Wellington Water

Asset Information Requirements

Formerly: As-Built Specification for Water Services

April 2025 | Version 2.0

Our water, our future.

Document Control

This document was developed for the Hutt, Porirua, Upper Hutt and Wellington City Councils, South Wairarapa District Council and Greater Wellington Regional Council.

Revision History

Revision	Prepared By	Description	Date
0-0.6	Various	Interim Regional Design and As-Built Specification V5 V6 by Capacity Infrastructure Services Ltd Version (0 to 6 inclusive).	October 2013 & April 2014
1.0	Dylan Hopkins, Wade Gosper, Steve Luck	Full revision using existing implemented and draft as-built specification documents. It was also revised to align with the Regional Standard for Water Services and Regional Specification for Water Services.	November 2021
1.1	Wade Gosper	Section 2.3: Updated coordinate and vertical datum requirements. Updated to provide options for non-CAD based deliverables from Contractors	October 2022
2.0	Greg Evans	Overhauled and renamed to Asset Information Requirements.	April 2025

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Contents

1 Introduction

To manage our water assets effectively, we need to answer three simple questions:

1. **Data**: What is it?
2. **Geospatial**: Where is it?
3. **Documentation**: How does it work?

Having clear answers to these questions for every part of our water system is crucial. It helps us:

a. Fix problems quickly and improving operational efficiency.
b. Maintain our levels of service.
c. Manage our assets appropriately.
d. Effectively plan for the future.
e. Maintain regulatory compliance?

1.1 Purpose

These requirements outline asset information requirements for Wellington Water managed assets, on behalf of our client councils. These requirements have been developed to balance the cost of capturing and maintaining data against the needs of the organisation to make evidence-based decisions based on an appropriate asset management information system.

The requirements incorporate guidance and information requests from:

a. Finance: valuation, insurance, and capitalisation needs.
b. Operations: maintenance data from Wellington Water and Veolia.
c. Regulatory: sample of Taumata Arowai data request requirements.
d. Planning: data requirements resulting from the Managing Critical Asset Risk programme.
e. Data Management: requirements from Asset Management Data Schema working group.
f. National Standards: alignment with three waters asset data standard (ADS v3.7).

The Asset Information Requirements are supported by Exchange Information Requirements for Wellington Water managed projects, which details exact deliverables and milestones.

1.2 Scope

These requirements replace the **As-Built Specification for Water Services** and applies to all projects delivering assets to Wellington Water or one of the client councils. They encompass both network and facility assets which have historically been managed separately. This includes creating, decommissioning replacing or updating assets within the network.

Content previously found within the **As-Built Specification for Water Services** relating to draughting standards or specifications have been relocated to the **Regional Draughting Manual for Water Services.**

These requirements outline the minimum expected asset information to be collected and have been developed in accordance with the current business needs. The minimum requirements will evolve over time as business, supply chain, and the legislative and reporting landscapes mature.

Additional data beyond the minimum requirements outlined in this document may be captured. However, there is no guarantee that this information will be stored or maintained as a record against an asset.

1.3 Departures

Departures from, or suggested additions to these requirements shall only be made with the written permission of Wellington Water. Wellington Water must ensure compatibility with Wellington Water systems, ingestion processes and data schemas before changes are accepted.

1.4 Responsibility

Suppliers to Wellington Water are required to supply complete asset information according to these requirements in advance of Gateway 6 or 224(c) (**Resource Management Act**) submissions to Wellington Water and relevant council. This responsibility is held by the Project Information Manager.

1.4.1 Project Information Manager

Suppliers are to nominate a Project Information Manager. The Project Information Manager may be a role appointed to existing individual(s) within a project team or specifically appointed. The Project Information Manager is responsible for:

a. Developing the Information Delivery Plan including all deliverables and their delivery date.
b. Oversee information management processes throughout the project lifecycle.
c. Establish and manage the Common Data Environment (CDE).
d. Develop and implement information standards and plans.
e. Ensure compliance with the Wellington Water information requirements.
f. Coordinate information exchange between project stakeholders.
g. Perform quality assurance on information deliverables.
h. Facilitate supply chain integration and collaborative working.
i. Report on information management progress to Wellington Water and stakeholders.

It is preferable if appointed Project Information Manager(s) have been formally trained through a recognised **ISO 19650** course.

1.5 References

1.5.1 Document References

Documents included within Table 1 are referenced throughout and should be read in conjunction with these information requirements.

Table 1: Document References

Document Reference	Title
STD_0001	Regional Standard for Water Services
STD_0002	Regional Specification for Water Services
ICT_0004	Regional Draughting Manual for Water Services
DESR_0001	Register of Approved Products for use in Water Services Infrastructure
STD_0003A	Preventative Maintenance Template
STD_0003B	Asset Data Template
STD_0003C	Information Delivery Plan Template
3WADS	Three Waters Asset Data Standard (Version 3.7, Water New Zealand)

1.5.2 Standards References

Standards included within Table 2 are referenced throughout and should be read in conjunction with these requirements.

Table 2: Standard References

Standard Reference	Title
ISO 19650-2:2018	Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM) — Information management using building information modelling – Part 2: Delivery phase of the assets
ISO 19160-1:2015	Addressing Part 1: Conceptual Model (refer to LINZ for NZ application)
1991 No 69	**Resource Management Act 1991** (Public Act. 1991 No 69)

1.6 Terminology

Asset Information is split into three discrete components which respectively answer one of the three fundamental asset management questions.

1. **Data: what is it?**

Asset data consists of non-spatial attributes and metadata in relation to an instance of an asset.
For example, a pump may have asset data fields such as Material: **Steel** or Cost: **$2,500**, generally represented alphanumerically or populated from a code list.

2. **Geospatial: where is it?**

Knowing the location of assets is critical. Geospatial information is provided in CAD or GIS formats and contain the position of one or more assets within the network. Information is georeferenced to a common coordinate system and datum.

3. **Documentation: how does it work?**

Documentation comprises the remaining information that is required to operate and maintain an asset.

For example, a pump may have asset documents such as an **Operating Manual**, **Datasheet** or **Drawing**, generally delivered in a specific document format. Documentation includes document and preventative maintenance registers.

Table 3 contains additional terminology and acronyms used throughout these requirements.

1.6.1 Information Models

Information models are a collection or package of related information types, comprising data, graphical or geospatial models and supporting documentation. Each of the components of the model are related such that a change within the asset data should be reflected, where appropriate, within the graphical model and supporting documentation.

There are two types of information models, the Asset Information Model, and the Project Information Model, which share a cyclical relationship:

a. At the start of the project delivery phase, relevant information from the Asset Information Model contributes to the Project Information Model, e.g. existing assets, relevant maintenance history.
b. At project handover, the appropriate information within the Project Information Model is used to update the Asset Information Model.

Figure 1 illustrates a simplified relationship between Information Models.

> **Asset Information Model**

The Asset Information Model is a digital collection of information representing the operational phase of an asset's lifecycle. It contains data necessary for day-to-day operation, maintenance, and management, such as asset registers, maintenance schedules, and operational performance data.

The Asset Information Model supports strategic and operational decision-making by serving as a single source of validated information about the built asset. It is continuously updated throughout the asset's lifecycle to reflect its current state, incorporating changes from maintenance, repairs, or upgrades.

> Project Information Model

The Project Information Model is a digital collection of information generated during the delivery (design and construction) phase(s) of the project. The Project Information Model contains project or contractual information such as schedules, specifications or contracts, alongside all content required to update the Asset Information Model.

The Project Information Model is used to communicate design intent between stakeholders and facilitate efficient and structured project delivery. Upon project completion, the Project Information Model is archived within the nominated project folder, after updating the Asset Information Model.

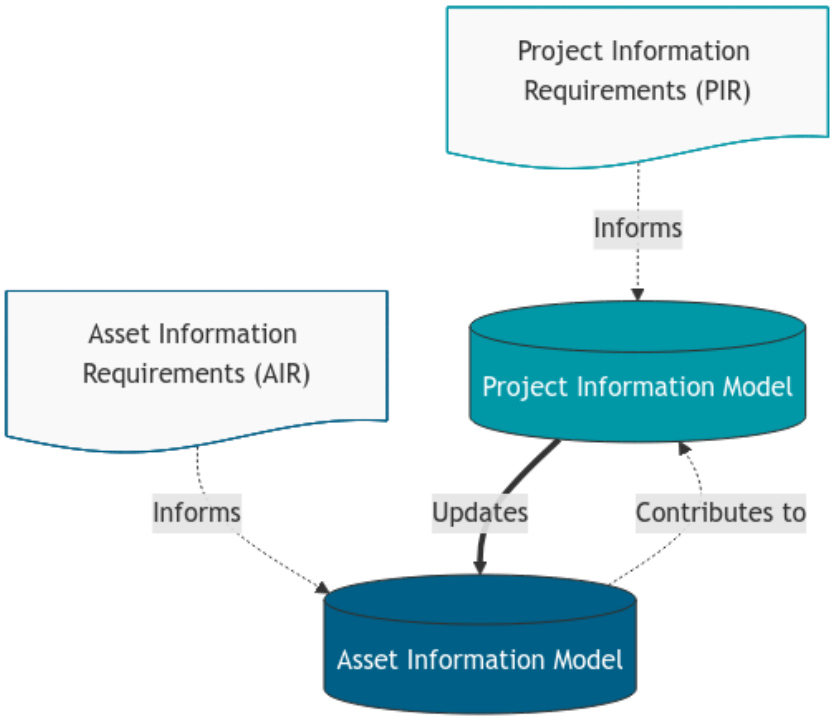

Figure 1: Information Models & Requirements Relationship (Simplified)

Table 3: Terms and Definitions

Term	Definition
Asset	Any item of value that is owned, operated, and maintained by the water utility. This includes equipment, facilities, or infrastructure used in treatment, distribution, or processing.
Asset Information Model	Collection of information, including graphical and non-graphical data and documents relevant to the ongoing management of the asset, informed by Asset Information Requirements.
As-built	A precise record showing exactly how a structure was constructed after completion.
CAD	Computer Aided Design used for 2D and 3D design. Examples include Revit, AutoCAD, Civil3D.
Class	A broad category of assets with similar characteristics, used for high-level asset groupings.
Common Data Environment	A centralised platform for managing, sharing and coordinating project information systematically, available to all project participants and stakeholders, commonly referred to as CDE.
Data	Information expressed in a table, including supporting attributes or metadata.
Documentation	Structured or unstructured information containers such as drawings and reports related to a built asset. These can include controlled, managed and unmanaged documentation.
Engineering-Controlled	A formally approved and version-controlled record subject to engineering management processes, ensuring quality, safety, and regulatory compliance.
Exchange Information Requirements	A pre-tender or pre-appointment document setting out the information requirements specific to an appointment, including milestones and deliverables. These may exist within Principal's Requirements or within a standalone document for Wellington Water managed projects.
Facility	A defined geographical area containing multiple assets or locations.
Function	The specific role or purpose an asset serves within the water system, such as pumping, treatment, or storage.
Geospatial	Location information provided in CAD or GIS formats, referenced to a common coordinate system and datum.
GIS	Geographic Information Systems, technology that is used to create, manage, analyse, and map data relating to spatial locations.
Hierarchy	Grouping of assets or locations in a structured, often parent-child relationship, representing how they are organizationally or functionally related.
Information Delivery Plan	A schedule of information to be produced and delivered throughout the project, including key issue dates. The plan must be agreed with Wellington Water.
Linear	Referring to assets that extend over a distance, such as pipelines for three water networks that connect sites or customers
Location	Also commonly referred to as functional location. A place or position where an asset is or can be installed.
Operating Location	A sub-location where assets are actively used or operated, applied to pump stations and water storage.
Physical [Asset]	Physical assets are assets which have been physically installed on site by the project delivery team(s).
Planned [Asset]	Planned assets are assets which are proposed for installation but have not yet been installed.
Preventative Maintenance [PM]	A proactive approach to maintaining equipment, systems, or assets by performing regular inspections, servicing, and repairs to prevent failures, reduce downtime, and extend their lifespan
Process System	An area within a water or wastewater treatment plant where assets are located and operated within a distinct process system

Term	Definition
Project Information Model	Collection of graphical and non-graphical information, including project specific information such as contracts and schedules informed by Project Information Requirements.
Reticulation	The network of pipes and connections that distribute or collect three waters to/from end users.
Subtype	A further subdivision of an Asset type, providing more detailed categorization of assets.
Tier	A level of breakdown of data granularity within the hierarchy structure.
Type	A more specific grouping within an Asset class, often based on shared attributes or maintenance requirements.

1.7 Delivery

All information referenced within transmittals should be stored appropriately within the nominated project folder or Common Data Environment. At a minimum the information model must include:

a. Information Delivery Plan: **Template**
b. Asset Data: **Template**
c. Geospatial Information
d. Preventative Maintenance Register: **Template**

The delivery team's Project Information Manager is responsible for developing an appropriate Information Delivery Plan scoped to the requirements of the project, including all deliverables and their delivery dates. The contents of this plan are to be approved by the nominated Wellington Water project representative.

Information is to be submitted to Wellington Water via:

a. The Wellington Water project or Land Development contact person.
b. The relevant council sub-division approval team.
c. The Wellington Water Asset Data Team:
    i. Email: **asbuilt@wellingtonwater.co.nz**
    ii. Jira: **Online Service Portal**

Transmittals which do not satisfy these requirements will not be accepted.

1.7.1 Information Delivery Planning

The Information Delivery Plan is developed by the delivery team Project Information Manager for Wellington Water managed projects. The plan details the information model to be developed and provided within the project at each project milestone. The plan is developed during planning and early design stages and submitted to Wellington Water for acceptance.

The Information Delivery Plan relates information to corresponding assets, processes or facilities and comprises of at least two tables, which encompass the following minimum requirements. More detail may be found within the **Information Delivery Plan Template**.

Table 4: Information Delivery Plan Requirements (Part 1)

#	Field	Description
1	ID	Unique ID with consistent naming convention.
2	Description	Summary of the information content and purpose.
3	Document Type	Classification of the information (e.g., report, policy, procedure, form).
4	Discipline	The engineering discipline the information relates to (e.g., process engineering).
9	Approver	The team the document was developed for and accepting the information at the milestone.
5	Originator	The organisation or team responsible for creating the information
6	Status Code	Current state of the information (e.g. draft, approved)
7	Suitability	Indicates the information fitness for use or release (e.g., for information).
8	Date	Date the information was supplied at
10	Document Link	Hyperlink or path to information.

Table 5: Association Table Requirements (Part 2)

#	Field	Description
1	ID	Unique ID key to the primary Information Delivery Plan.
2	Location Hierarchy	The hierarchy that the information relates to.
3	Asset Identifier	The asset the information specifically relates to.

Documents may have a relationship to one or more assets based on their position within the hierarchy (refer 2: Hierarchy Structure). These relationships should be identified in the Association Table.

Where a document relates to a facility or process (i.e. many assets), the document is to be assigned to the corresponding hierarchy rather than against each of the assets. Other documentation which relates specifically to individual fixed assets should also be related directly to the asset.

For example:

a. **Facilities (Tier 4)**: a single manual at a pump station often applies to the whole facility with many assets.
b. **Processes (Tier 5)**: a basis of design will often apply to a treatment process.

Similarly, documents may relate to a single fixed asset.

a. **Asset**: a test certificate will often only apply to a single asset instance.

1.7.2 Status Milestones & Revisions

Information produced for Wellington Water are to follow an internal and external review process. The key information stages for asset information are below:

> **Design**

Design revisions are denoted by with alphabetical letters starting from A.

The initial stage where all necessary investigations, design calculations, draughting, material specification, work scoping, and testing is performed. As the result of the design work, information is "Issued for Construction".

> **Issued for Construction**

Issue for Construction revisions are denoted by number 0.

When the information is approved and issued to Contractors to carry out the planning, procurement, site management and construction as per the scope of work.

> **As-built**

As-built revisions are denoted by sequential increases from 0 (Issue for Construction).

The revised set of information submitted upon completion of the project or a particular job. They reflect all changes made during the construction process. These changes may be because of the following:

a. As-found – changes to or discovery of water services during excavation, surveys, or maintenance.
b. Design change – changes that requires an approved 'design change order variation'.
c. As-constructed – minor design and construction configuration changes.
d. New Development- vested three-waters assets and/or realignment/modification

1.8 Future Development

These asset information requirements will evolve as the maturity of Wellington Water, the supply chain and the regulatory and legislative landscape grows. Some areas for future consideration in this document include:

a. Technical attribute assignment to asset unit types rather than classes.
b. Data standard alignment with industry best practice (e.g., IFC Specification, Uniclass).
c. Adaption of asset data standard to machine-interpretable language (e.g. Proteus XML, DEXPI).
d. Increase detail and structure (e.g. templating) of documentation requirements.
e. Review and amendment to documentation list.
f. Inclusion of operational asset information requirements.

1.9 Feedback

These requirements acknowledge the experience and expertise of our supply chain and will continuously seek feedback to develop and improve these requirements for Wellington Water, the client councils, and our supply chain. These requirements may undergo occasional amendment as policy, processes and technology evolves. The reader should ensure they are referring to the most recent version of the specifications which can be found at **www.wellingtonwater.co.nz**. Any feedback on the specifications can be emailed to **standards@wellingtonwater.co.nz**, or sent through to:

Wellington Water
Private Bag 39-804
Wellington Mail Centre 5045
Lower Hutt
c/-Standards

2 Hierarchy Structure

All assets managed by Wellington Water are classified into a hierarchy structure. The depth and complexity of the hierarchy is dependent on the function that the asset provides to the network.

a. The primary hierarchy is referred to as the **location hierarchy**, where a location will hold many assets.
b. The secondary hierarchy classification relates to each asset, or the **asset hierarchy**.

2.1 Location Hierarchy

The location hierarchy generally consists of a maximum of five tiers, where **assets** exist within tier five (and often grouped by process).

a. **Facility assets** used within storage, pumping or treatment are classified into a **facility hierarchy.**

   The facility hierarchy consists of the maximum five-tiers.

   Note facilities may also be referred to as locations.

b. Assets used for **network reticulation or collection** are classified within the simplified **network hierarchy.**

   The network hierarchy consists of three-tiers, skipping tiers four and five.

An illustration of the hierarchy is presented in Figure 2, partially expanded within the drinking water network. Further detail relating to the current Wellington Water system configuration in included in **Appendix 2**.

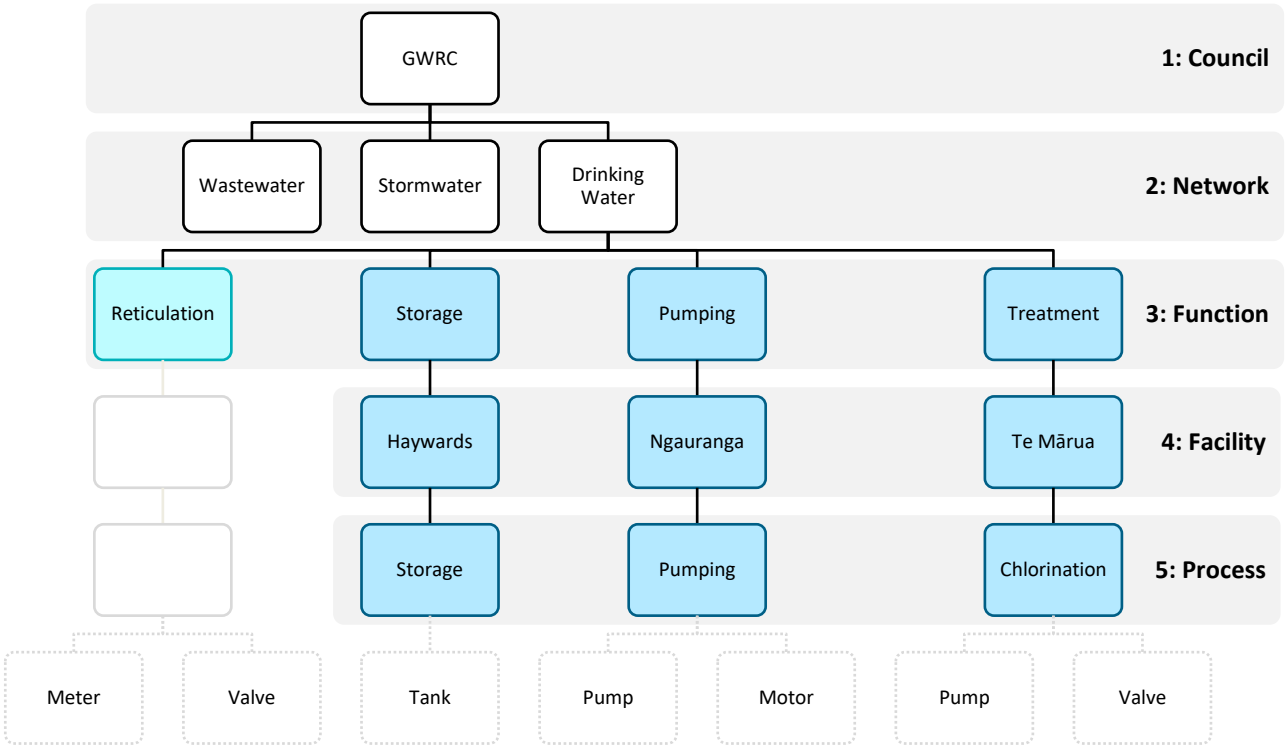

Figure 2: Location Hierarchy Example (Network, Facility)

Note: Potable Water, commonly referred to as PW historically may still appear on some Drinking Water assets. We are working to transition towards use of Drinking Water, DW over time.

2.2 Asset Hierarchy

Each asset that exists within the location hierarchy is classified into an additional three levels:

1. Asset Class.
2. Asset Type.
3. Asset Subtype.

Every asset must be assigned an asset class, type, and sub-type where applicable. The combination of type and sub-type are collectively referred to as the 'Unit Type'. The purpose of the **asset hierarchy** is to provide granularity that enables in critical business reporting requirements.

2.2.1 Asset Class

Asset class primarily serve as a high-level grouping of assets commonly used in aggregated reporting. Classes are also where Wellington Water assigns additional attribute requirements. The asset class is derived from the mandatory asset type. Asset classes are provided in **Appendix 1: Table 18** with examples such as:

1. **Mechanical Static**
2. **Instruments and Monitoring**
3. **Chambers and Manholes**

2.2.2 Asset Type

Asset types provide more granular information about what the asset is. Types are mandatory for all assets. Examples of asset types include (full list in **Asset Data Standard**):

1. **Valve**
2. **Pump**

2.2.3 Asset Subtype

Common asset classes have optional subtypes that provide additional granularity. Example asset subtypes include:

1. Valve
   - **1.1. Valve Ball**
   - **1.2. Valve Gate**
2. Pump
   - **2.1. Pump Axial**
   - **2.2. Pump Peristaltic**

Refer to **Asset Data Standard** for more a complete list of types and corresponding subtypes.

2.3 Relationship

All assets are assigned to the respective network or facility hierarchy dependent on their function in the network. Each asset must exist within a hierarchy, and many assets may exist within a single hierarchy. Examples of the relationship between hierarchy and assets are shown below in Figure 3 and Figure 4.

```
1: WCC (Wellington City Council)
└── 2: WCC-DW (Potable / Drinking Water)
    └── 3: WCC-DW-RETC (Reticulation)
        └── 4: N/A
            └── 5: N/A
                ├── 101674 WCC_DW1043539 VALVE 25MM
                ├── 101784 WCC_DW1043640 VALVE 100MM
                ├── 101234 WCC_DW1043728 VALVE 150MM
                ├── 101564 WCC_DW1089439 VALVE 50MM
                ├── 101294 WCC_DW1043239 VALVE 25MM
                └── 102344 WCC_DW1035875 VALVE 50MM
```

Figure 3: Example Network Hierarchy

```
1: GWRC (Greater Wellington Regional Council)
└── 2: GWRC-DW (Potable / Drinking Water)
    └── 3: GWRC-DW-TMNT (Treatment)
        └── 4: GWRC-DW-TMNT-TP801 / L0000396: TE MARUA TREATMENT PLANT
            └── 5: GWRC-DW-TMNT-TP801-CHLORO / L0000396-CHLORO: CHLORINATION
                ├── 1234 CHLORINE DRUM ISOLATION [TM-VLV0301]
                ├── 1235 CHLORINE FLUSH VALVE [TM-VLV0302]
                ├── 1236 CHLORINE ANALYSER [TM-AIT0301]
                └── 1237 CHLORINE PROCESS PIPEWORK [TM-PIPE0301]
```

Figure 4: Example Facility Hierarchy

3 Assets

Fixed assets are long-term, durable items that provide ongoing value to Wellington Water, such as pumps, pipes, or treatment equipment. Assets may be both physical or intangible, such as consents or software. Fixed assets are collected and managed on behalf of client councils through the Wellington Water Asset Register. Fixed assets are recorded when all following conditions are satisfied:

a. Criticality: The performance of the asset is critical to Wellington Water service objectives.
b. **Maintenance Strategy:** The asset is maintainable and requires preventative maintenance.
c. Data Granularity: Reporting on asset attribute is a regulatory, legislative, or financial requirement.
d. Value Threshold: The acquisition value of the asset exceeds $2,000.
e. Asset Life: An expected life greater than one year.

In instances where these conditions are not satisfied, the component should be considered an attribute or component of an assembly. Typically, all assets and their assemblies are found with supporting classifications within **Appendix 1**.

3.1 Asset Assemblies

A single fixed asset may be comprised of an assembly of components. This is commonly referred to as componentisation. An assembly of components may be considered a single fixed asset when:

a. Each of the components have similar deterioration rates and renewal cycles.
b. The cost of an individual component is significant in relation to the total assembly cost.
c. The failure of any component compromises the function of the assembly.
d. Maintenance and replacement can be assigned to the entire assembly.
e. Tracking at the assembly level provides adequate information for risk management.

Componentisation is suggested in the following contexts:

a. Buildings and structures that house processing equipment.
b. Process pipework, cabling, and other linear assets within facilities.
c. Backflow prevention assemblies, inclusive of enclosure, strainers, valves, and backflow devices.
d. High-volume, low-cost, and non-critical valves within facilities.
e. Electrical, instrumentation and controls components within processes or facilities.
f. Specialist supplied process equipment, such as a centrifuge.
g. Land, grounds, civil and structural asset types, such as retaining walls.
h. Intangible assets, such as software.

It is uncommon to replace or modify a single section of an assembly. However, in such circumstances:

a. The apportioned value of the removed component should be written off.
b. The value of the replacement, refurbishment or modification should be added to the fixed asset.
c. The life expectancy of the fixed asset assembly should be updated if required.

3.2 Planned Assets

Creating an asset record within the asset management information system prior to handover of the physical asset is considered best practice to streamline the handover of assets to operations. Wellington Water handle this through **planned assets**.

Planned assets are assets which are proposed for installation but have not yet been installed. Planned assets are typically generated in the design phases of a project. **Physical assets** are assets which have been physically installed on site by the construction team.

3.2.1 Overview

Planned assets exist to streamline the flow of information from the design team to the construction and operations teams. Planned assets are created throughout the design phase of the project to allocate identifiers which may then be used to:

a. Develop asset data against the planned asset.
b. Connect asset documentation to the planned asset.
c. Prepare proactive maintenance to the asset prior to installation.
d. Produce ancillaries (such as asset tags) prior to asset installation.

3.2.2 Variation

Scope variation is inevitable within the delivery of a project, often impacting the assets to be delivered. Suppliers are to manage and inform Wellington Water of variation to the Information Delivery Plan. It is expected that:

1. Some planned assets never become physical assets as they are no longer required.
2. Physical assets will appear during construction that were not generated during design.

Variations to assets during design and construction are to be finalised prior to Gateway 6.

3.3 Identification

Every facility, location and asset must have a unique identifier to ensure that asset information can be linked between various systems.

3.3.1 Facility Identification

Each facility within the network has a unique human-friendly identifier. When constructing new facilities, please consult with Wellington Water to ensure the facility has been assigned an identifier. Existing facility identifiers may be found in **Appendix 1**.

3.3.2 Asset Identification

A single asset may have several unique identifiers, each of which are outlined below:

1. Network ID (Reticulation Assets)
The Network ID applies to reticulation assets within the hierarchy. The identifier is automatically created by the system and is commonly seen through GIS interfaces. Suppliers are expected to provide the Network ID when removing or replacing or modifying assets. The Network ID cannot be supplied for new assets as this is system generated. In lieu of the final Network ID the supplier is to nominate a unique project identifier.
Examples: **HCC_SWP022265**, **WCC_DWP086017**

2. Asset Tag (Facility Assets)
Asset Tag is the unique, controlled Wellington Water identifier for an asset. The asset tag is the primary identifier for assets within facilities. Suppliers must provide facility asset tags for all removals, replacements, and additions, generated in accordance with **Appendix 2**. The facility asset tag is physically attached to assets within facility environments and denoted on drawings and within the asset management information system.
Examples: **WAI-LSHH-660003, TM-LSW1103CS**

3. Asset Number
The Asset Number is a sequentially generated identifier created when an asset is initialised in the facility asset system. This number is therefore unique to the instance of an asset and will change when a like-for-like replacement of an asset occurs. This number may be supplied for asset removals, replacements, or updates in addition to the Facility Asset Tag or Network ID.
Examples: **1755614**, **21894**

4. SCADA ID

The SCADA ID or tag is a Wellington Water generated ID which is used for devices connected to the SCADA system, in instances such as flow metering. If a new ID is required, please consult with Wellington Water. New SCADA identifiers are expected to align with the instrument asset tag.

5. Project Identifier

Project teams working on reticulation projects should consider using a project identifier to distinguish assets within supporting asset documentation. This identifier can be created by the project team and must be unique within the scope of the project. This identifier will be held as a secondary reference to the asset upon system load.

3.4 Activities

There are four key activities that may be undertaken on a fixed asset.

3.4.1 Creating

When adding a new fixed asset record within the hierarchy. Creating a new fixed asset is typically applied in two contexts, replacement of existing assets and addition of brand-new assets to the network.

3.4.2 Decommissioning

Assets may often be removed from the network, which typically occurs in two contexts, replacement of an existing asset or complete removal of the asset from the network, either by disposal or abandonment.

3.4.3 Replacing

Used when an existing fixed asset is removed from the network and replaced by a new fixed asset serving a similar function. Such replacements are often referred to as asset renewals. Asset replacements are a combination of a new (see **Creating Assets**) and removed asset (see **Decommissioning Assets**).

3.4.4 Updating

Asset updates are typically applied when new information is collected or modified on an existing asset through field work. Examples of this is the assignment of a new criticality or condition score to an existing asset.

3.5 Preventative Maintenance

Preventative maintenance ensures asset reliability, efficiency, safety, and longevity by addressing issues before they escalate. Accurate information from suppliers is crucial for defining specific maintenance requirements, optimising performance, avoiding damage, and maintaining warranties.

The preventative maintenance information required includes job plans and preventative (or planned) maintenance schedules. A single asset may have many job plans on different schedules.

3.5.1 Job Plan

a. Task description and objectives.
b. Specialist tools, equipment or materials required.
c. Safety precautions or procedures.
d. Estimated time for task completion.

3.5.2 Preventative Maintenance (PM) Schedule

a. Job plan to be used.
b. Assets the plan needs to be assigned to.
c. Frequency of maintenance.

Information to be supplied for maintenance may be found in **6.1.1 Preventative Maintenance**.

4 Data

Asset data is supplied using tables and stored within the asset management information system, including both facility and network assets. Non-spatial data should be supplied using the Wellington Water **Asset Data Template**.

4.1 Data Types

Various data types are used to represent different attributes of assets. The standard and key data type groupings are included in Table 6.

Table 6: Data Types

Data Type	Description	Examples
String	Text-based information	Asset names, Material, Address details, Manufacturer
Integer	Whole numbers	Life expectancy, Population served
Decimal	Precise numeric values	Flow rate, Pressure, Dimensions such as pipe diameter
Date	Time-based information	Installation date, Decommission date
Boolean	True/False values	Is compliant?
Geography	Spatial data	Asset locations, Service area boundaries

Address data is to be managed in formatted strings according to ISO 19160-1:2015. Additional information may be found at data.govt.nz.

4.2 Field Classifications

Table 7 details the classification of attributes into categories based on their importance and necessity for reporting and compliance. These classifications ensure consistency and completeness of data across the business.

Table 7: Field Classifications

Code	Name	Description	Example
S	System	System fields are automatically generated or populated by the data management system. These fields are typically not editable by users.	Unique ID (UID)
M	Mandatory	Mandatory fields are those that must be completed for data collection, evaluation, and compliance with regulatory or legislative requirements.	Install Date
C	Conditional	A conditionally mandatory attribute that must be supplied if applicable or relevant for the asset type designation.	Decommission Date
O	Optional	Optional fields provide additional information that is not critical for compliance or basic reporting but may offer valuable insights or context.	Alternate ID
F	Future	Useful attributes which do not have a suitable destination field within the current Wellington Water systems and need not be supplied.	Certification Frequency

4.3 Responsibility

The party responsible for supplying data is suggested within the **Asset Data Standard**, however should be adapted to fit the scope and procurement model of the project in question.

4.4 Units of Measurement

Units of measurement are applied at an attribute level and are defined within the **Asset Data Standard**. In circumstances where no unit is specified, the following rules should be adopted:

a. All units must be expressed in metric format (imperial should be converted prior to supply).
   i. Geospatial measures (e.g. Northing, Easting, Elevation) must be expressed in metres (m).
b. SI units (International System of Units) are used unless domain-specific standards take precedence.

4.5 Asset Attributes

Attributes contain properties related to an asset, stored within a table field. Attributes can be broken down into two categories, common and technical as these will vary based on the asset class. The combination of common and technical attributes enable key business reporting, including regulatory, legislative, operational, or financial activities.

4.5.1 Common Attributes

Common attributes are the minimum attributes that may be applied to any asset class detailed in the **Asset Data Standard**. Common attributes are applied to all assets in addition to any technical attributes required.

4.5.2 Technical Attributes

Technical attributes contain properties of assets which are only applicable due to their classification. A complete list of technical attributes alongside their definitions may be found in the **Asset Data Standard**.

4.6 Code Lists

Code lists are standardised sets of predefined values or categories used to classify and organise data about assets. Application of code lists contribute to improved data quality and standardisation enabling improved reporting and data exchange. Code lists may also be referred to as lookup tables, enumerated list or domain or value lists. Not all attributes have a corresponding code list.

Hierarchy lists may be found in Appendix 1:

a. **Table 14: Council - Tier 1 Codes**
b. **Table 15: Network - Tier 2 Codes**
c. **Table 16: Function - Tier 3 Codes**
d. **Table 17: Process - Tier 5 Codes**

Asset lists may be found in the **Asset Data Standard**.

5 Geospatial

Geospatial or spatial data provides critical information about the location of an asset. All geospatial data must correctly be located within specified coordinate systems and datums. There is no requirement for non-spatial data to be embedded within geospatial submissions beyond basic asset identification.

Project teams may use appropriate local circuit projections during design and construction to provide finer tolerance and accuracy. However, all surveyed information submitted to Wellington Water must be provided in the following projection and datum.

a. Horizontal Datum: New Zealand Geodetic Datum 2000 (NZGD2000)
b. Vertical Datum: New Zealand Vertical Datum 2016 (NZVD2016)
c. Projection: New Zealand Transverse Mercator 2000 (NZTM2000)

All spatial data must connect and identify upstream and downstream connections in standard operation.

5.1 Surveying

In situations where three-dimensional objects are simplified into a point or line, the following rules apply:

a. Chambers, sumps: represented as a point in the centre of the chamber lid.
b. Pipes, channels, culverts: represented as a line matching the asset centreline.
c. Other objects: approximated at the centreline, centre of mass or centroid of the object.

5.1.1 Accuracy

All survey work must satisfy Class A accuracy tolerance specified within **LINZ Cadastral Survey Guidelines**. The supplier should notify Wellington Water if Class A accuracy tolerance is not achievable. Suppliers should take all practicable measures to document and eliminate all systematic and gross errors from measurements. The supplier is responsible for any corrections and re-supply of non-conforming measurements.

5.1.2 Application

Survey-grade accuracy is mandatory for subsurface assets as detailed below.

a. Identified hazardous assets (including asbestos cement pipes, electricity and gas assets).
b. Pipe inverts (including chambers, sumps, inlets, and outlets).
c. Any connection points including those to existing networks.
d. All valves, meters, hydrants, and significant pipe fittings and junctions.
e. Changes of grade (COG) or changes of direction (COD).
f. Top of Pipe (TOP) levels at intervals no greater than 36m for straight sections.
g. Water main high and low points.
h. Crossing points, intersections and parallel utilities within 100mm.
i. Start and end of water body and rail corridor crossings.
j. Cathodic protection systems anode bed and test locations.
k. Tank and chamber floor and lid levels where applicable.
l. Easement extents and legal boundaries.
m. Found and abandoned assets.

5.2 Modelling

Three-dimensional (3D) models or two-dimensional (2D) drawings may be supplied to evidence the location of an asset. These may be generated through either CAD or GIS applications. Assets do not require survey-grade accuracy unless depicting the applications denoted in 5.1.2. It is preferable that all survey measurements taken for other purposes, such as construction are supplied and embedded within model files.

5.2.1 3D Models

Three dimensional models are to be supplied at project handover in both native and vendor neutral format, refer to 5.3 for more detail. All models are to be as built (i.e. reflective of changes between design and construction) before submission.

> Asset Identification

Assets contained within 3D model geometry must be appropriately tagged with primary asset identifiers through properties within the supplied file. These must connect to other information submissions.

> Data

3D models are not required to have embedded asset data beyond basic asset identification. Suppliers may elect to do so if their workflow supports this in consultation with Wellington Water. All other data may be supplied in tabular formats.

> Drawings

All drawings other than standard details and schematics are to be generated as viewpoints or sections within 3D models. Drawing viewpoints are to be included in the native model export.

> Federation Strategy

Models are to be federated based on general best practice, using conventions such as discipline or process-based methodologies unless otherwise specified.

> Ownership

Model ownership resides with the supplier during project delivery. In instances where project phases are completed by different parties, models will be owned and transitioned between parties by Wellington Water until returned to the project team. Following handover models will be owned by Wellington Water.

5.2.2 2D Drawings & Models

Two dimensional drawings may also be used to provide the location of an asset. All final drawings must be supplied in as built state without red-line or field markups. All drawings are to be developed in accordance with the **Regional Draughting Manual for Water Services**.

> Structure

Supplied as a single sheet with unique number for each drawing, i.e., no aggregation or merging. Each single sheet to have a corresponding native drawing or model file.

> Representation

Assets classes (as defined in **2.2.1 Asset Class**) are to be separated out by layers within design software, each with the defined geometry type in **Table 18: Asset Classes**. Additionally:

a. Arcs should be avoided for line string asset classes, instead broken into small straight segments.
b. Line string assets should only be broken or split at significant features, including:
    i. Isolation valves.
    ii. Junctions (e.g. tee).
    iii. Characteristic (attribute) changes.
c. Air Valves do not split pipes, but the junction beneath does.
d. Bend Fittings only break pipes if they change the pipe characteristic (e.g. material).
e. Service Connections made by tapping bands or saddles do not split pipes.
    i. The tapping band or saddle must identify the parent main asset ID.

> Packaging

Native drawings to be supplied as an ‘eTransmit’ or equivalent form inclusive of all proprietary information such as external references (XREFs).

> **Exceptions**

It is expected that all supplied drawings have been derived from the parent model, except for standard and schematic-based diagrams.

5.3 Format

Spatial information is to be supplied in formats as listed in Table 8. Both native and vendor-neutral formats are required for cross-compatibility and reusability. Any portable document format files should be supplied in machine-readable, vectorised states. Survey data is to be provided directly within models or drawings.

Table 8: Spatial File Formats

Type	File Format(s)	Notes
Drawings	.dwg & .pdf	Autodesk strongly preferred. Include survey data.
Models	.dwg, .rvt & .ifc	Autodesk and latest supported IFC. Include survey data.
Spatial	.gdb, .dwg, .geojson, .xml	Used for survey data when drawings or models are not required.
Point Cloud	.e57, .laz	Classified point cloud strongly preferred.
Images	.png, .jpg	Location services to be enabled with EXIF data.

6 Documentation

Documentation comprises the remaining information that is required to operate and maintain an asset. Documentation is typically the source of any information above the minimum data and geospatial information requirements. It is **critical** that documentation is correctly associated to corresponding data records to enable efficient handover from projects to operations.

a. Drawings are to be developed using guidance within the **Regional Draughting Manual**.
b. Draft, red-line or marked-up documentation will not be accepted.

The documentation required for submission varies based on the function provided to the network, split between reticulation or collection and facilities (treatment, storage, or pump stations). Note that facilities encompass small or household grinder pump stations.

At a minimum, the documentation listed below is expected when handing over assets. The delivery team Project Information manager is responsible for creating the Information Delivery Plan for the project for acceptance by Wellington Water. This details deliverables and their delivery dates, detailed in 1.7.1.

Collection & Reticulation Networks

a. All documentation for regulatory compliance, including design, construction and operational.
b. Arrangement drawings of equipment within chambers.
c. Elevation drawings of vertical equipment, such as venting.
d. Other non-standard design or construction detail drawings.
e. Operational and maintenance (O&M) information, including:
    i. Planned maintenance requirements/schedules.
    ii. Equipment datasheets, warranties, and manuals.

Facilities

a. All documentation for regulatory compliance, including design, construction and operational.
b. Design documentation including basis of design and functional descriptions.
c. Schematics including single line diagrams and piping and instrumentation diagrams.
d. Overview drawings including general arrangements, isometrics and site plans.
e. Other non-standard design or construction detail drawings.
f. Health and safety records, including HAZOP, SiD (Safety in Design) and Risk Registers.
g. SCADA configuration, such as PLC or RTU addresses, configuration, and code.
h. Equipment Datasheets
i. Operational and Maintenance (O&M) information, including:
    i. Planned maintenance requirements/schedules.
    ii. Standard and site operating procedures.
    iii. Emergency response plans.
    iv. Equipment datasheets, warranties, and manuals.
    v. Calibration and testing certificates.
    vi. Operator training and relevant certification.

6.1 Registers

6.1.1 Preventative Maintenance

Preventative maintenance registers are split into three key tables, job plan, job plan tasks and preventative maintenance schedules. The relationship between job plans, the corresponding schedule(s) and affected assets is critical for correctly establishing maintenance requirements. These activities should be derived from and included within the supplied operations and maintenance (O&M) manual. Project teams should speak and coordinate with the relevant Maintenance Planner during design and construction phases.

More information and examples are available within the **Preventative Maintenance Template**.

> Exemptions

Products listed in the **Approved Products Register** do not need a separate preventative maintenance register when installed. However, these assets must still be included and properly documented in the overall asset data submission. All other installed assets, such as those within facilities such as treatment plants, pump stations and reservoirs must be discussed with the respective Maintenance Planner.

> Job Plans

The contents of the job plan table include:

a. Compliance Activities: mandatory tasks required for compliance.
b. Health and Safety: tasks required to ensure the job is completed safely.
c. Manufacturer Requirements: those required to fulfil warranty obligations.
d. Industry Best Practice: other recommended activities based on the asset or process.

Table 9 details the required fields for a job plan.

Table 9: Job Plans

#	Field	Description	Example
1	Job Plan	A unique number to identify the job plan.	OPC12345-001
2	Description	Concise activity description.	Valve Exercising
3	Frequency	Frequency of activity or work.	3M (3 monthly)
4	Duration	Estimated duration of the activity.	2 hours

> Job Plan Tasks

Job plans are assigned tasks through a supporting table with structure detailed in Table 10.

Table 10: Job Plan Tasks

#	Field	Description	Example
1	Job Plan	The job plan to assign tasks to	OPC12345-001
2	Sequence	Sequential number denoting the task order.	1
3	Task	A short description of the task to be undertaken	Confirm the valve at the expected location and identifiable.
4	Action	The result from task completion.	Yes/No, Measurement

> Preventative Maintenance Schedules

The contents of the preventative maintenance schedule include:

a. Manufacturer: recommended maintenance frequency.
b. Compliance: mandatory maintenance frequency.

The priority of the task is to be assigned through the schedule, according to Table 11.

Table 11: Preventative Maintenance Priority

#	Priority	Description	Usage
1	Critical	Activities essential for public health, safety, environmental protection, and preventing catastrophic failures.	Often high frequencies (3,4,5Y), or Regulated activities included as part of any, or Activities with any identified H&S component
2	High	Activities important for maintaining service reliability, efficiency, and preventing minor failures.	Activities that enable good operational continuity, or assets with moderate-risk profile if failing
3	Standard	Activities important for long-term asset management, efficiency improvements, and customer satisfaction.	Assets with low-risk profile if failing.

Table 12 details the required preventative maintenance information to relate the job to the asset.

Table 12: Preventative Maintenance Schedules

#	Field	Description
1	Job Plan	Job plan identifier.
2	Asset	Asset ID or number to relate to the job plan.
3	Priority	Integer representing the importance of the maintenance activity.
4	Start Date	Suggested start date to meet warranty or compliance requirements
5	Service Group	Classifies the key reason for maintenance (e.g. Regulatory or std. planned maintenance).

6.2 Engineering-Controlled Documents

Engineering Controlled information are formally approved and version-controlled records subject to engineering management processes, ensuring quality, safety, and regulatory compliance. In instances where the project team is required to either create or update an engineering-controlled document, please consult with the Wellington Water.

Updates to existing engineering-controlled documentation must be undertaken by updating the master version. For example, updates to a piping and instrumentation diagram must be completed on the master file and **not** on separate drawings detached from the master. Updates to engineering-controlled documents not checked-out **will not be** accepted. Note that not all drawings throughout the whole network are available in both CAD and PDF states, or a master may not currently exist.

6.2.1 Engineering-Controlled Drawings

Wellington Water manage each of the following drawing types:

a. Process and Instrumentation Diagrams (P&ID)
b. Process Flow Diagrams (PFD)
c. Electrical Schematics (ESD)
d. Single Line Diagrams (SLD)
e. Instrument Loop Diagrams (ILD)
f. Standard Drawings (STD)

Engineering-controlled drawings may be identified using one of two conventions, based on the client council. Further information may be found in **Drawing and Asset ID Structures.**

6.3 Naming Conventions

Wellington Water provide a simple naming convention within the Information Delivery Plan Template**.** This convention should ensure each file name is uniquely coded to associate the document to the related asset data records.

6.4 File Formats

Documents are to be supplied in formats as listed in Table 13. Native and vendor-neutral formats are required for cross-compatibility and reusability. Any portable document format files should be supplied in machine-readable states.

Table 13: Document File Formats

Type	File Format(s)	Notes
Documents	.docx, .pdf	Including reports, specifications, manuals, etc.
Spreadsheets	.xlsx, .csv	Including calculations, registers, checklists, etc.
Media	.jpg, .png, .mp4	With supporting information and metadata where applicable.
Other	N/A	Discuss with Wellington Water

Appendix 1. Hierarchy

Refer to **2: Hierarchy Structure** for more information.

Location Hierarchy

The following tables detail the components of the location hierarchy.

Council - Tier 1

The Council code is used to assign the geographical jurisdiction of water assets. In cases where water assets are jointly owned by multiple councils, the code of the council where the asset is physically located takes precedence.

Application:

a. **Reticulation (InfoAsset)**
b. **Facilities (Maximo, VAMS)**

Table 14: Council - Tier 1 Codes

#	Code	Description
1	**GWRC**	Greater Wellington Regional Council
2	**HCC**	Hutt City Council
3	**PCC**	Porirua City Council
4	**UHCC**	Upper Hutt City Council
5	**SWDC**	South Wairarapa District Council
6	**WCC**	Wellington City Council

Network - Tier 2

Application:

a. **Reticulation (InfoAsset)**
b. **Facilities (Maximo, VAMS)**

Table 15: Network - Tier 2 Codes

#	Code	Description
1	**DW**	Drinking Water
2	**RW**	Raw Water
3	**SW**	Stormwater
4	**WW**	Wastewater

Function - Tier 3

Application:

a. **Reticulation (InfoAsset)**
b. **Facilities (Maximo, VAMS)**

Table 16: Function - Tier 3 Codes

#	Code	Description
1	**PSTN**	Pump Stations
2	**RETC**	Reticulation or Collection Network

#	Code	Description
3	**RSVR**	Reservoir
4	**TMNT**	Treatment Plant

Facility - Tier 4

Application:

a. **Reticulation (InfoAsset)**
b. **Facilities (Maximo, VAMS)**

Refer to the **Asset Data Standard** for the latest list.

Process - Tier 5

Application:

a. **Reticulation (InfoAsset)**
b. **Facilities (Maximo, VAMS)**

Table 17: Process - Tier 5 Codes

Code	Process	Description	Drinking Water	Stormwater	Wastewater
000	**AUXIL**	**General, Auxiliary**	✓	✓	✓
010	CTRL	Control	✓	✓	✓
020	UTIL	Utilities, Site Services	✓	✓	✓
030	POWER	Electrical Power	✓	✓	✓
040	PWRGEN	Generators	✓	✓	✓
050	HVAC	Heating Ventilation Air Conditioning	✓	✓	✓
060	SAFENV	Safety & Environment	✓	✓	✓
070	PAIR	Process Air	✓	✓	✓
080	PWATER	Process Water	✓	✓	✓
090	SMPLB	Sampling, Laboratory	✓	✓	✓
100		*Spare*			
110		*Spare*			
120		*Spare*			
130		*Spare*			
140		*Spare*			
150		*Spare*			
160		*Spare*			
170		*Spare*			
180		*Spare*			
190		*Spare*			
200	**INTAKE**	**Intakes & Pre-treatment**	✓	✓	
210	INFLUE	Influent		✓	✓
220	WELLS	Wellfield	✓		
230	LAKE	Collection Lake	✓	✓	
240	SCRN	Screening	✓	✓	✓
250	GRIT	Grit Removal	✓	✓	✓
260	STRN	Strainer	✓	✓	✓
270	COMMU	*Comminution*			✓

Code	Process	Description	Drinking Water	Stormwater	Wastewater
280		*Spare*			
290		*Spare*			
300	**PRIM**	**Primary and Preliminary Treatment**		✓	✓
310	CLARIF	Clarifiers	✓	✓	✓
320	COAGUL	Coagulation	✓		
330	FLOCU	Flocculation	✓		
340	MIXER	Rapid Mixers	✓		
350	DAFL	Dissolved Air Flotation	✓	✓	✓
360	*SEDIM*	*Sedimentation*			✓
370					
380					
390		*Spare*			
400	**SCND**	**Secondary Treatment**	✓		✓
410	DIGEST	Digestion			✓
420	AERATN	Aeration (Aerobic)	✓		✓
430	BIOGAS	Biogas (Anaerobic)			✓
440	FOAM	Anti-foaming			✓
450	BTF	Biological Trickle Filtration			✓
460	RAS	Return Activated Sludge			✓
470	WAS	Waste Activated Sludge			✓
480	PONDS	Oxidation Ponds		✓	✓
490		*Spare*			
500	**TERT**	**Tertiary Treatment**	✓	✓	✓
510	BACKP	Back Pulse	✓	✓	✓
520	MEMB	Membrane Filtration	✓	✓	✓
530	FILTER	Filtration	✓	✓	✓
540	ACTIVC	Activated Carbon	✓	✓	✓
550	PERME	Permeate	✓		✓
560	BKWASH	Backwash Water	✓	✓	✓
570		*Spare*			
580		*Spare*			
590		*Spare*			
600	**DISINF**	**Disinfection, Cleaning**	✓	✓	✓
610	CHLORO	Chlorination	✓	✓	✓
620	HYPOGN	Hypo Generation	✓		✓
630	SHYPO	Sodium Hypochlorite	✓	✓	✓
640	OZONE	Ozone	✓		✓
650	UVDIS	UV Disinfectant	✓	✓	✓
660	CIP	Clean in Place	✓	✓	✓
670		*Spare*			
680		*Spare*			
690		*Spare*			
700	**CHEMICAL**	**Chemical Addition & Adjustment**	✓	✓	✓

Code	Process	Description	Drinking Water	Stormwater	Wastewater
710	FLUORO	Fluoridation	✓		
720	NEUTRA	Neutralisation	✓	✓	✓
730	PH	pH Adjustment	✓	✓	✓
740	CONTAM	Specific Contaminant Removal	✓	✓	✓
750	CORRODE	Corrosion Control	✓		
760	SCALE	Scale Inhibition	✓		✓
770		*Spare*			
780		*Spare*			
790		*Spare*			
800	**SOLIDS**	**Solids Handling & By-product**			✓
810	DRYING	Drying			✓
820	THICKR	Thickeners			✓
830	REJECT	Reject Water, Run-to-waste	✓	✓	✓
840	DWATER	Dewatering	✓		✓
850	ODOUR	Odour Control			✓
860	SLDG	Sludge Handling & Transfer			✓
870	CENTR	Centrate			✓
880		*Spare*			
890		*Spare*			
900	**TREATW**	**Treated Water**	✓		
910	DISCHARGE	Discharge	✓	✓	✓
920	EFFLU	Effluent		✓	✓
930	REFFLU	Reclaimed Effluent		✓	✓
940	PMPG	Pumping	✓	✓	✓
950	STOR	Storage	✓	✓	✓
960	BYPASS	Bypass	✓	✓	✓
970		*Spare*			
980		*Spare*			
990		*Spare*			

Asset Hierarchy

The following tables detail the core components of the asset hierarchy. More detail should be found within the supporting **Asset Data Standard**.

Table 18: Asset Classes

Code	Name	Geometry	Descriptions
BLDS	**Building**	POLYGON	A structure with floor, roof, and walls with above ground walk-in access.
CHAM	**Chambers & Manholes**	POINT	A partially below ground or below ground enclosure where equipment and pipework is housed for inspection or maintenance purposes.
CIVL	**Civil**	POLYGON	A structure that provides adequate rigidity to withstand its own weight and can resist external loads. The load elements relate to civil structures e.g., anchor blocks, bridge piers or equipment bases.
CONT	**Containment Structures**	POINT	A structure or vessel that manages media for storage or process balancing such as reservoirs, and process tanks.
CSTR	**Control Structures**	POLYGON	A structure that holds back any material or fluid, typically to separate terrain or fluid at different elevations.
CNTS	**Control System**	POINT	Asset systems that integrate software and hardware with network connectivity to manage, command, direct or regulate the behaviour of other devices or systems using control loops that are either automated and / or manually directed.
ELNE	**Electrical Lines**	LINESTRING	Electrical cables and lines used for transmission of energy between two points. Within a water utility context this is typically limited to cabling within facilities and cathodic protection. These work in conjunction with electrical static and rotating.
ELRO	**Electrical Rotating**	POINT	Electrical equipment that is the motive or drive to mechanical equipment to perform work or rotated by a mechanical machine to produce electricity.
ELST	**Electrical Static**	POINT	Equipment used in the distribution, protection and management of AC and DC electricity supply.
PEQ	**Equipment**	POINT	Facility equipment not related to water services, captured for the sake of financial valuation.
INST	**Instruments and Monitoring**	POINT	A device used directly or indirectly to measure and / or control a variable. The term does not apply to parts (e.g., a receiver bellows or a resistor) that are internal components of an instrument.
PMS	**Intangibles**	N/A	Facility intangible assets, captured for the sake of financial valuation.
LAND	**Land**	POLYGON	Earth surface not permanently covered by water vested or procured to secure access rights to water supply and treatment of large infrastructure.
MECR	**Mechanical Rotating**	POINT	Mechanical equipment that with the addition of kinetic energy can move other equipment, move material from one point to another, or to agitate media.
MECS	**Mechanical Static**	POINT	Mechanical equipment that is not used for rotation, movement, or agitation. Static mechanical equipment is used to connect civil structures such as pipe fittings, supports a mechanical process, or is used as a physical interface with a mechanical machine.

Code	Name	Geometry	Descriptions
NODE	**Nodes**	POINT	Nominal asset to represent connection points between linear assets which are required for system configuration or compatibility and do not represent physical assets and hold no financial value.
CONP	**Pipes and Conduits**	LINESTRING	A tube that conveys fluid or gas or may be used for the protection of another service such as an electric cable.
ROBR	**Roads, Bridges & Rail**	POLYGON	Transport corridor facilitating the transfer of goods and people by vehicle and / or the support of utility services along a designated infrastructure corridor.
SISV	**Site Services**	POINT	Ancillary site components that support the infrastructure site functions such as access, security, and office equipment.
TRMT	**Treatment Devices**	POLYGON	Storm Treatment are proprietary devices used to improve the quality of stormwater prior to discharging to a receiving environment.
TOOL	**Tools**	POINT	Handheld devices or devices that are small enough to be moved by hand that aids in accomplishing a work task such as cutting, shaping, measuring, or tightening.
VALV	**Valves**	POINT	A device halting or controlling the passage of a fluid or gas through pipes, ducts and at the inlet or outlet of containment vessels.
VEH	**Vehicles**	POINT	An asset used for the transportation of people or goods.
WWAY	**Waterway**	LINESTRING	Waterway that conveys water in lined or unlined constructed channels where the water is not stream water. A lined channel is a constructed channel with either a lined base or bank(s) whereas an unlined channel is an open constructed earthen channel with no lined base and banks.

Appendix 2. Identification

Assets within **facilities** are required to be uniquely tagged and identified, including:

a. Physically tagged within the facility.
b. Within referenced drawings and models, including P&ID.
c. Within design, construction and operational documentation.
d. Within control systems, i.e. SCADA.
e. Within supplied data for Asset Management Information Systems.

This convention relies on a series of attributes of the asset as below:

a. Facility Identifier (FID), 2-3 characters
Facility Identifiers are found within the **Asset Data Standard (Dropdowns)**
b. Process Area (PRO), 3 numbers
Process Area codes are found within **Table 17** above.
c. Drawing Number (DRG), 2 numbers
Drawing numbers refer to the P&ID which the asset is depicted.
Speak to Treatment and Control Systems for more information.
d. Asset Tag Code (CODE), 2-4 characters
Asset Tag Codes are found in the **Asset Data Standard (Classifications)**
Speak to Treatment and Control Systems for GWRC codes.
e. Function Modifier (*), 1-2 characters *(optional)*
Function Modifiers are found in **Table 20** below.
f. Sequential Number (NUM), 2-3 numbers
Unique sequential numbers should be generated by the project team.
g. System (SYS), 2 numbers
Speak to Treatment and Control Systems for more information.

Conventions currently differ between councils due to historical practices. Standardising conventions between councils is planned for future iterations of these requirements.

> Greater Wellington Regional Council

Tags generally follow the convention of:

FID- CODEDRGNUMSYS

The 3rd level switch on the 11th drawing, caustic system at Te Mārua is depicted as:

TM-LSW1103CS

The 1st miscellaneous valve on the 15th drawing, dewatering system at Te Mārua is depicted as:

TM-MLV1501DE

Speak to Treatment and Control Systems for more information.

> Other Councils

Tags follow the convention of:

FID-CODE*[*]*-PRONUM

The 2nd actuated valve within the pumping process at Hopkirk Pump Station is depicted as:

HOP-VA-940002

Or the 3rd level switch (with high-high function) at Waiohine chlorination process is depicted as:

WAI-LSHH-610003

The representation of the tag may differ depending on the context, to avoid clutter and duplication. Tag representations are included with examples in Table 19.

Table 19: Asset Tag Representation

ID Application	GWRC Example	Other Council Example
Asset System Tag	TM-LSW1103CS	WAI-LSHH-610003
Physical Field Tag	TM-LSW1103CS	WAI-LSHH-610003
Documentation Tag	LSW1103CS	LSHH-610003
Drawing Tag	LSW1103CS	LSHH-610003
SCADA Tag	LSW1103CS	LSHH-610003

Note that Wellington Water have inherited and utilised a variety of historical asset tagging conventions under different pseudonyms, such as Tech ID. Existing assets may be mapped to the new structure with the support of Wellington Water, to ensure newly generated tags are unique.

Table 20 details the instrument and valve function modifiers to be used when generating asset tags.

Table 20: Function Modifiers

ID	Asset Type	Code	Description
1	Instrument	**C**	Close
2	Instrument	**H**	High
3	Instrument	**HH**	High-high
4	Instrument	**L**	Low
5	Instrument	**LL**	Low-low
6	Instrument	**M**	Middle
7	Instrument	**N**	Non-return
8	Instrument	**O**	Open
9	Instrument	**R**	Run
10	Instrument	**S**	Stop
11	Instrument	**X**	Unclassified
12	Valve	**A**	Actuated
13	Valve	**C**	Controlled (e.g. Hydraulic)
14	Valve	**M**	Manual
15	Valve	**N**	Non-return
16	Valve	**R**	Relief

Appendix 3. System Hierarchies

Master System

The location hierarchy also answers the question of which application the asset should be mastered in. Figure 5 illustrates the master system for asset instances within the current Wellington Water asset management information system, using drinking water network as an example. Each facility contains many processes, and each process may have many assets. The current asset management system consists of two entry points:

a. **InfoAsset:** InfoAsset creates the master record of a facility, alongside reticulation assets.

b. **Maximo, VAMS:** Contains asset instances within facilities and their processes.

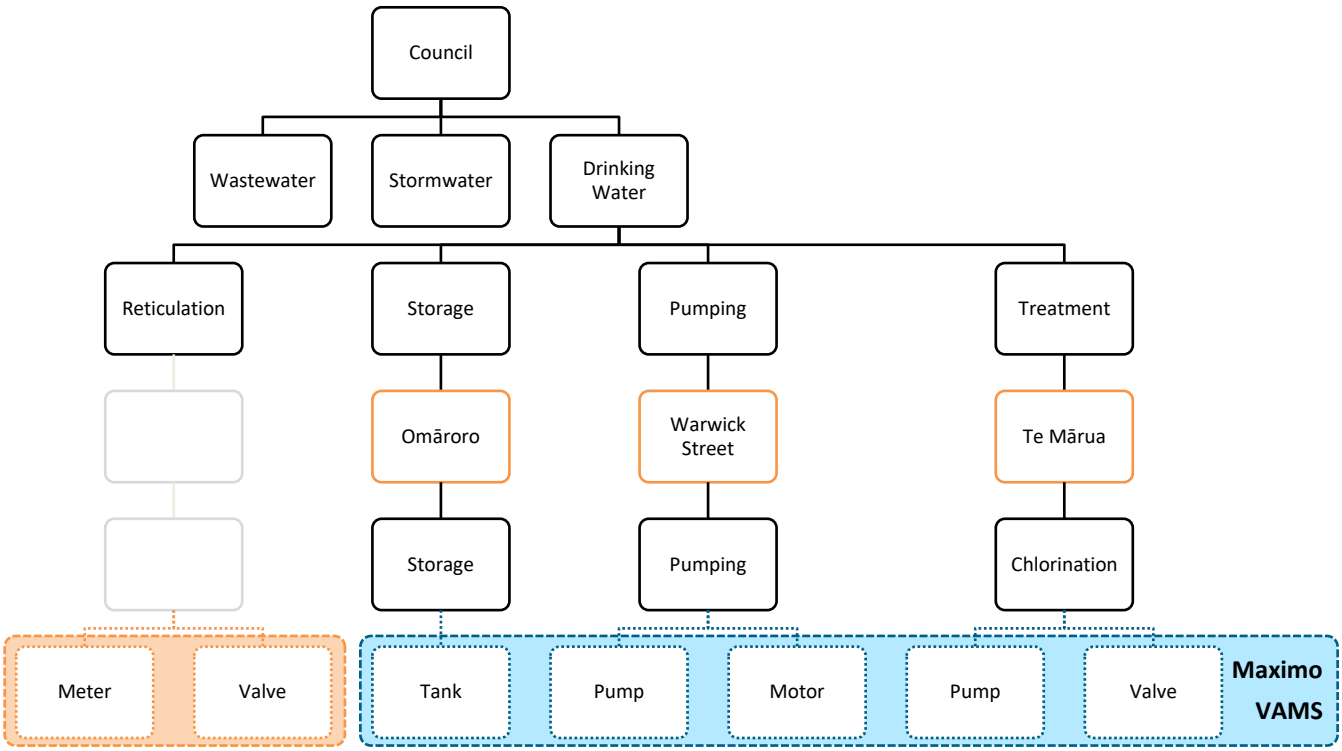

Figure 5: Master System Illustration (InfoAsset, Maximo, VAMS)