



Plant and Equipment Tag Numbering

TMS1647

Standard Technical Specification

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Document Consultation

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Acronyms and Abbreviation

Acronym	Definition
AMC	Asset Management Coordination team
CAT	Category
D&C	Design and Construct
EAMS	Enterprise Asset Management System (Ellipse)
ELV	Extra Low Voltage
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
PLC	Programmable Logic Controller
QUU	Queensland Urban Utilities
SEQ	South East Queensland

Reference Documents

Document Number	Title
To be advised	Process and Instrumentation Diagrams (P&ID) Legend
PRO395	SEQ Water Supply and Sewerage- D&C Code Asset Information QUU Addendum
TEM523	Cable Schedule Template
TMS1654	Naming Requirements for Engineering Documents
TEM618	Asset Management Equipment Register
ISA S5.1	Process Industry Practices: Piping and Instrumentation Diagram Documentation Criteria

1. INTRODUCTION

This specification details the requirements for the assignment of equipment and component tag numbers for physical assets installed at Queensland Urban Utilities (QUU) sites.

2. Scope

This specification has been written with the intent that it shall be applied to all new QUU assets and amendments to existing assets. All new or replaced equipment or high voltage cables designed by the Contractor shall have a unique tag number generated and validated in Asset Management Equipment Register TEM618. The contractor shall use TEM618 to create the tags and submit them for review to Asset Management Coordination (AMC) Team via their QUU 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.

This specification shall be read in conjunction with the Project Documentation for the Contract. The Contractor 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 QUU (specifically AMC) in writing.

2.1. Definitions

In this document, the following definitions apply:

Project Documentation	Governing technical documents detailing all items for the specific works included or referenced in the Contract.
QUU Representative	The QUU personnel responsible to execute function of Design Manager, Project Manager or Water Approvals officer for a project.
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.
Equipment	Plant, machinery, property, buildings, water and sewerage pipe networks, and other items like instrumentation and valves that have a distinct value to QUU. 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.
Component	A physical entity not significant enough to be considered an equipment item, and which may be a part of an equipment item'.
Plant Number	A unique number that is assigned to each equipment location.
Component Number	A unique identifier assigned to each component.

Equipment Number	A unique number that is assigned to the equipment 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 until it is decommissioned).
Contract	The agreement between QUU and the Contractor to which this specification pertains.
Physical Assets	Physical assets are sites, equipment and components as defined in PRO395.

3. Workflow and Responsibilities

3.1. QUU

3.1.1. Project Commencement Greenfield

QUU 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.

3.1.2. Project Commencement Brownfield

QUU will provide TEM618 with a complete extract of the enterprise asset management system (EAMS) within 3 business days on request from the Contractor, listing all equipment stored within the EAMS and their tag numbers.

For components, QUU will provide the latest relevant P&ID drawings and the Contractor 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 QUU as part of the project reviewing process.

3.1.3. Design

QUU will provide the Contractor with TEM618. This specifies the equipment type codes, processes and attributes (as outlined in PRO395) required to be uploaded into the EAMS. TEM618 will provide the Contractor with a validated tag for each piece of equipment or HV cable entered.

QUU AMC will review the tag numbers proposed by the Contractor in TEM618 (developed utilising the QUU standard conventions) and confirm their acceptance within 10 business days. The accepted equipment tag numbers, along with the EAMS equipment numbers, will be provided to the QUU representative from the AMC.

3.2. Contractor

3.2.1. Project Commencement

At the commencement of the project the Contractor shall request:

- A site number from QUU and TEM618 (Greenfield)
- TEM618 and latest P&ID relevant to the project (Brownfield)

The Contractor 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 shall take special care to avoid the duplication of tag numbers; this may include field assessment of existing tags and advice of any anomalies with tag number assignment to QUU in a timely manner.

The Contractor shall maintain up-to-date register of all equipment and HV cable tag numbers allocated and supply the register to QUU 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.

3.2.2. Project Design Phase

As early as possible, but, not later than the 30% design milestone, the Contractor shall provide a list of all proposed equipment and component tag numbers for QUU review. This shall include all additions, replacements, and disposals. Supporting documentation as requested by QUU (e.g. drawings and schedules) shall be provided to assist QUU with assessing if the tag numbers have been assigned in accordance with this specification. The equipment tag numbers shall be used consistently throughout all Project Documentation delivered by the Contractor.

AMC will review and validate, within 10 business days the tag numbers proposed by the Contractor at 30% design.

The Contractor shall utilise TEM618 to provide equipment tag numbers and associated attributes to QUU in a prescribed format for upload to QUU's EAMS at 100% design to be approved by AMC. The Contractor shall update and reissue TEM618 with the Project As Constructed/Built documentation.

4. Equipment Tag Numbers

The QUU EAMS database has numbering conventions for items of plant designated in the business as 'equipment', such as switchboards, pumps and valves.

4.1. Existing Tag Number Conventions

Unless specified otherwise the Contract scope of work requires the Contractor to assign tag numbers to existing operational plant, equipment and components where no tag numbers are currently assigned or installed. The tag number assignment for existing assets shall be in accordance with this specification. The Contractor shall update all existing documentation with the tag numbers assigned to existing assets.

There may be projects where works under the Contract requires the Contractor to modify or interface to existing plant and equipment. It is possible that the existing plant and equipment tag numbers and numbering conventions have been established for the site. Before the commencement of design works the Contractor shall engage with QUU and investigate the extent of updates to existing equipment and component tag numbers.

Any established convention identified shall be documented and communicated to QUU for assessment and confirmation before detail design and tag numbering of equipment commences.

4.2. 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 QUU shall be tagged in accordance with this specification and allocated the general process area 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

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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 at the destination location, and where appropriate, equipment shall be retagged.

The AMC shall be notified of all equipment movements.

5. Tag Number Representation in Project Documentation

5.1. Asset Management Equipment Register – TEM618

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

- Accurate EAMS extract of existing equipment and HV cables (not components or 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 AMC, via the QUU Representative, by the contractor at 30% design, 100% design and again at commissioning as part of the Project As Constructed/Built documentation.

TEM618 is an Asset Management Equipment Register application with the following options:

- Create Tags – allows the user to quickly and easily generate Equipment tags by selecting a Site, a Process and an Equipment Code;
- 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.

5.2. 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. In future, the site identifier will form part of the drawing number and will normally be contained in the drawing title.

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 each tag number.

5.3. 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 site identifier to the equipment or component tag numbers where used throughout the documentation.

6. Tag Identifier Structure

6.1. General

The tagging structure described, herein, is intended to provide intelligence to the format of plant numbers to help identify equipment type, location, function and service.

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

- Existing equipment tags have the process area codes after the equipment code, the new convention has the process area codes before the equipment codes.
- Equipment type identifiers have updated to align with IS5.1 for instrumentation and can be two, three or four character in format
- A designated train number has been added to the tagging structure
- Sequence numbers is universally available up to 999

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.

6.2. Nomenclature and Tag Identifier Codes

Table 1: Tag Identifier Codes and Nomenclature

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	Numeric.

	[mm]	
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/IED 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.

6.3. Equipment and Components Tags

This section covers all physical assets determined to be **equipment** by QUU. Items that are considered equipment are defined in Appendix A of PRO395 and their equipment identification codes 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; 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 managed by QUU. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- “CCCC” is the process area 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 code. 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. The train number is only used for similar parallel trains. Otherwise the default value is 0.
- “MMM” is the sequential number 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.

6.3.1. 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 it is 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.

6.3.2. Equipment and Component Requirements

- 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 QUUs description convention. QUU will review and approve all proposed equipment descriptions during the design phase of the project.

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

6.4. Piping Systems 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 of 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.

6.4.1. 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.

6.4.2. 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 QUU. Ref to Appendix A of this standard.

6.5. Control and Instrumentation Tags

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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 managed by QUU. The coding and boundary limits for each asset group are listed in Appendix B of PRO395.
- "CCCC" is the process area 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 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. The train number is only used for similar parallel trains. Otherwise the default value is 0.
- "MMM" is the unique sequential number within a process. The instrumentation number (instrumentation loop number) is a 3 digit numerical code generally commencing at 001.

6.5.1. 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).

6.5.2. 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.

6.6. 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 elements as follows:-

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

Where:

- "CCCC" is the process area 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 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.
- "MMM" is the unique sequential number 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 code for each cable type. The cable identifiers are shown in Table 2.

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 & SINGLE MODE FIRE OPTIC CABLES
COPPER COMMUNICATION CABLES	T	ALL TELECOMMUNICATIONS CABLES, CAT5, CAT6 & ALL SERIAL COMMUNICATION COPPER CABLES
EARTH CABLES	E	GREEN/YELLOW INSULATED EARTH CABLES

Table 2 Cable Type Identifier Codes

- "X[X][X]" Cable Number 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 should estimate this requirement based on the likely quantum of cables in the process.

6.6.1. Cable Numbering Examples

0200-MTR-2001-P001

- 0200 where the process area is Pre-Treatment.
- MTR is the pump motor.
- 2001 denotes the motor as being the first in the second train.
- P001 where P is cable type and 001 is the incremental value.

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.

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

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.

6.6.2. Cable Numbering Requirements

The cable tag number 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 number comprises of the connected equipment tag number followed by the cable type identifier and cable number. There could be departures from this convention under certain circumstances and the Contractor shall notify QUU in writing and advise reasons for the departures.

The Contractor shall seek QUU's acceptance of any cable tag number departures from this specification before proceeding to utilise those cable tag numbers throughout the design documentation. QUU will not accept Contractor variations for delay or cost for re-work to reassign cable tag number that do not comply with this specification.

6.7. Cable Ferrule Number Identification

The Contractor 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.

Appendix A - Piping Material Codes

Code	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 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
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
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 HOT DIP 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, 2mm MINIMUM THICKNESS
S3	STAINLESS STEEL, GRADE 304

Appendix B – Fluid Service Codes

Code	Fluid service description
AA	ACETIC ACID
AIR	AIR
ALS	ALUM SOLUTION (ALUMINIUM SULPHATE)
AG	AMMONIA GAS
AMH	AMMONIUM HYDROXIDE
ANS	ANTISCALANT
BWW	BACKWASH WASTEWATER
BIO	BIOGAS
CEN	CENTRATE
CLG	CHLORINE GAS
CIT	CITRIC ACID
CA	COMPRESSED AIR
DS	DIGESTED SLUDGE
DR	DRAINAGE
EF	EFFLUENT
ETH	ETHANOL
FS	FERMENTED SLUDGE
FSN	FERMENTER SUPERNATANT
FECL	FERRIC CHLORIDE
FE	FILTERED EFFLUENT
FLT	FILTRATE
FM	FIRE MAIN
FA	FOUL AIR
FW	FOUL WATER
GRT	GRIT
HCL	HYDROCHLORIC ACID
IW	INDUSTRIAL WATER
IA	INSTRUMENT AIR
LP	LIME POWDER
MG	MAGNESIUM HYDROXIDE
M	METHANOL
MLR	MIXED LIQUOR RECYCLE
OIL	OIL
OF	OVERFLOW
PES	POLYMER SOLUTION (POLYELECTROLYTE)
PW	POTABLE WATER
PE	PRIMARY EFFLUENT
PS	PRIMARY SLUDGE
RSW	RAW SEWAGE
RE	RECLAIMED EFFLUENT
RAS	RETURN ACTIVATED SLUDGE

Code	Fluid service description
SS	SCREENED SEWAGE
SCN	SCREENINGS
SC	SCUM
SE	SECONDARY EFFLUENT
SW	SERVICE WATER
SL	SLUDGE
SB	SODIUM BISULPHATE
SOH	SODIUM HYDROXIDE
SH	SODIUM HYPOCHLORITE
SLS	SODIUM LAURYL SULPHATE
SME	SODIUM METABISULPHITE
STW	STORM WATER
SA	SULPHURIC ACID
SPN	SUPERNATANT
TE	TERTIARY EFFLUENT
TSW	TREATED STORM WATER
WAS	WASTE ACTIVATED SLUDGE