PLANT AND EQUIPMENT TAG NUMBERING

STANDARD TECHNICAL SPECIFICATION

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Gavin Sharp	Manager Asset Knowledge		21/09/2023

3. Reference Documents

Document Number	Title
PRO395	Urban Utilities Addendum SEQ Water Supply and Sewage Design & Construction Code Asset Information
TEM523	Cable Schedule Template
TMS1654	Document Naming and Numbering Convention
TEM618	Asset Management Equipment Register
ISA S5.1	Process Industry Practices: Piping and Instrumentation Diagram Documentation Criteria

4. PURPOSE

This specification details the requirements for the assignment and registration of equipment, component, piping, control, instrumentation and cabling tags for physical assets installed at all Urban Utilities sites.

5. Scope

This specification has been written with the intent that it shall be applied to all new Urban Utilities assets and amendments to existing assets.

All new or replaced equipment or high voltage cables designed by the contractor/delivery partner/developer shall have a unique tag number generated and validated in the Asset Management Equipment Register application, TEM618. The contractor/delivery partner/developer shall use TEM618 to create the tags and submit them for review to the Asset Knowledge Team via their Urban Utilities Representative. All components, piping and non HV cables shall be uniquely identified and tagged as per this specification for the project. The tag numbers assigned shall be consistently used throughout all Project Documentation delivered by the contractor/delivery partner/developer.

This specification shall be read in conjunction with the Project Documentation for the contract/approved scope of work. The contractor/delivery partner/developer shall be responsible for the supply of all labour, equipment, and materials necessary to deliver the works in accordance with the Project Documentation.

The use of vendor assigned, generic or any other equipment tag numbering conventions in the Project Documentation is not permitted unless accepted by Urban Utilities (specifically Asset Knowledge Team) in writing.

6. Definitions and acronyms

Term	Definition
Component	A physical entity not significant enough to be considered an equipment item, and which may be a part of an equipment item.
CAT	Category
Component Number	A semi-unique alphanumeric tag assigned to each component requiring individual identification within project or process documentation. (Typically, a locally managed number within the process or project).
Component Tag	Used interchangeably with the term Component Number, it is a semi-unique alphanumeric tag assigned to each component requiring individual identification within project or process documentation. (Typically, a locally managed number within the process or project).
Contract	The agreement between Urban Utilities and the Contractor to which this specification pertains.
Contractor	The entity bound to execute the work and having responsibility for the design, manufacture and supply, installation, delivery, documentation and other functions as further defined in the documents related to the work. This includes sub-contractors appointed by the Contractor.
D&C	Design and Construct
Delivery Partner	The entity bound to execute the work and having responsibility for the design, manufactures and supply, installation, delivery, documentation and other functions as further defined in the documents related to this work. This includes sub-contractors appointed by the Delivery Partner.
Developer	The entity executing the scope of work and having responsibility for the design, manufacture and supply, installation, delivery, documentation and other functions as approved in the Water or Sewer Connection Approval.
EAMS	Enterprise Asset Management System (Ellipse)
ELV	Extra Low Voltage
Equipment	Plant, machinery, property, buildings, water and sewerage pipe networks, and other items like instrumentation and valves that have a distinct value to Urban Utilities. Equipment are differentiated between network assets, site and facility-based assets. Equipment items are typically valued over the capital threshold, are worthwhile actively maintaining or are critical to the process.
Equipment Number	A unique 12-digit number that is assigned to the equipment item at the equipment location by the EAMS database. (For re-locatable equipment

	the plant number will change, but the equipment number will remain with the asset).
Equipment Tag	Used interchangeably with the term Plant Number and Tag Number, it is a unique alphanumeric tag that is assigned to equipment item.
GPRS	General Packet Radio Service
HV	High Voltage
I/O	Input/ Output
LV	Low Voltage
MCC	Motor Control Centre
P&ID	Piping and Instrumentation Diagram
Plant Number	Used interchangeably with Equipment Tag and Tag Number – it is a unique alphanumeric tag that is assigned to each equipment item.
PLC	Programmable Logic Controller
Physical Assets	Physical assets are sites, equipment and components as defined in PRO395.
Project Documentation	Governing technical documents detailing all items for the specific works included or referenced in the Contract or approved scope of work.
SEQ	South East Queensland
Tag Number	Used interchangeably with Equipment Tag and Plant Number – it is a unique alphanumeric tag that is assigned to each equipment item.
Urban Utilities Representative	The Urban Utilities personnel responsible to execute the functions of Design Manager, Project Manager or Water Approvals officer for a project.

7. WORKFLOW

7.1 Urban Utilities

7.1.1 Project Commencement – Greenfield

Urban Utilities will provide a unique number for the site and an updated TEM618 within 3 business days of receiving a site identification number request from the contractor/delivery partner/developer.

7.1.2 Project Commencement – Brownfield

Urban Utilities will provide TEM618 with a complete extract of the enterprise asset management system (EAMS) within 3 business days on request from the contractor/delivery partner/developer, listing all equipment stored within the EAMS and their tag numbers.

For components, Urban Utilities will provide the latest relevant P&ID drawings and the contractor/delivery partner/developer shall manage the existing component tags and nominate new component tags in accordance with this specification. Any new and amended P&IDs and nominated tags will be reviewed by Urban Utilities as part of the project review process.

7.1.3 Project Design Phase

Urban Utilities will provide the contractor/delivery partner/developer with TEM618. This specifies the equipment identifiers, processes identifiers and attributes (as outlined in PRO395) required to be uploaded into the EAMS. TEM618 will provide the contractor/delivery partner/developer with a validated tag for each piece of equipment or HV cable entered.

Urban Utilities will review the tag numbers proposed by the contractor/delivery partner/developer in TEM618 (developed utilising the Urban Utilities standard conventions) and confirm their acceptance within 10 business days. The accepted equipment tags numbers, along with the EAMS equipment numbers, will be provided to the Urban Utilities representative from the Asset Knowledge team.

7.2 Contractor/delivery partner/developer

7.2.1 Project Commencement – Greenfield

At the commencement of a project the contractor/delivery partner/developer shall request a site identifier from Urban Utilities and TEM618.

The contractor/delivery partner/developer shall allocate tag numbers to the equipment or components in accordance with this specification. The contractor shall take special care to avoid the duplication of all tag numbers.

The contractor/delivery partner/developer shall maintain an up-to-date register of all equipment and HV cable tag numbers allocated and supply the register to Urban Utilities upon the completion of any project milestones with TEM618, as well as a register of components. These registers typically include equipment lists, instrumentation lists, valve lists and cable schedules.

7.2.2 Project Commencement – Brownfield

At the commencement of a project the contractor shall TEM618 and the latest relevant P&ID to the project.

The contractor/delivery partner/developer shall allocate tag numbers to the equipment or components in accordance with this specification and undertake any rework required due to incorrect assignment of the tag numbers. The contractor/delivery partner/developer shall take special care to avoid the duplication of any tags numbers; this may include field assessment of existing tags and advice of any anomalies with tag number assignment to Urban Utilities in a timely manner.

The contractor/delivery partner/developer shall maintain up-to-date register of all equipment and HV cable tag numbers allocated and supply the register to Urban Utilities upon completion of all project milestones with TEM618, as well as a register of components. These registers typically include equipment lists, instrumentation lists, valve lists and cable schedules.

7.2.3 Project Design Phase

As early as possible, but, not later than the 30% design milestone, the contractor/delivery partner/developer shall provide a list of all proposed equipment and component tags numbers for Urban Utilities review. This shall include all additions, replacements, and disposals. Supporting documentation as requested by Urban Utilities (e.g. drawings and schedules) shall be provided to assist Urban Utilities with assessing if the equipment tags numbers have been assigned in accordance with this specification. The Tag numbers shall be used consistently throughout all Project Documentation delivered by the contractor/delivery partner/developer. The Asset Knowledge Team can be contacted via equipmentinforequest@urbanutilities.com.au .Asset Knowledge Team will review and validate, within 10 business days the equipment tags numbers proposed by the contractor/delivery partner/developer at 30% design.

The contractor/delivery partner/developer shall utilise TEM618 to provide equipment tag numbers and associated attributes to Urban Utilities in the prescribed format. TEM618 is required for direct upload to Urban Utilities EAMS at 100% design and must be reviewed and approved by the Asset Knowledge Team at this time.

7.2.4 Project Delivery / As Constructed Phase

The contactor/delivery partner/developer shall update all equipment attributes for each tag registered at 100% design and reissue TEM618 with the Project As Constructed/Built documentation to the Asset Knowledge Team. The Asset Knowledge Team can be contacted directly or via your Urban Utilities representative at equipmentinforequest@urbanutilities.com.au

8. EQUIPMENT TAGS

The Urban Utilities EAMS database has tag numbering conventions for all items of plant designated in the business as 'equipment', such as switchboards, pumps and valves. If any item of plant meets the requirements of the Ellipse EMAS Equipment Record Creation Decision Tree found in Appendix A of PRO395 and is listed in the Equipment and Component List found in Appendix D of PRO395.

8.1 Existing Tag Numbers & Conventions

Unless specified otherwise, the contract/approved scope of work requires the contractor/delivery partner/developer to assign equipment tags to existing operational plant, equipment and components where no equipment tags are currently assigned or installed. The tag assignment for existing assets shall be in accordance with this specification. The contractor/delivery partner/developer shall update all existing documentation with the equipment tags assigned to existing assets.

There may be projects where works under the contract/approved scope of work require the contractor/delivery partner/developer to modify or interface with existing plant and equipment. It is possible that the existing plant and equipment tags and numbering conventions have been established for the site. Before the commencement of design works the contractor/delivery partner/developer shall engage with Urban Utilities and investigate the extent of updates to existing equipment and component tags.

Any established convention identified shall be documented and communicated to Urban Utilities for assessment and confirmation before detail design and tagging of equipment commences.

8.2 Re-locatable, Mobile and Temporary Equipment

Re-locatable or mobile equipment refers to any equipment that has been designed with the intention of being able to relocate it at some point in the future. Re-locatable equipment that is moved about the facility, but which is operated and maintained by Urban Utilities shall be tagged in accordance with this specification and allocated the general process area identifier code.

Temporary equipment that is not expected to remain in service at a particular location for longer than a year and has been located for a specific purpose rather than being part of a general facility inventory shall not be tagged in accordance with this specification; however a tag affixed to the re-locatable/mobile equipment shall display the equipment number so as to positively identify it.

The relocation of plant and equipment should be reviewed against the plant and equipment tagged at the destination location, and where appropriate, equipment shall be retagged.

The Asset Knowledge Team shall be notified of all equipment movements. This can be done via the email address: equipmentinforequest@urbanutilities.com.au.

9. TAG REPRESENTATIONS IN PROJECT DOCUMENTATION

9.1 Asset Management Equipment Register – TEM618

The intent of the Asset Management Equipment Register application, TEM618, is to provide:

- An accurate EAMS extract of existing equipment and HV cables (not including components or other cables);
- A tool for the generation of standardised and validated tags;
- The uniform and validated submission of new, modified, existing or to be disposed equipment information in a format that is acceptable for immediate upload into the EAMS database.

TEM618 shall be submitted to the Asset knowledge team, via the Urban Utilities Representative if required, by the contractor/delivery partner/developer at 30% design, 100% design and again at commissioning as part of the Project As Constructed/Built documentation.

TEM618 allows the end user to perform the following operations:

- Create Tags – allows the user to quickly and easily generate Equipment tags by selecting Site, Process and Equipment Identifier codes;
- Modify / Replace / Dispose Equipment – allows the user to request the modification, replacement and / or disposal of existing Equipment items;
- Equipment Attributes – allows the user to assign attribute values to new and / or existing Equipment items;
- Export and Submit – provides the facility for the user to save and submit requests for their changes to be uploaded to the Ellipse Equipment Register;
- Additional Options – allows the user to manage the data they have generated through the use of the application.

TEM618 contains a User Manual in PDF format which can be accessed by clicking on the blue circle containing the white question mark at the top of the Main Menu page.

TEM618 is regularly maintained to ensure that the latest record of tags are always available to the user. If you are unsure if you have the latest version, please contact your Urban Utilities representative.

If you require additional support and/or training in the use of the TEM618 Asset Management Equipment Register tool please don't hesitate to contact your Urban Utilities representative or the Asset Knowledge Team via equipmentinforequest@urbanutilities.com.au.

9.2 Drawings

Provided that the site identifier is clearly displayed in the title block on a drawing, it is not necessary to prefix every tag number shown on the drawing with the site identifier. Currently, the site identifier will form part of the drawing number and will also be contained in the drawing title

NOTE: The exception to this rule is where drawings contain equipment and components from different sites. In this case the equipment or components must be uniquely identified with the site identifier in full in every tag.

9.3 Other Project Documentation

For other Project Documentation where the site identification code is clearly and unambiguously included in the document number or title block, it will not be necessary to prefix the site identifier to the equipment or component tag numbers where used throughout the documentation.

Deliverables documentation must contain the tag number in the file name when it exists and there is a one to one relationship between the tag and the document's content.

NOTE: If the documentation contained equipment and components from different sites, they must be uniquely identified in full in every tag.

10. TAG IDENTIFIER STRUCTURE

10.1 General

The structures described, herein are intended to provide intelligence to the format of plant tag numbers to help identify equipment type, location, function and service.

Where practical the structure has remained aligned to the tagging systems applied to existing Urban Utilities facilities, however the following aspects have changed:

- Equipment tags prior to version 9 of the EAMS application (Ellipse), had the process area identifier after the equipment identifier, but the new convention adopted with the upgrade to version 9 of the EAMS application has the process area identifier before the equipment identifier;
- Equipment identifiers have been updated to align with IS5.1 for instrumentation and can be two, three or four character in format;
- A designated train number identifier has been added to the tagging structure;
- Sequence numbers are universally available up to 999
- The tag structure for Simple (Tier 2) sites and the Equipment items at those sites has been changed, compared to the existing and standing tagging structure of the Moderately Complex (Tier 3), and Complex (Tier 4) sites. The different sites types are listed in the three worksheets in the Appendix C spreadsheet in PRO395.

NOTE: Equivalent items of equipment will carry plant and tag numbers that are consistent across the other streams; i.e. on a duty/duty/standby pump station the discharge valve on Pump 1 will have a unique ID as VLV-1001 while the discharge valve on Pump 2 will be assigned with VLV-2001. This will facilitate the preparation of standard designs and efforts to "commoditise" components of the field equipment. Uniqueness will be provided through reference to the site and train identifiers.

10.2 Nomenclature and Tag Identifier Codes for Simple (Tier 2) Sites

Identifier Code	Description	Format
AA	Asset Group	Alpha – Asset Group and Asset Location are combined to form the Simple (Tier 2) Site Identifier. Refer to the Appendix C of PRO395 for a full set of Simple (Tier 2) Site Types (Asset Groups).
BBBBBBBB	Asset location (block)	Numeric - Asset Group and Asset Location are combined to form the Simple (Tier 2) Site Identifier. Refer to the Appendix C of PRO395 for a full set of Simple (Tier 2) Site Types (Asset Groups).

EE[E][E]	Equipment identifier or instrument type identifier	Alpha - refer to Equipment & Component Identifier in Appendix D of PRO395 for a full list of codes.
G	Train number	Numeric – applied to similar parallel trains, otherwise default is 0.
MMM	Sequence number	Numeric – 3-digit counter

10.2.1 Equipment and Components Tags for Simple (Tier 2) Sites

This section covers all physical assets determined to be equipment by Urban Utilities at Simple (Tier 2) sites. If any item of plant meets the requirements of the Ellipse EMAS Equipment Record Creation Decision Tree found in Appendix A of PRO395 and is listed in the Equipment and Component List found in Appendix D of PRO395. All equipment shall be assigned as follows:

"***{AABBBBBBBB-}EE[E][E]-GMMM***"

Where:

- "AA" is the two (2) alpha asset group of Simple (Tier 2) sites; this is a high-level identification of the type of facilities, including Chemical Dosing, Water Monitoring and Telemetry Network facilities, etc. The Site Code for each asset group is listed in Appendix C of PRO395.
- "BBBBBBBB" is the eight (8) digit asset location code. This code identifies a specific area or facility. This code is unique and is manage by Urban Utilities.
- When combined "AABBBBBBBB" they form unique site identifier which will be provided on request by the Asset Knowledge Team.
- "EE[E][E]" is the equipment identifier. Up to four alpha characters to identify the type of equipment. The codes are listed in Appendix B of PRO395.
- "G" is the train number identifier. The train number is only used for similar parallel trains. Otherwise the default value is 0.
- "MMM" is the sequential number identifier for equipment items in that system. The sequence number is a 3-digit numerical code generally commencing at 001 and incrementing for all equipment in the particular process area.

10.2.2 Simple (Tier 2) Site Equipment Examples

FN00000319-SWB-0001 identifies the equipment item at the High Street Brassal Network Flow Meter site (FN00000319), as a Switchboard (SWB) where is it not located in a train (0) and it is the first Switchboard at the site (001).

SL00000183-RTU-0001 identifies the equipment item at the Chadston Close Kenmore Hills Sewer Monitoring site (SL00000183), as a Remote Terminal Unit (RTU) where it is not located in a train (0) and it is the first Remote Terminal Unit at the site (001).

10.2.3 Equipment and Component Requirements for Simple (Tier 2) Sites

- Only the last eight to nine characters of the equipment tag should be shown in the Project Documentation specific to the site (i.e. SWB-0001) starting from the equipment code as per 5.2.

- A unique tag shall be allocated for any of the following in a project or development: each package; infrastructure item; building; enclosure; maintainable item of equipment or location.
- Equipment descriptions shall be functionally descriptive in terms of process and generic in terms of equipment type. There is a limit of two strings of 40 characters each which should be concise and follow Urban Utilities description convention. Urban Utilities will review and approve all proposed equipment descriptions during the design phase of the project.

Equipment classified as a Component under PRO395 shall follow this same tagging convention.

10.3 Nomenclature and Tag Identifier Codes for Moderately Complex (Tier 3) and Complex (Tier 4) Sites

Identifier code	Description	Format
AA	Asset group	Alpha – Asset Group and Asset Location are combined to form the Site Identifier, refer to Site Identifiers in Appendix B of PRO395 for a full set of codes.
BBB	Asset location (block)	Numeric - Asset Group and Asset Location are combined to form the Site Identifier, refer to Site Identifiers in Appendix B of PRO395 for a full set of codes.
CCCC	Process Area	Numeric – refer to Process Identifier in Appendix C of PRO395 for a full list of codes
EE[E][E]	Equipment type or instrument type identifier	Alpha - refer to Equipment & Component Identifier in Appendix D of PRO395 for a full list of codes.
FF	Piping material code	Alphanumeric – designates piping material & class/rating, refer Appendix A of this specification.
G	Train number	Numeric – applied to similar parallel trains, otherwise default is 0.
MMM	Sequence number	Numeric – 3-digit identifier.
NN	Pipe diameter prefix	DN, NB or OD as specified in relevant Australian Standards.
OO[O][O]	Nominal line size or OD [mm]	Numeric.
PP[P][P]	Fluid Service code	Alpha – identifies the type of fluid flowing through the pipe; refer Appendix B of this specification.
V	Cable supply type identifier	Alpha – refer Table 2 Cable Type Identifier Codes of this specification.
XXX	Cable/wire/Switchgear/I ED sequential number	Numeric, prefixed with as many 0 as necessary to achieve the full length
[]	Optional character	Brackets [alpha or numeric]e.g. due to variable length of the tag identifier structure or application of a modifier.
{}	Facility Identifier	Braces {facility identifier} of the tag that could be omitted from being represented on drawings or field tags if absolutely necessary, but nevertheless, forms a part of creating a complete tag identifier.

10.3.1 Equipment and component tags for Moderately Complex (Tier 3) and Complex (Tier 4) Sites

This section covers all physical assets determined to be equipment by Urban Utilities at Moderately Complex (Tier 3) and Complex (Tier 4) sites. Items that are considered equipment are defined in Appendix A of PRO395 and their equipment identification codes are listed in Appendix D of the same. All equipment shall be assigned as follows:

"{AABBB-}CCCC-EE[E][E]-GMMM"

Where:

- "AA" is the two (2) alpha asset group of Moderately Complex (Tier 3) and Complex (Tier 4) Sites; this is a high-level identification of the type of facilities, wastewater treatment Plants, sewage pump stations, etc. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- "BBB" is the three (3) digit asset location code. This code identifies a specific area or facility. This code is unique and is manage by Urban Utilities. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- When combined "AABBB" form the unique site identifier as listed in Appendix B of PRO395 for Tier 3 and Tier 4 sites.
- "CCCC" is the process area identifier code. The process area is a 4-digit code. The process area identifiers can be found in Appendix C of PRO395.
- "EE[E][E]" is the equipment identifier code. Up to four alpha characters to identify the type of equipment. The codes are listed in Appendix D of PRO395.
- "G" is the train number identifier. The train number is only used for similar parallel trains. Otherwise the default value is 0.
- "MMM" is the sequential number identifier for equipment items in that system. The sequence number is a 3-digit numerical code generally commencing at 001 and incrementing for all equipment in the particular process area.

10.3.2 Moderately Complex (Tier 3) and Complex (Tier 4) Sites Equipment Examples

ST021-0510-BLR-0001 identifies the equipment item at Sandgate Sewage Treatment plant (ST021), in the Biological Treatment Common sub-process (0510) as an aeration blower (BLR) where is it not located in a train (0) and is the first blower in that process area (001).

ST018-0710-PMP-0001 identifies the equipment item at Luggage Point Sewage Treatment Plant (ST018), in the Chlorine Disinfection & Outfall sub-process (0710) as a pump (PMP) where it is not located in a train (0) and is the first pump in that process area (001). **ST018-0710-MTR-0001** would identify a motor associated with the aforementioned pump.

10.3.3 Equipment and Components for Moderately Complex (Tier 3) and Complex (Tier 4) Sites

- Only the last 11 to 14 characters of the equipment tag number should be shown in the Project Documentation specific to the site (i.e. 0510-BLR-0001) starting from the process/sub-process identifier as per 5.2.
- A unique tag identifier shall be allocated for any of the following in a project or development: each package; item of process equipment; infrastructure item; building; enclosure; maintainable item of equipment or location.
- Equipment description shall be functionally descriptive in terms of process and generic in terms of equipment type. There is a limit of two strings of 40 characters each which should

be concise and follow Urban Utilities description convention. Urban Utilities will review and approve all proposed equipment descriptions during the design phase of the project. Please refer to Section 11 of this document for concise naming requirements.

Equipment classified as a Component under the Ellipse EAMS Equipment Creation Decision Tree in Appendix A and found listed in Appendix C of PRO395 shall follow this same tagging convention.

10.4 Piping System Tags

Piping codes are used to identify the size, material, sequence number for all pipes. This piping specification is particularly important when producing P&IDs.

Each pipe run on the Project shall be allocated a unique line identifier as follows:

"NNO[O][O][O]-FF[F]-PPP-GMMM"

Where,

- "NN" is the pipe diameter prefix. Outside Diameter OD or Diameter Nominal/Nominal Bore DN/NB as specified in the relevant Australian Standard.
- "O[O][O][O]" is the diameter in (mm) or (in).
- "FF[F]" is the piping material code – refer Appendix A o f this specification.
- "PP[P]" is the fluid Service code – refer Appendix B of this specification.
- "G" is the train number, applied to similar parallel trains, otherwise default value is 0.
- "MMM" is the pipe identifier.

10.4.1 Piping System Example

DN20-S1-CA-2001 identifies a pipe as having a diameter nominal (DN) of 20mm (20) made of seamless stainless steel 316 (Appendix A material identifier S1) conveying compressed air (Appendix B fluid service identifier CA) in train number two (2) as being the first (001) pipe in the line.

10.4.2 Piping System Requirements

- Pipe identifier number shall be increased every time the pipe specification or size change and shall remain the same number when the pipe branches off.
- Piping system tags are not Identifiers. They do not uniquely identify items, but instead allow reference back to standard designs and data sheets.
- Due to potential for many work streams/contractors to require piping specification codes, a master list is maintained by Urban Utilities. Ref to Appendix A of this standard.
- Piping system tags are not required to be entered into the EAMS or TEM618.

10.5 Control and Instrumentation Tags

Each field instrument and control valve on the project shall be allocated a unique Tag Identifier. The tag system for Instrumentation shall follow the same convention as equipment tags in section 2.
Each instrument or control valve shall be allocated a unique identifier as follows:

"{AABBB-}CCCC-EE[E][E]- GMMM"

Where,

- "AA" is the two (2) alpha asset group; this is a high level identification of the type of facilities, Waste water treatment Plants, sewage pump stations, chemical dosing facilities, etc. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- "BBB" is the Three (3) digit asset location code. This code identifies a specific area or facility. This code is unique and is manage by Urban Utilities. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- "CCCC" is the process area identifier code. The process area is a 4 digit code. The process area identifiers can be found in Appendix C of PRO395.
- "EE[E][E]" is the instrument identifier code as per ISA S5.1. Up to four alpha characters to identify the type of instrument. The codes are listed in Appendix D of PRO395.
- "G" is the train number identifier. The train number is only used for similar parallel trains. Otherwise the default value is 0.
- "MMM" is the unique sequential number identifier within a process. The instrumentation number (instrumentation loop number) is a 3 digit numerical code generally commencing at 001.

10.5.1 Control and Instrumentation Example

ST021-0510-PIT-0002 identifies a pressure transmitting instrument at Sandgate Sewage Treatment Plant (ST021), located in the Common Biological Treatment process (0510) as a pressure indicator transmitter (PIT), where it is not located in a train (0) and is the second pressure indicator transmitter in that process area (002).

10.5.2 Control and Instrumentation Requirements

- The sequence loop number (GMMM) will be a sequential number within the type of measurement (e.g. P, T, L). For example, a pressure transmitter instruments will have sequential numbers within pressure instruments in the same process area while a temperature instrument will follow sequential numbers within temperature instrument in the same process area.ie. (ie. 0510-PT-0001, 0510-TT-0001 or 0510-LT-0001)
- The identification and designation of instruments and instrumentation systems for measurement and control shall be in accordance with ISA-5.1 unless otherwise modified herein.
- Control and instrumentation equipment description shall be functionally descriptive in terms of process and generic in terms of equipment type. There is a limit of two strings of 40 characters each which should be concise and follow Urban Utilities description convention. Urban Utilities will review and approve all proposed equipment descriptions during the design phase of the project. Please refer to Section 11 of this document for concise naming requirements.

10.6 Cable Tag Numbering

All cables shall be assigned tag numbers and the tag numbers shall be used consistently throughout all relevant Project Documentation including the cable schedule. The cable schedule shall have fields as per TEM523 Cable Schedule Template.

The cable tag numbering convention is a semi-intelligent number which allows for ready identification of the process area where the cable is installed. It indicates the cable type followed by an incremental number. The cable tag number is made up of 5 identifiers as follows:

"CCCC-EE[E][E]- GMMM- VX[X][X]"

Where:

- "CCCC" is the process area identifier code. The process area is a 4-digit code. The process area identifiers can be found in Appendix C of PRO395.
- "E[E][E]" is the instrument identifier code as per ISA S5.1 Up to four alpha characters to identify the type of Equipment or instrument. The codes are listed in Appendix D of PRO395.
- "G" is the train number identifier.
- "MMM" is the unique sequential number identifier within a process. The instrumentation number (instrumentation loop number) is a 3-digit numerical code generally commencing at 001.
- "V" is the cable identifier is a 1-character identifier code for each cable type. The cable identifiers are shown in the table below.

Cable Type	Identifier	Description
HV Power Cables	H	HV power cables
ELV & LV Power Cables	P	LV & ELV power cables
Control Cables	C	LV & ELV multi-core control cables
Instrument Cables	J	Twisted pair instrument cables
Fibre Optic Cables	F	Multi mode and single mode fibre optic cables
Copper Communication Cables	T	All telecommunications cables, CAT5, CAT6 and all serial communication copper cables
Earth Cables	E	Green/yellow insulated earth cables

- "X[X][X]" Cable Number identifier is a numerical code generally commencing at 1 and incrementing for all cables in the particular process area. There is no restriction on the number of digits in this element of the tag number. This number should be padded with leading zeros for easy sorting e.g. 001. The contractor/delivery partner/developer should estimate this requirement based on the likely quantum of cables in the process.

10.6.1 Cable Numbering Examples

0200-MTR-2001-P001identifies the cable as belonging to the process area of Pre-Treatment (0200), for the pump motor (MTR), where the motor is the first unit in the second train (2001) and where the power cable type (P) and the incremental value (001).

- Should the cable to the motor terminate in a local control panel, the cable from the local control panel to the pump motor terminal box shall be 0200-MTR-2001-P002.
- Where a power cable runs from a main switchboard to a distribution board the cable tag number shall be assigned by the distribution board tag number followed by the cable type identifier and cable number.
- Where a power cable runs from a transformer to a main switchboard the cable tag number shall be assigned by the switchboard tag number followed by the cable type identifier and cable number identifier.
- Where a power control cable runs from an instrument to the PLC control panel the cable tag number shall include the instrument tag number followed by the cable type identifier and cable number identifier.
- Where a copper communication cable runs between two communications panels the cable tag number shall comprise of the communications panel tag number furthest from the main communications panel in the network followed by cable type identifier and cable number.
- Fibre optic cables shall follow the similar cable tag naming convention to the copper communications cable above.

10.6.2 Cable Tagging Requirements

- The cable tag generally has the site identification code omitted because most cables terminate both ends within the perimeter boundary of the site. Where a cable is run between sites, the site identification code shall be prefixed to the cable tag number.

- Generally, a cable tag comprises of the connected equipment tag number followed by that cable's own type identifier and cable number. There could be departures from this convention under certain circumstances and the contractor/delivery partner/developer shall notify Urban Utilities in writing and advise reasons for the departures.

The contractor/delivery partner/developer shall seek Urban Utilities' acceptance of any cable tagging departures from this specification before proceeding to utilise those cable tag numbers throughout the design documentation. Urban Utilities will not accept contractor/delivery partner variations for delay or cost for re-work to reassign cable tags number that do not comply with this specification.

10.6.3 Cable Ferrule Number Identification

The contractor/delivery partner/developer shall assign unique ferrule numbers for all cores of control cables, fibre optic cables and serial communication cables where applicable. Ferrule numbers must be unique and identical ferrule numbers assigned to cores at both ends of the cable. Refer to TMS1200 Electrical Installation Technical Specification for cable ferrule numbering requirements.

11. TAG NAMING REQUIREMENTS

The tags are created using the tool TEM618 by the contractor/delivery partner/developer. The datasheet that the tool generates when those tags are saved is accessed by the user through the Export and Submit button. It is at this point, prior to sending it to the Asset Knowledge Team, that the generic two equipment item description fields shall be customised to properly describe the equipment tagged within the project.

Each equipment item description is made up of two 40-character fields. To provide a standard and consistent description naming convention, the Equipment item description should contain:

- the Equipment Type, such as 'PUMP', 'TANK' or 'VALVE' for example, and;
- the Function or Purpose of the Equipment item, such as 'SUMP', 'OVERFLOW' or 'REFLUX', for example, and / or;
- the Location or Proximity of the Equipment item, such as 'WET WELL, SP068 TUFNELL ROAD BANYO', 'CURRENT LOCATION - SP443 PUMP UNIT SET 1' or 'IN PIT, W M HUGHES ST CNR MUSGRAVE ST', for example, without any words being split across the two description fields.

In the following example, the first 40 character description field contains the text 'VALVE, DISCHARGE, MAIN PUMP 2', and the second 40 character description field contains the text 'EMERGENCY OVERFLOW STORAGE TANK'.

Further examples of Equipment item descriptions include:

Description Line 1	Description Line 2
ROOF PERIMETER HANDRAILS, RESERVOIR TANK	WR076 BELLVUE RD, GOODNA
VENT PIPE, WEET WELL TO VENT STACK, SP419	
VALVE, DISCHARGE, PUMP 2	SP356 BLACKALL ST, EAST IPSWICH
PUMP, MAIN PUMP 1, EMERGENCY OVERFLOW	STORAGE TANK, SP068 TUFNELL ROAD, BANYO

12. APPENDIX A – PIPING MATERIAL IDENTIFIER CODES

Identifier	Pipe material (Pressure pipes) descriptions
C0	**Copper (General)**
C1	Copper, AS 1432. type A, annealed tempered
C2	Copper, AS 1432. type B, annealed tempered
D0	**Ductile iron (General)**
D1	Ductile iron, rubber ring joint AS 2280. Pressure class pipe and fittings (WSA PS 200, WSA PS 201, WSA PS 2005 and WSA PS 2015) to suit application cement lined (heavy) internally and bitumen coated externally
D2	Ductile iron flanged joint AS 2280. Flanged class pipe and fittings (WSA PS 200, WSA PS 201, WSA PS 2005 and WSA PS 2015) to suit application cement lined (heavy) internally and bitumen coated externally.
D3	Ductile iron, rubber ring joint AS 2280. pressure glass pipe and fittings (WSA PS 200, WSA PS 201, WSA PS 2005 and WSA PS 2015) to suit application epoxy lined internally and bitumen coated externally.
D4	Ductile iron flanged joint AS 2280. Pressure class pipe and fittings (WSA PS 200, WSA PS 201, WSA PS 2005 and WSA PS 2015) to suit application epoxy lined internally and bitumen coated externally.
E0	**PE (Polyethylene) (General)**
E1	PE100 PN8, AS4130
E2	PE100 PN10, AS4130
E3	PE100 PN12, AS4130
E4	PE100 PN16, AS4130
E5	PE100 PN20, AS4130
F0	**FRP (Fibre Reinforced Plastic) (General)**
F1	FRP pipe class 4, AS 3571
F2	REINFORCED CONCRETE PIPE, AS 4058, PVC LINED
G0	VC (Vitrified Clay)
M0	**Mild steel (General)**
M1	Mild steel, AS 1074, MEDIUM, GALVANISED
M2	Mild steel, AS 1579, welded and/or flanged hot dipped galvanised and/or cement lined where indicated
M3	Mild steel, AS 4041, schedule pipe, flanged or welded or welded hot dipped galvanised
M4	Mild steel schedule 40 welded or flanged for T = 45%%DC stainless steel grade 304L or 316L schedule 40 for T=45%%DC
M5	Carbon steel schedule pipe AS 4041 flanged or welded no internal surface treatment
P0	**PVC (Poly Vinyl Chloride) (General)**
P1	uPVC (Unplasticised PVC), AS 1477, class 18
P2	uPVC (Unplasticised PVC), AS 1273, rainwater pipe
P3	uPVC (Unplasticised PVC), AS 1254 storm water pipes
P4	uPVC (Unplasticised PVC), ASTM D1785, schedule 80
P5	mPVC series 2

S0	**Stainless steel (General)**
S1	Stainless steel, grade 316, seam welded and seamless, schedule pipe to suit application
S2	Stainless steel, grade 316, spiral welded, welded 2mm minimum thickness
S3	Stainless steel, grade 304

13. APPENDIX B – FLUID SERVICE IDENTIFIER CODES

Identifier	Fluid service description	Identifier	Fluid service description
AA	ACETIC ACID	MG	MAGNESIUM HYDROXIDE
AEA	AERATION AIR	M	METHANOL
AIR	AIR	MLR	MIXED LIQUOR RECYCLE
ALS	ALUM SOLUTION (ALUMINIUM SULPHATE)	OIL	OIL
AG	AMMONIA GAS	OF	OVERFLOW
AMH	AMMONIUM HYDROXIDE	PES	POLYMER SOLUTION (POLYELECTROLYTE)
ANS	ANTISCALANT	PW	POTABLE WATER
BWW	BACKWASH WASTEWATER	PE	PRIMARY EFFLUENT
BIO	BIOGAS	PS	PRIMARY SLUDGE
CEN	CENTRATE	RSW	RAW SEWAGE
CLG	CHLORINE GAS	RE	RECLAIMED EFFLUENT
CIT	CITRIC ACID	RAS	RETURN ACTIVATED SLUDGE
CA	COMPRESSED AIR	SS	SCREENED SEWAGE
DS	DIGESTED SLUDGE	SCN	SCREENINGS
DR	DRAINAGE	SC	SCUM
EF	EFFLUENT	SE	SECONDARY EFFLUENT
ETH	ETHANOL	SW	SERVICE WATER
FS	FERMENTED SLUDGE	SL	SLUDGE
FSN	FERMENTER SUPERNATANT	SB	SODIUM BISULPHATE
FECL	FERRIC CHLORIDE	SOH	SODIUM HYDROXIDE
FE	FILTERED EFFLUENT	SH	SODIUM HYPOCHLORITE
FLT	FILTRATE	SLS	SODIUM LAURYL SULPHATE
FM	FIRE MAIN	SME	SODIUM METABISULPHITE
FA	FOUL AIR	STW	STORM WATER
FW	FOUL WATER	SA	SULPHURIC ACID
GRT	GRIT	SPN	SUPERNATANT
HCL	HYDROCHLORIC ACID	TE	TERTIARY EFFLUENT
IW	INDUSTRIAL WATER	TSW	TREATED STORM WATER
IA	INSTRUMENT AIR	WAS	WASTE ACTIVATED SLUDGE

LP	LIME POWDER		