.
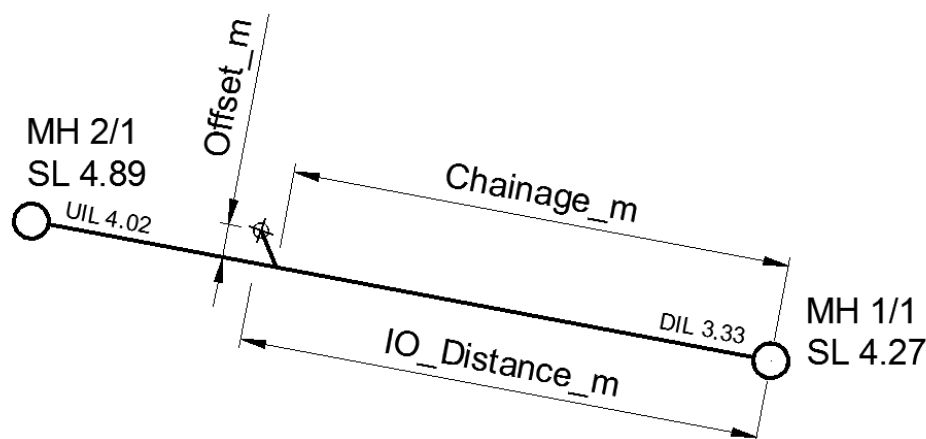
Figure 3

Fittings

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

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

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.

Spatial Relationship: Not Applicable.

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 wall of the chamber. Please refer to figure 4 for a detailed diagram. Points 2 and 3 represent the intersection of pipe material and chamber wall whereas points 1 and 4 represent the Maintenance Holes capture.

Spatial Relationship: Not Applicable
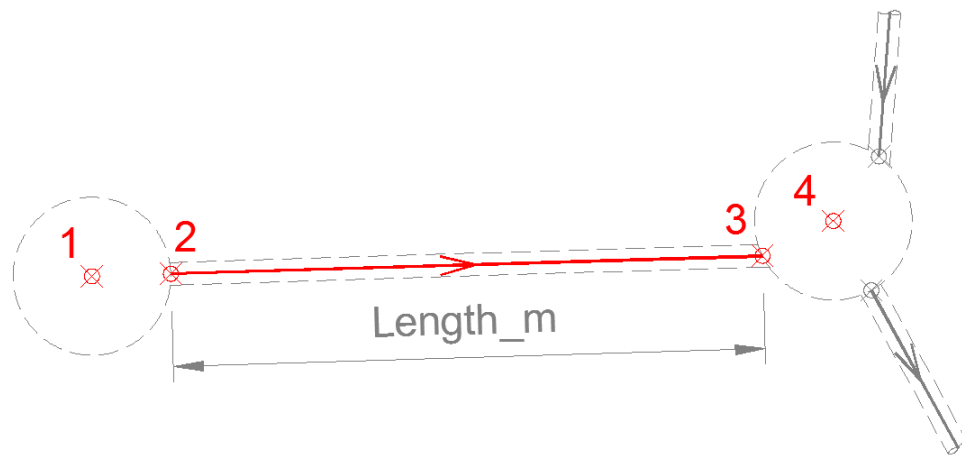
Figure 4

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

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

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.

StormWater

EndStructure

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

Spatial Relationship: Headwall "floats" adjacent to the end of a StormWater pipe feature.

Figure 5

Fitting

Asset Capture: Single point feature representing the centre point of the fitting. At this stage an End Cap is the only kind of fitting captured in this asset type.

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

GPT Complex / GPT Simple / NonGPTSimple

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) 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 represent basic and minor sand filtration storage

Spatial Relationship: GPTComplex and NonGPTSimple assets must be coincident to pipe features as per Pits/Manhole features. However GPTSimple 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.

Pipe

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 6, 7 and 8 below.

Figure 6 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 7 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 8 represents an irregular shaped pit with multiple multi-celled pipes entering the pit asset and a large single-celled asset exiting the pit and outletting through an End Structure.

Spatial Relationship: May be coincident to StormWater point features.

Figure 7

Length_m
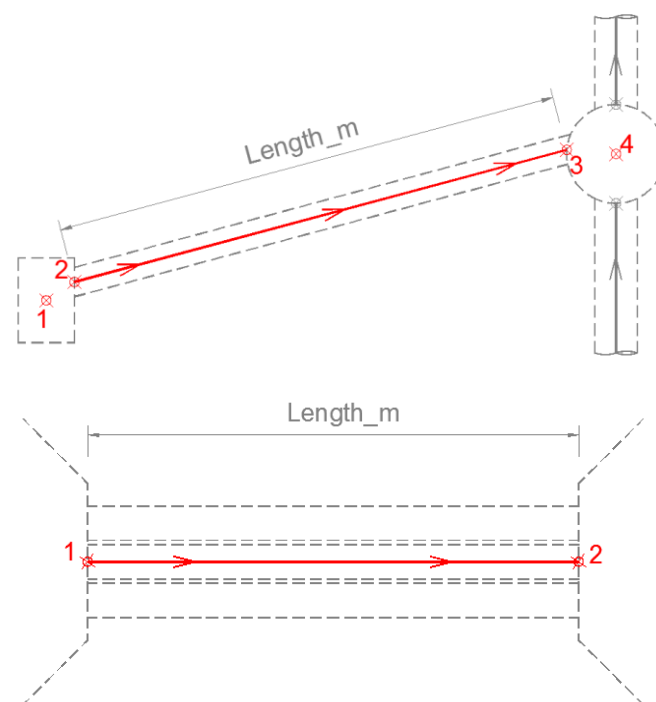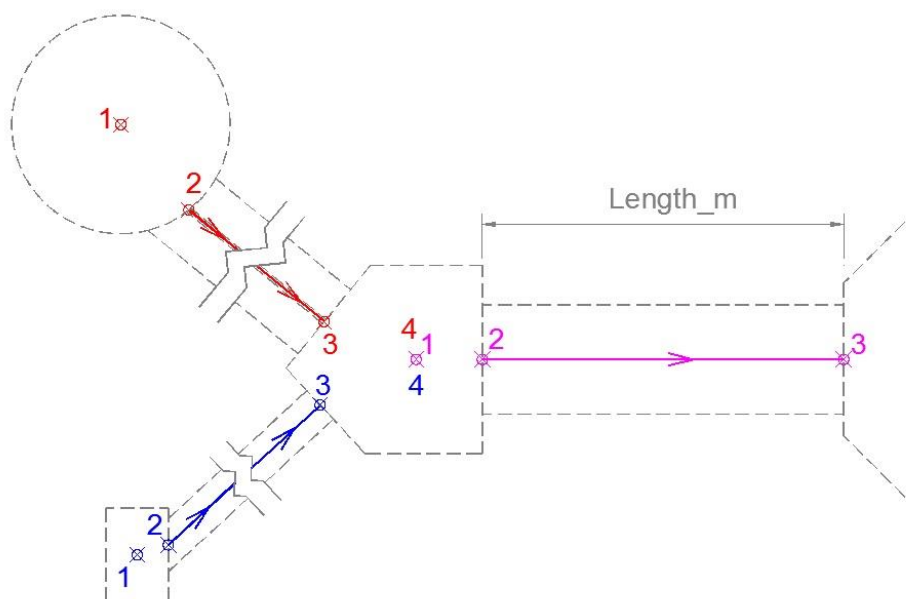
Figure 8

Pit

Asset Capture: Simple point feature representing the centre of chamber of a pit or manhole. Please note: If the asset's Use = "Pit" then the InletConfig and InletType elements must be populated. Note: InletConfig's Left/Centre/Right is referenced from the lintel looking at the road crown.

Spatial Relationship: Not Applicable.

SurfaceDrain (Including Open Drain)

Asset Capture: Simple linear feature representing the invert of the channel.

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

WSUDArea

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)

Spatial Relationship: Not Applicable.

Supplementary

PointFeature / PolylineFeature / PolygonFeature

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.

Surface

Contour

Asset Capture: Linear feature capturing a single contour feature.

Spatial Relationship: Not applicable.

SpotHeights

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

Spatial Relationship: Not applicable.

Transport

FlushPoint

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

Spatial Relationship: Must be coincident to SubSoilDrain assets.

Pathway / RoadPathway / PathStructure

Asset Capture: Complex linear feature (read: polylines including curves but not Bezier curves) representing the centre longitudinal axis of a pathway. Please refer to the green and red dash/dot line in figure 9 below. The green represents an existing pathway asset whereas the red denotes a newly constructed section of Pathway.

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

Pavement / Parking

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 9 below for a typical representation of Pavement capture. Also the solid green transparent hatch in figure 10.

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

PramRamp

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

Spatial Relationship: Must be coincident to Pathway, RoadPathway or PathStructure assets.

RoadEdge

Asset Capture:　　　　Complex linear feature (read: polylines including curves but not bézier curves) representing the top of kerb. In case of inverts, edge of concrete furthest from road centreline.

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.

RoadIsland

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 red and purple transparent hatches figure 10 for RoadIsland 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.

SubSoilDrain

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

Spatial Relationship:　　Must be coincident to Flush points.
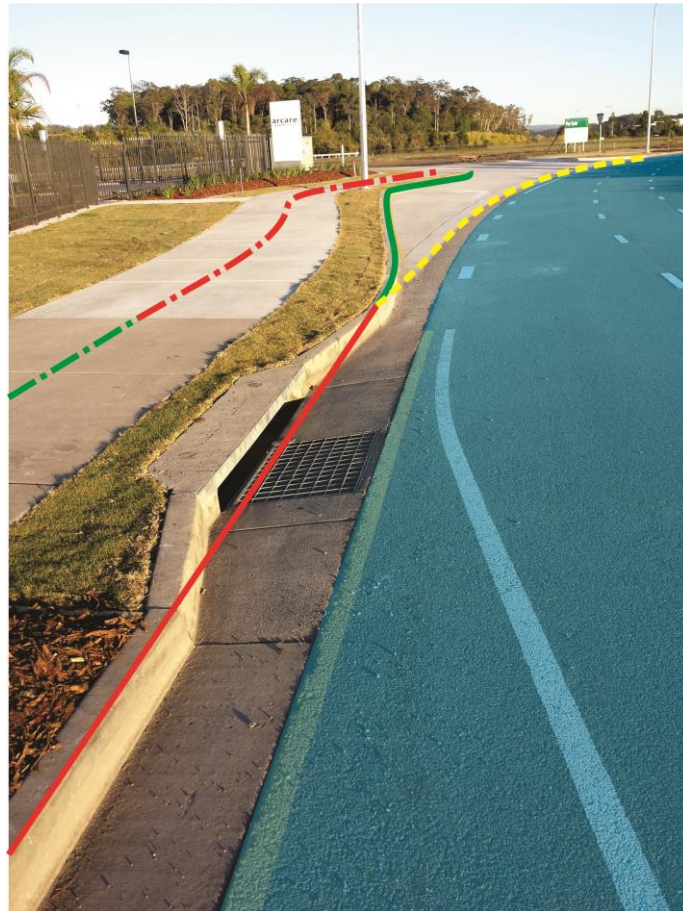
Figure 9

Figure 10

Water Supply Assets

Fittings / Service Fittings / Irrigation Fittings

Asset Capture: Single point feature representing the centre point of the fitting. Please refer to the yellow circles in figure 11 below for representations of a Tee and Tapping Band.

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

Hydrants

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

Spatial Relationship: Must be coincident to a pipe asset.

Maintenance Holes / Storage Tanks

Asset Capture: Single point feature located on the centre of the chamber. If required to capture the polygon feature please utilise the Supplementary Polygon feature (refer to Supplementary Features page 17 above).

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

Meters

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

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

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 11 below. 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 doesn't change.

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

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.

Below is an image of a Tee and Tapping Band (yellow circles) connected to reticulation mains (redlines) and a service pipe (green line).
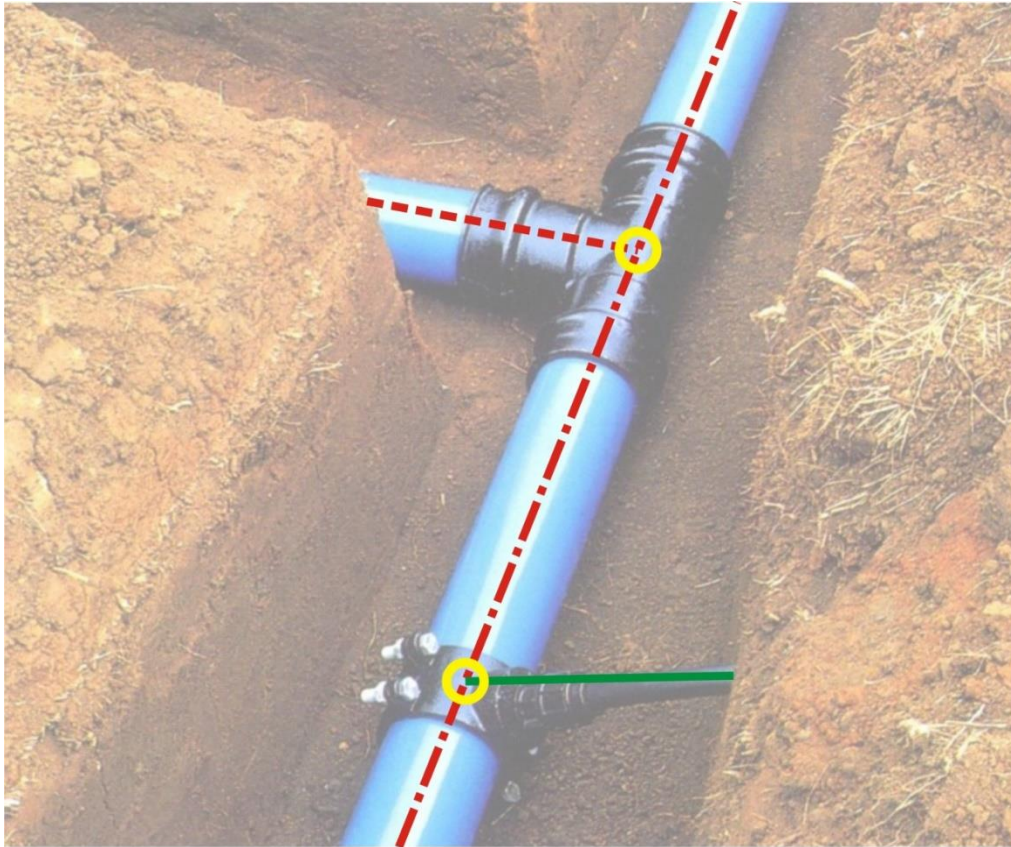
Figure 11

APPENDIX A - ADAC DATA SCHEMA

The following hierarchy identifies the individual asset types, attributes available to be captured and the mandatory status of said attributes.

Global Object Model

All assets gain the following:

Element Name	Mandatory (Y/N)
ObjectId	N
InfrastructureCode	N
Owner	N
Status	Y
Notes	N
SupportingFile() *	N

* Brackets denote an "array", used to specify a variable(s) that can be indexed

Cadastre Object Model

Connection

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

Easement

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

Lot

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

RoadReserve

Element Name	Mandatory (Y/N)
Name	Y

SurveyMark

Element Name	Mandatory (Y/N)
MarkName	Y

WaterCourseReserve

Element Name	Mandatory (Y/N)
Name	Y

OpenSpace Object Model

ActivityArea

Element Name	Mandatory (Y/N)
Use	Y
Type	Y
UnderSurfaceMaterial	Y
EdgeType	Y

ActivityPoint

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

Artwork

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

BarrierContinuous

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

BarrierPoint

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

BBQ

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

BicycleFitting

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

Boating Facility

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

Building

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

ElectricalConduit

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

ElectricalFitting

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

Fixture

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

LandscapeArea

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

OpenSpaceArea

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

RetainingWall

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

Seat

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

Shelter

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

Sign

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

Table

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

Tree

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

WasteCollectionPoint

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

Sewerage Object Model

Connection

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

Fitting

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

MaintenanceHole

Element Name	Mandatory (Y/N)
Use	Y
Length_mm	Y (Rectangular only)
Width_mm	Y (Rectangular only)
Diameter_mm	Y (Circular only)
Area_sqm	Y (Custom only)
SurfaceLevel_m	Y
InvertLevel_m	Y
FloorConstruction	Y
FloorMaterial	Y
WallConstruction	Y
WallMaterial	Y
RoofMaterial	Y
Lining	N
LidMaterial	Y
DropType	Y
CatchmentPS	N
LineNumber	N
MH_Number	Y
Chainage_m	N
TieDistance_m	N
OffsetDistance_m	N
Rotation	Y

PipeNonPressure

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

PipePressure

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

Valve

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

Stormwater Object Model

EndStructure

Element Name	Mandatory (Y/N)
StructureID	Y
StructureLevel_m	Y
EndWallType	Y (if EndWall exists)
EndWallConstruction	Y (if EndWall exists)
WingWallType	Y (if WingWall exists)
WingWallConstruction	Y (if WingWall exists)
ApronType	Y (if Apron exists)
ApronConstruction	Y (if Apron exists)
GrateType	N
TideGate	N
PredominantMaterial	Y
OutletProtectionType	Y
Rotation	N

Fitting

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

GPTComplex

Element Name	Mandatory (Y/N)
Sqid_Id	N
Manufacturer	Y (if Commerical)
ModelNumber	Y (if Commerical)
Length_mm	Y (Rectangular only)
Width_mm	Y (Rectangular only)
Diameter_mm	Y (Circular only)
Function1	Y
Function2	N
Function3	N
US_PipeDiameter_mm	N
DS_PipeDiameter_mm	N
SurfaceLevel_m	Y
US_InvertLevel_m	Y
DS_InvertLevel_m	Y
CleanoutLevel_m	Y
Depth_m	N
SumpDepth_m	N
HasFilterMedia	N
HasBasket	N
HasBoards	N
DesignFlow_m3s	Y
MaxContaminantVolume_m3	N
MaxInternalVolume_m3	N
MaintenanceCycle_mnths	N
Rotation	N

GPTSimple

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

NonGPTSimple

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

Pipe

Element Name	Mandatory (Y/N)
US_InvertLevel_m	Y
DS_InvertLevel_m	Y
US_SurfaceLevel_m	Y
DS_SurfaceLevel_m	Y
Diameter_mm	Y (Circular only)
Height_mm	Y (Rectangular only)
Width_mm	Y (Rectangular only)
Material	Y
Class	Y
JointType	Y (Circular only)
Cells	Y
ConcreteCoverType	Y
Grade	N
Length_m	N

Pit

Element Name	Mandatory (Y/N)
PitNumber	Y
Use	Y
ChamberConstruction	Y
Length_mm	Y (Rectangular only)
Width_mm	Y (Rectangular only)
Diameter_mm	Y (Circular only)
Radius_mm	Y (Extended only)
Extension_mm	Y (Extended only)
LidType	N
SurfaceLevel_m	Y
InvertLevel_m	Y
Depth_m	Y
InletConfig	Y (if Inlet exists)
InletType	Y (if Inlet exists)
LintelConstruction	Y (if Lintel exists)
LintelLength_m	Y (if Lintel exists)
OutletType	Y
FireRetardant	Y
Rotation	N

SurfaceDrain

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

WSUDArea

Element Name	Mandatory (Y/N)
Sqid_Id	N
TreatmentMeasure	Y
Function1	Y
Function2	N
Function3	N
PondingArea_m2	N
PondingDepth_m	N
FilterArea_m2	N
FilterDepth_m	N
TransitionDepth_m	N
DrainageDepth_m	N
MacrophyteZoneArea_m2	N
MacrophyteZoneDepth_m	N
CoarseSedimentArea_m2	N
SedimentVolume_m3	N
MinSurfaceLevel_m	N
PermanentPondLevel_m	N
OutletLevel_m	N
DesignFlow_m3s	N
HasSpillway	Y
MaintenanceCycle_mnths	N

Supplementary Object Model

Note: These features only contain the Object_Id element from the Global elements.

SupplementaryPoint / SupplementaryPolyline / SupplementaryPolygon

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

Surface Object Model

Note: These features only contain the Object_Id element from the Global elements.

Contour / SpotHeight

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

Transport Object Model

FlushPoint

Element Name	Mandatory (Y/N)
Function	Y

Parking

Element Name	Mandatory (Y/N)
Name	Y
NoOfCarparks	N
OnOffStreet	Y
SurfaceType	Y (if Surface exists)
SurfaceThickness_mm	Y (if Surface exists)
SurfaceArea_sqm	N
PavementType	Y
BaseLayerType	Y (If BaseLayer exists)
BaseLayerDepth_mm	Y (If BaseLayer exists)
BaseStabilisation	N
SubBaseLayerType	Y (If SubBaseLayer exists)
SubBaseLayerDepth_mm	Y (If SubBaseLayer exists)
SubBaseStabilisation	N
LowerSubBaseLayerType	Y (If LowerSubBaseLayer exists)
LowerSubBaseLayerDepth_mm	Y (If LowerSubBaseLayer exists)
LowerSubBaseStabilisation	N
PavementGeoTextile	N
SubgradeCBR	Y
SubgradeStabilisation	N

PathStructure

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

Pathway

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

Pavement

Element Name	Mandatory (Y/N)
Name	Y
SurfaceType	Y (if Surface exists)
SurfaceThickness_mm	N
SurfaceNomWidth_m	Y (if Surface exists)
PavementType	Y
BaseLayerType	Y (If BaseLayer exists)
BaseLayerDepth_mm	Y (If BaseLayer exists)
BaseStabilisation	N
SubBaseLayerType	Y (If SubBaseLayer exists)
SubBaseLayerDepth_mm	Y (If SubBaseLayer exists)
SubBaseStabilisation	N
LowerSubBaseLayerType	Y (If LowerSubBaseLayer exists)
LowerSubBaseLayerDepth_mm	Y (If LowerSubBaseLayer exists)
LowerSubBaseStabilisation	N
PavementGeoTextile	N
SubgradeCBR	Y
SubgradeStabilisation	N

PramRamp

Element Name	Mandatory (Y/N)
Rotation	N

RoadEdge

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

RoadIsland

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

RoadPathway

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

SubSoilDrain

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

Water Supply Object Model

Fitting

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

Hydrant

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

IrrigationFitting

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

MaintenanceHole

Element Name	Mandatory (Y/N)
Use	Y
Length_mm	Y (Rectangular only)
Width_mm	Y (Rectangular only)
Diameter_mm	Y (Circular only)
SurfaceLevel_m	Y
InvertLevel_m	Y
FloorConstruction	Y
FloorMaterial	Y
WallConstruction	Y
WallMaterial	Y
RoofMaterial	Y
LidMaterial	Y
Rotation	N

Meter

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

Pipe

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

ServiceFitting

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

StorageTank

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

Valve

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

Valve