Appendix I - Pump Stations Asset Data Requirements

SI base unit

Quantity	Name of Unit	Abbreviation
Length	meter	m
	millimetre	mm
Volume	Cubic meters	m^3
	Litre	L
Area	Square meter	m^2
Flow rate	Cubic meter per hour	m^3/hr
	Cubic meter per second	m^3/s
	Litres per second	L/s
	Litres per hour	L/h
Mass	tonne	t
Pressure	Pascal	Pa
	kilopascal	kPa
Electric potential difference	Voltage	V
	Kilovoltage	kV
Apparent power	Kilovolt-ampere	kVA
Energy	kilowatt	kW
Electric current	Ampere	A
	kiloampere	kA
Torque	Newton meters	Nm

Section 1: Pump station asset data requirements - General attributes

These are the general data fields (attributes) that are common to all station assets for creating asset records in SAP/GIS. Most of the fields are mandatory unless otherwise stated. Mandatory fields are indicated with (M)

CAT Column	CAT Column Heading	Notes and Valid Values
A	SAG Feature Number	(M) Enter the CAT/SAG Feature number. e.g. Pump “SS10”
B	Asset Sub Type	Most assets will have require specifying the sub-types, e.g. Valves, Pump require Valve Type and Pump Type respectively. These are included in Section 2 – Asset Specific requirements. Please select from an asset specific pick list e.g. domPumpType has values such as Centrifugal, Axial etc.
C	Asset Record Capture Type	(M) Select from pick list: domCaptureType • Create New Record • Updating Exisitng Record Use ‘Create New Record’ for a new entry of the asset into the system. E.g. New project requires a new motor to be installed. Use ‘Update Existing Record’ for updating existing asset record. E.g. Make and model for an existing asset record in SAP was blank and we need the fields to be updated with field validated values, then use ”Update Existing Record”.
D	Differs from design (yes/no)	(M) Specify if the as-built asset aligns with specs/drawings issued in design stage. Select Yes or No from pick list: domDiffersFromDesign If Differs from design is ‘Yes’, we request you to submit variations and necessary documentation. Note - This information is only for entry in CAT. It is not brought into SAP/GIS.
E	Asset Unique Identifier	(M) If the Asset Record Capture Type is “Create new record” then enter the unique ID from As-built documents, specifications, drawings etc. This helps us reference between the asset record in the system and supporting documentation. If the Asset Record Capture Type is “Update Existing Record” then enter the CCC SAP ID of the asset. Most cases, the asset is captured as an equipment in SAP with a unique SAP ID. Please enter the 8 digit SAP Equipment ID. E.g. 11000123 is the Pump 01 at the Addington WS Site. Some assets are captured in SAP as a Functional Location e.g. Building, Please enter the SAP Functional Location label. E.g. STN_WS_PS_1001_WELL_01 is the Well 01 at Addington WS Site. data -

F	Asset Tag	(M) Data - Text (16 Characters) Asset Tag is the physical tag / label that is fixed near/on the asset on site. The Tag is aligned with CCC asset tagging convention. E.g. 105.1 OP001 is Pump 01 This is a mandatory field.
G	mE	(M) for Point, Line, Polygon features data -
H	mN	(M) for Point, Line, Polygon features data -
I	Vertex Order	(M) for Line & Polygon features data - Number
J	Network (WW,SW,WS)	(M) Select from pick list: domNetwork
K	Station Type	(M) Select from pick list: domStationType
L	Station Number	(M) data -
M	Site Name	(M) data - Text (30 Characters)
N	Short Description	(M) data -
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	(M) data -
P	Manufacturer	Select from pick list: domPumpsetManufacturer
Q	Model	data -
R	Model Number	data -
S	Manufacturing Serial Number	data -
T	Date of commission	(M) data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)

V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	(M) data - Date (dd/mm/yyyy)
Z	Photo - File Name	(M) data -

Additional notes: Picklist values may miss some values in that case use ‘NotInlist’ sheet in CAT

Section 2: Pump station non-spatial asset specific as-built data requirements

Stations Non-spatial assets are assets that are within a pump station building that do not require surveying. We will not be representing them in GIS. They are coded with prefix SNxx (SN = Stations Non-spatial)

As-Built requirements (Stations)

SN01: Actuator

Name **Actuator (Equipment)**

Equipment Type **SN01** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN01
B	Actuator Type	Select from pick list: domActuatorType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)

An actuator is a motor or drive mechanism responsible for moving or controlling a second asset or system. It is operated by a source of energy, typically electric current, hydraulic fluid pressure, or pneumatic pressure, and converts that energy into motion. Within three-waters the majority of actuators are used to operate valves.

Electric Actuator

		AA	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)		
		AB	Voltage	data - Decimal Number (15 Chars, 4 Decimals)		
		AC	Current Type	Select from pick list: domCurrentType		
		AD	Torque Rating in N/m	data - Decimal Number (7 Chars, 2 Decimals)		
		AE	Installation Company	data - Text (30 Characters)		
		Additional Information				
		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT				

SAP Object Type: ACTUATOR
SAP Class Type: ACTUATOR (002)
Represented in GIS: No

Classification Information:

1. Actuator Type
   [SAP Characteristic Name = ZPM_ACTUATORTYPE, CHAR, SAP Picklist below]
   Description: The type of actuator used in the system.
   Data Entry: 30 Characters

	Actuator type	Description	Photo
a)	PNEUMATIC	The pneumatic actuator is driven by compressed air at high pressure which is then converted to mechanical motion (either linear or rotary) to control and operate the valve.	
b)	HYDRAULIC	The hydraulic actuator is typically a cylinder or fluid motor that is driven by high pressure fluid (typically oil) to create a linear or rotary motion to control and operate the valve.	

c)	ELECTRIC	The electric actuator is driven by an electric motor that creates rotary motion which may then be converted to either linear or rotary motion by way of gearing in order to control and operate the valve.	

2. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The resulting power output of the actuator.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

3. Voltage
   [SAP Characteristic Name = ZPM_VOLTAGE, NUM]
   Description: Voltage of the actuator.
   Unit: V
   Data Entry: 15 Characters, 4 Decimal place

4. Current Type
   [SAP Characteristic Name = ZPM_CURRENTTYPE, CHAR, SAP Picklist below]
   Description: Type of current used in the actuator (if Actuator type is Electric)
   Data Entry: 7 Characters

   a) AC – Alternating current reverses the direction of the current periodically
   b) DC – Direct current is an electrical current which flows consistently in one direction.
   c) Not-Applicable – for Actuators that are Hydraulic or Pneumatic.

5. Torque Rating
   [SAP Characteristic Name = ZPM_TORQUERATING, NUM]
   Description: The torque generated by the actuator at rated speed.
   Unit: Nm
   Data Entry: 7 Characters, 2 Decimal place

6. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the actuator.
   Data Entry: 30 Characters

As-Built requirements (Stations)

SN02: Air Conditioner

Name **Air Conditioner (Equipment)**

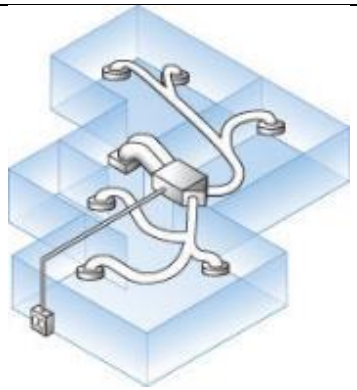
Equipment Type **SN02 "**Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN02
B	Air Conditioner Type	Select from pick list: domAirConditionerType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)

Air conditioners are apparatus used to alter or maintain ambient conditions within a building. An air conditioner consists of an internal and an external unit connected by refrigerant pipes.

Standalone AC

AA	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AB	Installation Company	data - Text (30 Characters)
AC	Phase	Select from pick list: domAirConditionerPhase
AD	Cooling Capacity in kW	data - Decimal Number (7 Chars, 2 Decimals)



Ducted AC

Additional Information
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.

SAP Object Type: AIRCOND
SAP Class Type: AIRCOND (002)
Represented in GIS: NO

Classification Information:

1. Air Conditioner Type
   [SAP Characteristic Name = ZPM_AIRCONDTYPE, CHAR, SAP Picklist below]
   Description: The type of air conditioner installed.

Data Entry: 30 Characters

	Air conditioner type	Description	Photo
a)	STANDALONE	Individual (Standalone) air conditioning units	 Source
b)	DUCTED	Cool air is distributed through ducts from one central air conditioning that cools the air.	 Source

2. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The power required to operate the air conditioner.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

3. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the air conditioner.
   Data Entry: 30 Characters

4. Phase
   [SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
   Description: The type of distribution load in the air conditioner power supply.
   Data Entry: 30 Characters

   a) 1PHASE – Single phase air conditioner uses a single phase power supply.
   b) 3PHASE – Three phase air conditioner uses three phase power supply.

5. Cooling Capacity
   [SAP Characteristic Name = ZPM_COOLINGCAPACITY, NUM]
   Description: Is a measure of the air conditioner's ability to remove heat from a room/confined space.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

As-Built requirements (Stations)

SN02: Air Tank System

Name	**Air Tank System**
Equipment Type	**SN02 "**Non-Spatial Asset Inputs"

A receptacle, container or chamber for Air storage.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN03
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Operating Pressure in kPa	data - Decimal Number (6 Chars, 2 Decimals)
AB	Volume in m3	data - Decimal Number (14 Chars, 2 Decimals)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: AIRTANK
SAP Class Type: AIRTANK (002)
Represented in GIS: NO

Classification Information:

1. Operating pressure
   [SAP Characteristic Name = ZPM_OPERATINGPRESSURE, NUM]
   Description: The pressure that the air tank is operating during normal condition.
   Unit: kPa
   Data Entry: 6 Characters, 2 Decimal place

2. Volume
   [SAP Characteristic Name = ZPM_VOLUME, NUM]
   Description: The volume of air the tank can hold.
   Unit: m^3
   Data Entry: 14 Characters, 2 Decimal place

As-Built requirements (Stations)

SN04: Cable

Name **Cable**

Equipment Type **SN04** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN04
B	Cable Type	Select from pick list: domCableType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Cable Purpose	Select from pick list: domCablePurpose
AB	Cable Length in meters	data - Decimal Number (15 Chars, 4 Decimals)
AC	Installation Company	data - Text (30 Characters)
AD	Rating in Amp (for Power Cable)	data - Decimal Number (4 Chars, Decimals)
AE	No. of Cores (for Comms, Control)	data - Decimal Number (2 Chars, Decimals)
AF	Phase	Select from pick list: domCablePhase

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Cables are formed by a conductor surrounded by a shield. Conductors can be an optical fibre, a single solid metallic core or core consisting of a number of smaller diameter metallic strands. Single and multiple core cables are in-use.

Power Cables

Signal Cable

CCC requires the following information about Cables in pump stations.

• All Data Communication Cables to be grouped as "Communication Cables Group" created as an individual row equipment item for the pump station. e.g. "Addington Pump Station - Communications Cables Group"

• All Signal Control Cables to be grouped as "Signal and Control Cables Group" created as an individual row equipment item for the pump station.e.g. "Addington Pump Station - Signal and Control Cables Group"

• Main incoming power cables and Individual Drive power cables (High voltage and low voltage cables) to be created as individual row equipment items (similar to cable schedule) with cable length information provided for each cable.
E.g.
1. "Addington Pump Station - Incoming Power Cabling" (from power source to station switchboard)
2. "Addington Pump Station - Pump 1 Drive Cabling" (from Pump 1 VSD to Pump1)
3. "Addington Pump Station - Pump 2 Drive Cabling" (from Pump 2 VSD to Pump2)

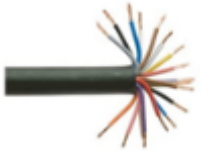
• All other power cables can be grouped as "Other Power Cables Group" created as an individual row equipment item for the pump station.

• Enter "NOT-APP" for Manufacturer, Model, Model #. However Cabling documents such as cables schedules and data sheet, drawings, etc will be required to gather more specific information about the cable to assist CCC with scoping renewals and/or repair work.

SAP Object Type: CABLE
SAP Class Type: CABLE (002)
Represented in GIS: No

Classification Information:

1. Cable Type
   [SAP Characteristic Name = ZPM_CABLETYPE, CHAR, SAP Picklist below]
   Description: The type of cable used in the system.
   Data Entry: 30 Characters

	Cable type	Description	Photo
a)	FLEX (Flexible)	Flat shape with flexible capability to cope with tight bending and physical stress.	 Source
b)	MCORE (Multicore)	Cables which contain multiple cores to combine multiple signals or power feeds.	 Source
c)	SHLD (Shielded)	Shielded cables have one or more insulated conductors encased in a standard conductive layer.	 Source
d)	SUB (Submersible)	Submersible cables are designed for connections in water.	 Source
e)	FIBRE (Fibre)	Fibre cables contain one or more optical fibres that are used to transmit large amounts of data at high speeds.	 Source

f)	TWISTED PAIR (Twisted)	Twisted pair cables contain pairs of conductors that are twisted together.	 Source

2. Cable Purpose
   [SAP Characteristic Name = ZPM_CABLEPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the cable.
   Data Entry: 30 Characters

   a) POWER – Cable used for the transmission of electrical power.
   b) COMMUNICATIONS – Cable used for transmitting information signals.
   c) CONTROL / SIGNAL – Cable used for automation and instrumentation application.

3. Cable Length
   [SAP Characteristic Name = ZPM_CABLELENGTH, NUM]
   Description: The length of the cable including bends and turns from one asset to another.
   Unit: m
   Data Entry: 15 Characters, 4 Decimal place

4. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the cable.
   Data Entry: 30 Characters

5. Rating in Amp (Power Cable)
   [SAP Characteristic Name = ZPM_RATING, NUM]
   Description: The maximum current (measured in amps) that the conductor can carry safely.
   Unit: A
   Data Entry: 4 Characters

6. No. of Cores (Comms, Control)
   [SAP Characteristic Name = ZPM_NUMBERCORES, CHAR, SAP Picklist below]

Description: The number of cores within a cable. Cores are made of copper wires that are coated with insulated plastic.
Data Entry: 2 Characters

7. Phase
   [SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
   Description: The type of distribution load in the cable power supply.
   Data Entry: 30 Characters

   a) 1PHASE – A single phase power is a two-wire alternating current power circuit
   b) 3PHASE – A three phase power is a three wire alternating current power circuit.
   c) LOWVOLT – A low voltage power requires less current through the electrical wiring.

As-Built requirements (Stations)

SN05: Compressor

Name	**Compressor** (Air)
Equipment Type	**SN05** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN05
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AB	Phase	Select from pick list: domCompressorPhase

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

An air compressor is a mechanical device that converts power (using an electric motor, diesel or gasoline engine, etc.) into potential energy stored in pressurized air (i.e., compressed air).

Portable Air Compressor

Heavy Duty Air Compressor

SAP Object Type: COMPRESSOR
SAP Class Type: COMPRESSOR (002)
Represented in GIS: NO

Classification Information:

1. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The power needed to operate the compressor.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

2. Phase
   [SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
   Description: The type of distribution load in the compressor power supply.
   Data Entry: 30 Characters

   a) 1PHASE – Single phase compressor has one power winding.
   b) 3PHASE – Compressor that has three different power windings inside one motor housing

As-Built requirements (Stations)

SN06: Crane

Name **Crane**

Equipment Type **SN06** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN06
B	Crane Type	Select from pick list: domCraneType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Inspection Number	data - Text (30 Characters)
AB	Installation Company	data - Text (30 Characters)
AC	Crane Controls	Select from pick list: domCraneControl
AD	Phase	Select from pick list: domCranePhase
AE	Lifting Capacity (Tonne)	data - Decimal Number (6 Chars, 1 Decimals)
AF	Installation Certificate Date	data - Date (dd/mm/yyyy)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

A machine equipped with a hoist rope, wire ropes or chains, and sheaves, which can be used to lift and lower materials and optionally to move them horizontally.

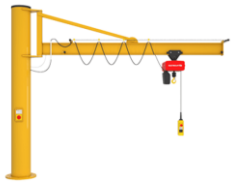
Gantry Crane

SAP Object Type: CRANE
SAP Class Type: CRANE (002)
Represented in GIS: NO

Classification Information:

1. Crane type
   [SAP Characteristic Name = ZPM_CRANETYPE, CHAR, SAP Picklist below]
   Description: The type of crane installed. Select from picklist below.
   Data Entry: 30 Characters

	Crane type	Description	Photo
a)	TRAVELLING	A crane that consists of two overhead runaways that is built into the buildings support structure. It is used for lifting, lowering and moving loads.	 Source
b)	GANTRY	The crane is built atop a gantry that is supported by two frame steel legs. It is used to lift heavy objects.	 Source  Source
c)	CHAIN BLOCK	The crane consists of grabbing hook, hand chain and a lifting chain. Chain block cranes can be electrically or manually operated.	 Source  Source
d)	RAIL	The crane is built on a rail	

e)	SWING	Also known as a jib crane which is a type of overhead lifting device. It consist of a horizontal beam with a vertical tower. It is a lightweight crane used for repetitive lifting with limited space.	 Source

2. Inspection Number
[SAP Characteristic Name = ZPM_INSPECTIONNUMBER, CHAR, SAP Picklist below]
Description: The inspection number of the Crane at time of installation and commissioning by the installation company.
Data Entry: 30 Characters

3. Installation company
[SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR, SAP Picklist below]
Description: The company that has installed the crane.
Data Entry: 30 Characters

4. Crane controls
[SAP Characteristic Name = ZPM_CRANECONTROL, CHAR, SAP Picklist below]
Description: The crane's control system.
Data Entry: 30 Characters

   a) MECHANICAL – Cranes that have a mechanical device equipped with winder, wire ropes and sheaves.
   b) ELECTRICAL – Cranes that are powered by electricity.

5. Phase
[SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
Description: The type of distribution load in the crane power supply.
Data Entry: 30 Characters

   a) 1PHASE – A single phase crane uses a single power supply
   b) 3PHASE – A three phase crane uses three phase power supply

6. Lifting capacity
   [SAP Characteristic Name = ZPM_LIFTINGCAPACITYTONNE, NUM]
   Description: The maximum load that the crane can lift.
   Unit: t (tonne)
   Data Entry: 6 Characters, 1 Decimal place

7. Installation certificate date
   [SAP Characteristic Name = ZPM_INSTCERTDATE, DATE]
   Description: The installation certificate date.
   Data Entry: 10 Characters

As-Built requirements (Stations)

SN07: Electrical System

Name **Electrical System**

Equipment Type **SN07** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN07
B	Electrical System Type	Select from pick list: domElectricalSystemType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Main Switch Amps	data - Decimal Number (6 Chars, 2 Decimals)
AB	Ingress Protection	data - Text (3 Characters)
AC	Form of Separation	data - Text (2 Characters)
AD	Type Tested	Select from pick list: domElectricalSystemTypeTested
AE	Fault Rating	data - Decimal Number (10 Chars, 2 Decimals)
AF	Installation Company	data - Text (30 Characters)
AG	Transformer to Cabinet Cable Length in meters	data - Decimal Number (7 Chars, 2 Decimals)
AH	Cabinet to Pump Cable Length in meters	data - Decimal Number (7 Chars, 2 Decimals)

Electrical assets are assets involved in the distribution of electrical power throughout a facility, they are differentiated by requiring external input for the change of any set-points or other operational criteria.

MCC - Motor control circuit

Control Panel

CCC requires information about following electrical systems within Electrical Systems Tab.

- MCC (Motor Control Centers)
- Control Panel
- Switch Board
- Distribution Boards

All corner points along outline to be surveyed. Create one CAT row per surveyed point.

		AI	Main Switch Manufacturer	data - Text (30 Characters)		
		AJ	Main Switch Model	data - Text (30 Characters)		
		Additional Information *All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline				

SAP Object Type: ELECTRICS
SAP Class Type: ELECTRICS (002)
Represented in GIS: No if inside the building. Yes if Outside the building.
GIS Model: ELECTRICAL-TBC

Classification Information:

1. Electrical System Type
   [SAP Characteristic Name = ZPM_ELECTRICALSYSTEMTYPE, CHAR, SAP Picklist below]
   Data Entry: 30 Characters

	Type	Description
a)	CONTROL PANEL	Combination of electrical devices which use electrical power to control the various mechanical functions of equipment or machinery. Source.
b)	DISTRIBUTION BOARD	The main electrical supply system that distributes an electrical power feed in secondary circuits via breakers.
c)	MOTOR CONTROL CENTRE	A manual or automated assembly to control some or all electric motors.
d)	POWERSUPPLYBOX	An internal IT hardware component that supplies electric power to an electric load
e)	SWITCHBOARD	A component of an electrical distribution system.
f)	MAIN CABINET	The main electrical cabinet

2. Main Switch Amps
   [SAP Characteristic Name = ZPM_MAINSWITCHAMPS, NUM]

Description: The ampere (Amps) of the main switch.
Unit: A
Data Entry: 6 Character, 2 Decimal place

3. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR]
   Description: Form of Protection specified as per standard 2 digit IP Code. Refer to http://www.dsmt.com/resources/ip-rating-chart for more information
   Data Entry: 3 Character

4. Form of Separation
   [SAP Characteristic Name = ZPM_FORMOFSEPARATION, CHAR]
   Description: The form of separation the electrical system contains. As per Annex D of Standard BS EN 60439
   Data Entry: 2 Character

5. Type Tested
   [SAP Characteristic Name = ZPM_TYPETESTED, CHAR, SAP Picklist below]
   Description: Specify whether electrical system has been type tested (test to see if system conforms to requirements or regulation)
   Data Entry: 30 Character

   a) YES
   b) NO
   c) PARTIAL

6. Fault Rating
   [SAP Characteristic Name = ZPM_FAULTRATING, NUM]
   Description: It is the amount of current an electrical system can withstand in a short circuit scenario
   Unit: kA
   Data Entry: 10 Character, 2 Decimal place

7. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the electrical system.
   Data Entry: 30 Character

8. Transformer to Cabinet Cable Length
   [SAP Characteristic Name = ZPM_TRANSCABINETCABLE, NUM]
   Description: The total length of cable including bends & turns from the transformer to Electrical cabinet in meters.
   Unit: m
   Data Entry: 7 Character, 2 Decimal place

9. Cabinet to Pump Cable Length
   [SAP Characteristic Name = ZPM_CABINETPUMPCABLE, NUM]
   Description: The length of cable including bends and turns from the Cabinet to Pump in meters.
   Unit: m
   Data Entry: 7 Character, 2 Decimal place

10. Main Switch Manufacturer
    [SAP Characteristic Name = ZPM_MAINSWITCHMAKE, CHAR]
    Description: The manufacturer of the main switch
    Data Entry: 30 Character

11. Main Switch Model
    [SAP Characteristic Name = ZPM_MAINSWITCHMODEL, CHAR]
    Description: The model of the main switch.
    Data Entry: 30 Character

As-Built requirements (Stations)

SN08: Engine

Name **Engine**

Equipment Type **SN08** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN08
B	Fuel Type	Select from pick list: domEngineFuel
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)

Engines, or internal combustion engines, are machines for the conversion of fuels into rotational motion. An engine asset includes fuel pumps, heat exchanges and other ancillaries supplied as part of the engine but does not include external units.

Diesel engine

Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Fuel Consumption (Litres/Hour)	data - Decimal Number (5 Chars, 1 Decimals)
AB	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AC	RPM	data - Decimal Number (6 Chars, Decimals)
AD	Output Drive Type	Select from pick list: domEngineOutputDrive

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: ENGINE
SAP Class Type: ENGINE (002)
Represented in GIS: No

Classification Information:

1. Fuel Type
   [SAP Characteristic Name = ZPM_FUELTYPE, CHAR SAP Picklist below]
   Description: The type of fuel used in the engine

Data Entry: 30 Characters

a) DIESEL
b) GAS
c) DUEL – Diesel and Gas

2. Fuel Consumption
   Data Entry: 7 Characters, 2 Decimal place
   [SAP Characteristic Name = ZPM_FUELCONSUMPTION_LH, NUM]
   Description: The volume of fuel consumed by the engine in a certain amount of time.
   Unit: L/h
   Data Entry: 5 Characters, 1 Decimal place

3. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The resulting power output of the engine.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

4. RPM
   [SAP Characteristic Name = ZPM_RPM, NUM]
   Description: Revolution per minute is the measure of how fast the engine is spinning.
   Data Entry: 6 Characters

5. Output Drive
   [SAP Characteristic Name = ZPM_OUTPUTDRIVE, CHAR, SAP Picklist below]
   Description: Specify how the engine outputs its energy
   Data Entry: 30 Characters

   a) DIRECT – Directly drives a load without transmission elements such as gears, belt or chains.
   b) BELT DRIVEN – Transmit and modify rotary motion from Engine shaft to the other by means of pulleys and belts.
   c) HYDRAULIC – Transfer of Engine's output power & rotary motion into hydraulic system.

As-Built requirements (Stations)

SN09: Exchanger

Name **Exchanger**

Equipment Type **SN09** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN09
B	Exchanger Type	Select from pick list: domExchangerType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Exchanger Capacity in kW	data - Decimal Number (7 Chars, 2 Decimals)
AB	Operating Fluid	Select from pick list: domExchangerOperatingFluid
AC	Operating Pressure in kPa	data - Decimal Number (6 Chars, 2 Decimals)
AD	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Heat exchangers are units designed for the transfer of heat between two fluids resulting in a decrease in temperature of the hot fluid and an increase in temperature of the cold fluid.

Plate Exchanger

Coil-Tube Exchanger

SAP Object Type: EXCHANGER
SAP Class Type: EXCHANGER (002)
Represented in GIS: NO

Classification Information:

1. Exchanger Type
   [SAP Characteristic Name = ZPM_EXCHANGERTYPE, CHAR, SAP Picklist below]
   Description: Type of exchanger installed.
   Data Entry: 30 Character

	Exchanger type	Description	Photo
a)	PLATE	Heat exchanger which uses metal plates to transfer heat from one fluid to another.	 Source
b)	SHELL AND TUBE	Heat exchanger which uses a bundle of tubes mounted inside a cylindrical shell. Two fluids exchange heat, one fluid flows through the shell while the second fluid flows through the tubes.	 Source
c)	FIN	Fins in heat exchangers are surfaces that extend from an object (e.g. finned chambers) to increase the rate of heat transfer.	 Source

d)	COIL	Coil heat exchangers consist of metal tube that transfer heat between two or more streams.	 Source
e)	SEPARATED PLATE		

2. Exchanger Capacity
   [SAP Characteristic Name = ZPM_EXCHANGERCAPACITY, NUM]
   Description: The maximum power capacity of the heat exchanger.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

3. Operating Fluid
   [SAP Characteristic Name = ZPM_OPERATINGFLUID, CHAR, SAP Picklist below]
   Description: The two fluids used in the heat exchanger.
   Data Entry: 30 Character

   a) AIR-OIL
   b) AIR-WATER
   c) WATER-OIL
   d) WATER-WATER

4. Operating Pressure
   [SAP Characteristic Name = ZPM_OPERATINGPRESSURE, CHAR, SAP Picklist below]
   Description: Operating pressure of the heat exchanger.
   Unit: kPa
   Data Entry: 6 Characters, 2 Decimal place

5. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR, SAP Picklist below]

Description: The company that has installed the heat exchanger.
Data Entry: 30 Characters

As-Built requirements (Stations)

SN10: Fan

Name **Fan**

Equipment Type **SN10** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN10
B	Fan Type	Select from pick list: domFanType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)

Fans are mechanical devices designed to create movement (flow) in a gas stream. This feature/asset type to be used only for the Fan itself. It excludes the motor of the fan. Motor and Starter needs to be captured as individual assets in the CAT sheet.

Fan differ from compressors in that fans predominantly supply flow while compressors create pressure.

Axial fan

AA	Operating Pressure in kPa	data - Decimal Number (6 Chars, 2 Decimals)
AB	RPM	data - Decimal Number (6 Chars, Decimals)
AC	Installation Company	data - Text (30 Characters)
AD	Fan Purpose	Select from pick list: domFanPurpose
AE	Phase	Select from pick list: domFanPhase
AF	Fan Diameter	data - Decimal Number (6 Chars, 2 Decimals)

Positive Displacement fan

Additional Information
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.

SAP Object Type: FAN
SAP Class Type: FAN (002)
Represented in GIS: NO

Classification Information:

1. Fan Type
   [SAP Characteristic Name = ZPM_FANTYPE, CHAR, SAP Picklist below]
   Description: The type of Fan installed.
   Data Entry: 30 Characters

	Fan type	Description	Photo
a)	AXIAL	Axial fan consist of blades which are in axial direction, parallel to the shaft.	 Source
b)	SIDE CHANNEL	Side channel blower converts kinetic energy into pressure via a pumping medium. The impeller is mounted directly on the shaft of the motor and together with the specifically shaped housing, forms the side channel.	 Source
c)	CENTRIFRUGAL	Centrifugal fans extract air at right angle to the intake of the fan, and spin the air outwards to the outlet by deflection and centrifugal force.	 Source
d)	POSITIVE DISPLACEMENT	A positive displacement blower consists of two rotors that are joined together by gears surrounded by a blower casing. The blower traps a certain volume of air and discharges it against the system pressure.	 Source

2. Operating Pressure
   [SAP Characteristic Name = ZPM_OPERATINGPRESSURE, NUM]
   Description: The operating pressure of the Fan under normal conditions.
   Unit: kPa
   Data Entry: 6 Characters, 2 Decimal place

3. RPM
   [SAP Characteristic Name = ZPM_RPM, NUM]
   Description: Revolution per minute refers to the number of rotations the fan blade makes per minute.
   Data Entry: 6 Characters

4. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR, SAP Picklist below]

Description: The company that has installed the Fan.
Data Entry: 30 Characters

5. Fan Purpose
   [SAP Characteristic Name = ZPM_FAN_PURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the Fan installed.
   Data Entry: 30 Characters

   a) SUPPLY – The fan pulls outside air into a space.
   b) EXTRACT – The fan removes and controls excess humidity, fumes and unwanted odours.

6. Fan Diameter
   [SAP Characteristic Name = ZPM_FANDIAMETER, NUM]
   Description: The distance from one blade tip to the opposite blade tip.
   Unit: mm
   Data Entry: 6 Characters, 2 Decimal place

As-Built requirements (Stations)

-SN11: Filter Unit

Name **Filter Unit**

Equipment Type **SN11** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN11
B	Filter Purpose	Select from pick list: domFilterUnitPurpose
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domFilterUntManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Filter Unit Media	Select from pick list: domFilterUnitMedia
AB	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Filter Unit is a porous device/structure for removing impurities or solid particles from a liquid or gas passed through it. The material used in filter is called the filter media, which can be paper, membrane, etc.

Paper Cartridge

Ceramic Cartridge

Membrane

SAP Object Type: FILTUNIT
SAP Class Type: FILTUNIT (002)
Represented in GIS: No

Classification Information:

1. Filter unit media
   [SAP Characteristic Name = ZPM_FILTERMEDIA, CHAR, SAP Picklist below]
   Description: The type of filter unit media used in the filter bed. Select the primary media of the filter bed.
   Data Entry: 30 Characters

   a) BARK
   b) PAPER
   c) CARBON
   d) PAPER CARTRIDGE
   e) SOIL
   f) SAND
   g) CERAMIC CARTRIDGE
   h) PLASTIC
   i) MEMBRANE
   j) COCONUT HUSK
   k) ZEOLITE
   l) GLASS

2. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the harmonic filter.
   Data Entry: 30 Character

As-Built requirements (Stations)

SN12: Harmonic Filter

Name **Harmonic Filter**

Equipment Type **SN12** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN12
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domFilterharmnManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Max Current in Amperes	data - Decimal Number (6 Chars, 2 Decimals)
AB	Ingress Protection	data - Text (3 Characters)
AC	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Harmonic filters are electronic systems used to prevent electronic equipment in stations causing adverse effects in the public power supply. Harmonic filter installation is a requirement of power supply providers at stations with 20kW or greater of variable speed drives fitted.

Harmonic Filter Cabinet

SAP Object Type: FILTHARMN
SAP Class Type: FILTHARMN (002)
Represented in GIS: No

Classification Information:

3. Max Current
   [SAP Characteristic Name = ZPM_MAXCURRENT, NUM]
   Description: The maximum current that the harmonic filter can carry continuously and safely.
   Unit: A
   Data Entry: 6 Characters, 2 Decimal place

2. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR]
   Description: The Ingress protection code. It measures the capacity of the equipment to resist intrusion, dust and water.
   Data Entry: 3 Characters

4. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the harmonic filter.
   Data Entry: 30 Characters

As-Built requirements (Stations)

SN13: HMI

Name **HMI**

Equipment Type **SN13** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN13
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

An HMI is an acronym for Human Machine Interface. It is a device to allow users to manually control or operate machinery. In pump stations, the HMI is on the switchboard control panel and it allows the user to check operation logs, pump control, etc.

SAP Object Type: HMI
SAP Class Type: HMI (002)
Represented in GIS: No

Classification Information:

1. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the Human Machine Interface (HMI).
   Data Entry: 30 Characters

As-Built requirements (Stations)

SN14: Installation Control Point

Name **Installation Control Point (ICP)**

Equipment Type **SN14** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN14
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description – Enter ICP Number	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	~~Warranty Start Date~~	~~data - Date (dd/mm/yyyy)~~
V	~~Warranty End Date~~	~~data - Date (dd/mm/yyyy)~~
W	~~Acquisition Value - Purchase Cost~~	~~data - Decimal Number (8 Chars, 2 Decimals)~~
X	~~Acquisition Value - Installation Cost~~	~~data - Decimal Number (8 Chars, 2 Decimals)~~
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

As-Built requirements (Stations)

SN15: Instrument

Name **Instrument**

Equipment Type **SN15** "Non-Spatial Asset Inputs"

Device used to measure and display operational parameters of the pump station, e.g. flow, level, pressure etc.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN15
B	Measurement Type	Select from pick list: domInstrumentMeasurementType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Instrument Unit of Measure	Select from pick list: domInstrumentUnitOfMeasure
AB	Installation Company	data - Text (30 Characters)
AC	Factory Calibration Date	data - Date (dd/mm/yyyy)
AD	Installation Certificate Date	data - Date (dd/mm/yyyy)
AE	FlowMeter Verification Certification Date	data - Date (dd/mm/yyyy)

Flow Meter

Ultrasonic Level Sensor

		AF	Nominal Flowmeter Bore (mm)	data - Decimal Number (6 Chars, Decimals)		
		AG	Pressure Transducer RL (in meters)	data - Decimal Number (6 Chars, 3 Decimals)		
		Additional Information				
		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: INSTRMENT
SAP Class Type: INSTRMENT (002)
Represented in GIS: No

Classification Information:

1. Measurement Type
   [SAP Characteristic Name = ZPM_MEASUREMENTTYPE, CHAR, SAP Picklist below]
   Description: The measurement type that is implemented in the system.
   Data Entry: 30 Characters

	Types	Description	Photos
a)	ANALYTICAL	Instruments that are used for analytical application. Helps in establishing the composition and analysing materials. Source	
b)	FLOW	Instruments that measure the flow rate or quantity of flow in a stream. Source	 Source
c)	FLOW MECHANICAL	Flow measuring device used to measure the mass flow or volumetric flow of a stream. Source	 Source

d)	LEVEL	The level measurement device measures the distance from the reference point to the product surface. Ultrasonic or Radar pulses are emitted by the instrument, reflected by the product surface, received by the electronic evaluation unit and converted into level information. Source	 Source
e)	PH	pH instrument measures the hydrogen-ion activity (acidity or alkalinity) in a solution.	 Source
f)	POWER	The power instruments measure the power of a system in current, Frequency, Harmonics, voltage or Watt.	
g)	POSITION	A position sensor is proximity switch used to check position of valves (open/close), doors (open/close), hatches (open/close) etc.	
h)	PRESSURE	Pressure instruments are used to measure, monitor, record, transmit or control pressure.	 Source
i)	SPEED	A tachometer is an instrument which measures the rotation speed of a shaft or disk. It is designed to measure the revolutions per minute (RPM) of a moving object.	 Source
j)	TEMPERATURE	Temperature measuring sensors measure temperature by sensing some change in a physical characteristic. There are different types of temperature instrument such as resistive temperature devices (RTDs, thermistors), bimetallic devices and liquid expansion devices. Source	 Source
k)	TURBIDITY	Turbidity is measured in NTU: Nephelometric Turbidity Units. The instrument used for measuring it is called nephelometer or turbidimeter, which measures the intensity of light scattered at 90 degrees as a beam of light passes through a water sample. Source	 Source

l)	LEVEL - ULTRASONIC	Measure distance by using ultrasonic waves. The sensor head emits an ultrasonic wave and receives the wave reflected back from the target. Ultrasonic / level sensors measure the distance to the target by measuring the time between the emission and reception. Source	 Source
m)	LEVEL - FLOAT SWITCH	Float level sensors are continuous level sensors featuring a magnetic float that rises and falls as liquid levels change. Source	 Source
n)	LEVEL - HYDROSTATIC	A hydrostatic level sensor is a form of level probe that is used especially for level monitoring by measuring the hydrostatic pressure in a virtually static liquid at a pre-determined level of submersion. Source	 Source
o)	PRESSURE SENSOR	A pressure sensor is an instrument which is able to measure the pressure in gases or liquids. It consists of a pressure-sensitive element which can determine the pressure being applied and components to convert the information into an output signal. Source	 Source
p)	FLOW - MAGFLOW	Magnetic flow meters use a magnetic field to generate and channel liquid flow through a pipe. A voltage signal is created when a conductive liquid flows through the flowmeter's magnetic field. The faster the flow of the fluid, the greater the voltage signal generated. Source	 Source
q)	DISSOLVED OXYGEN	Dissolved oxygen meters use an electrochemical, polarographic, amperometric, galvanic, or optical sensor to measure the amount of gaseous oxygen dissolved in a water sample. Source	 Source
r)	HUMIDITY	Humidity meters measure the amount of water vapour in gases, most often air or pipelines, to ensure the optimal amount of moisture is present. Source	 Source

2. Instrument Unit of Measure
   [SAP Characteristic Name = ZPM_INSTUNITOFMEASURE, CHAR, SAP Picklist below]
   Description: The unit of measurement used by the instrument.
   Data Entry: 30 Characters

   a) CU. METER PER HOUR (m^3/hr)
   b) CU. METER PER SECOND (m^3/s)
   c) DEGREE CELSIUS (°C)
   d) METER (m)
   e) PASCAL (Pa)
   f) WATTS (W)
   g) NEPHELOMETRIC TURBIDITY UNITS (NTU)
   h) PERCENTAGE (%)

3. Installation Company
   [SAP Characteristic Name =ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the instrument.
   Data Entry: 30 Characters

4. Factory Calibration Date
   [SAP Characteristic Name = ZPM_FACTCALIBDATE, CHAR]
   Description: The date of the factory calibration certificate. Calibration certificate provides information on the measurement accuracy and quality of the instrument.
   Data Entry: 30 Characters

5. Installation Certificate Date
   [SAP Characteristic Name = ZPM_INSTCERTDATE, CHAR]
   Description: The date of the installation certificate.
   Data Entry: 30 Characters

6. FlowMeter Verification Certificate Date
   [SAP Characteristic Name = ZPM_FLOWVERIFCERTDATE, CHAR]
   Description: The date of the flow meter verification certificate. Verification certificate ensures that the instrument comply with the requirements for maximum permissible error and measuring tolerance. Only applies to Flowmeters. Leave this field blank if other type of instruments.

Data Entry: 30 Characters

7. Nominal Flowmeter Bore
   [SAP Characteristic Name = NOMINALFLOWMETERBORE, NUM]
   Description: Nominal bore is the approximate internal diameter of the flowmeter bore. Only applies to Flowmeters.
   Unit: mm
   Data Entry: 6 Characters

8. Pressure Transducer RL
   [SAP Characteristic Name = PRESSURETRANSDUCERRL, NUM]
   Description: The pressure inducer converts the physical pressure in the system into analogue electrical signal
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

As-Built requirements (Stations)

SN16: Line Filter

Name **Line Filter**

Equipment Type **SN16** "Non-Spatial Asset Inputs"

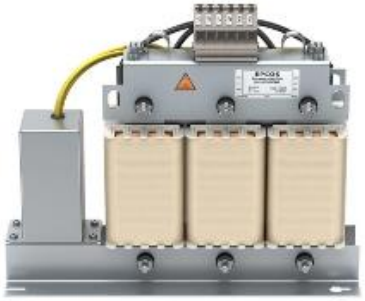
CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN16
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Max Current in Amperes	data - Decimal Number (6 Chars, 2 Decimals)
AB	Installation Company	data - Text (30 Characters)
AC	Ingress Protection	data - Text (3 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Line filter is an electronic filter placed between a power line and an electric equipment. It is used to prevent passage of radio frequencies between the power line and electric equipment.

EMI/RFI line filter



SAP Object Type: LINEFILTR
SAP Class Type: LINFILTR (002)
Represented in GIS: No

Classification Information:

1. Max Current
   [SAP Characteristic Name = ZPM_MAXCURRENT, NUM]
   Description: The maximum current that the line filter is designed to carry under the normal conditions.
   Unit: A
   Data Entry: 6 Characters, 2 Decimal place

2. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR, SAP Picklist below]
   Description: The company that has installed the line filter.
   Data Entry: 30 Characters

3. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR, SAP Picklist below]
   Description: The Ingress protection code. It measures the capacity of the motor to resist intrusion, dust and water.
   Data Entry: 3 Characters

As-Built requirements (Stations)

SN17: Motor Starter

Name **Starter** (for a Motor)

Equipment Type **SN17** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN17
B	Starter Starting Method	Select from pick list: domStarterStartingMethod
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Max Current in Amperes	data - Decimal Number (6 Chars, 2 Decimals)
AB	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AC	Ingress Protection	data - Text (3 Characters)
AD	Installation Company	data - Text (30 Characters)
AE	Phase	Select from pick list: domStarterPhase

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Starters are devices for the control of motors. Control can be on/off, on/off with torque reduction to reduce stresses or infinitely variable speed control.

VSD Starter

SAP Object Type: STARTER
SAP Class Type: STARTER (002)
Represented in GIS: No

Classification Information:

1. Starter Starting Method
   [SAP Characteristic Name = ZPM_STARTERSTARTINGMETHOD, CHAR, SAP Picklist below]
   Description: The starting method of the Starter
   Data Entry: 30 Characters

   a) DOL (Direct on line) – Direct on-line starter is a method of starting a 3-phase induction motor.
   b) LIQUID – liquid starter that employs an electrolytic resistance by moving electrodes in an electrolyte solution.
   c) SLIP RING – Slip ring starter control the speed/torque characteristics of a motor.
   d) SOFT START – Soft starter controls the amount of voltage running through the motors circuit.
   e) STAR DELTA – Star delta is a type of reduced voltage starter which reduces the starting current of the motor without using any external devices.
   f) VSD AC – variable speed drive is an electronic motor control device that has a complete control of the alternative current (AC) motor speed including starting and stopping.
   g) VSD DC - variable speed drive is an electronic motor control device that has a complete control of the direct current (DC) motor speed including starting and stopping.
   h) AUTO TRANSFORMER – Auto transformer starter reduces the voltage applied across the motor through the tappings of the autotransformer.

2. Max Current
   [SAP Characteristic Name = ZPM_MAXCURRENT, NUM]
   Description: The maximum current that the starter is designed to carry under the normal conditions.
   Unit: A
   Data Entry: 6 Characters, 2 Decimal place

3. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The power rating of the starter
   Unit: kW

Data Entry: 7 Characters, 2 Decimal place

4. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR, SAP Picklist below]
   Description: The Ingress protection code. It measures the capacity of the starter to resist intrusion, dust and water.
   Data Entry: 3 Characters

5. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR, SAP Picklist below]
   Description: The company that has installed the starter.
   Data Entry: 30 Characters

6. Phase
   [SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
   Description: The type of distribution load in the starter.
   Data Entry: 30 Characters

   a) 1PHASE – Single phase starter uses a single-phase power supply.
   b) 3PHASE – Three phase starter uses three phase power supply.
   c) LOWVOLT – Starter that uses low voltage power supply to operate.

As-Built requirements (Stations)

SN18: Motor Unit

Name **Motor Unit**

Equipment Type **SN18** "Non-Spatial Asset Inputs"

Motor is a machine for conversion of electrical energy into kinetic energy.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN18
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Ingress Protection	data - Text (3 Characters)
AB	RPM	data - Decimal Number (6 Chars, Decimals)
AC	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AD	Current Type	Select from pick list: domMotorCurrentType
AE	Installation Company	data - Text (30 Characters)
AF	Phase	Select from pick list: domMotorPhase

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: MOTOR
SAP Class Type: MOTOR (002)
Represented in GIS: No

Classification Information:

1. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR]
   Description: The Ingress protection code. It measures the capacity of the motor to resist intrusion, dust and water.
   Data Entry: 3 Characters

2. RPM
   [SAP Characteristic Name = ZPM_RPM, NUM]
   Description: Rotations per minute (Number of rotations of motor shaft per minute).
   Data Entry: 6 Characters

3. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The power supply required to operate the motor.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

4. Current Type
   [SAP Characteristic Name = ZPM_CURRENTTYPE, NUM]
   Description: Type of current used in the motor.
   Data Entry: 7 Characters

   a) AC – Alternating current reverses the direction of the current periodically
   b) DC – Direct current is an electrical current which flows consistently in one direction.

5. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]

Description: The company that has installed the motor.
Data Entry: 30 Characters

6. Phase
   [SAP Characteristic Name = ZPM_PHASE, CHAR, SAP Picklist below]
   Description: The type of distribution load in the motor.
   Data Entry: 30 Characters

   a) 1PHASE – Single phase motor uses a single phase power supply.
   b) 3PHASE – Three phase motor uses three phase power supply.
   c) LOWVOLT – Motor that uses low voltage power supply to operate.

As-Built requirements (Stations)

SN19: Network Equipment

Name **Network Equipment**

Equipment Type **SN19** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN19
B	Network Equipment Type	Select from pick list: domNetworkEquipmentType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Ingress Protection	data - Text (3 Characters)
AB	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Electronic devices that mediate data in a computer network. In pump stations, these are typically routers, firewall, switch and hub.

Router

Switch

SAP Object Type: NETWORKEQ
SAP Class Type: NETWORKEQ (002)
Represented in GIS: No

Classification Information:

1. Network Equipment Type
   [SAP Characteristic Name = ZPM_NETWORKEQUIPTYPE, CHAR, SAP Picklist below]
   Description: The type of network equipment installed.
   Data Entry: 30 Characters

   a) HUB – A network hub is a node that broadcasts data and connects multiple computers or other network devices together.
   b) SWITCH – A network switch is networking hardware that exchanges data packets by connecting devices on a computer network.
   c) ROUTER – A router is a networking device which can route network packets to other networks or devices.
   d) FIREWALL – A firewall is a security device that enforces a network boundary.

2. Ingress Protection
   [SAP Characteristic Name = ZPM_INGRESSPROTECTION, CHAR]
   Description: The Ingress protection code. It measures the capacity of the motor to resist intrusion, dust, and water.
   Data Entry: 3 Characters

3. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the network equipment.
   Data Entry: 30 Characters

As-Built requirements (Stations)

SN20: Pipework

Name **Pipework**

Equipment Type **SN20** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN20
B	Pipe Purpose	Select from pick list: domPipeworkPipePurpose
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Diameter in mm	data - Decimal Number (10 Chars, Decimals)
AB	Length in meters	data - Decimal Number (12 Chars, 2 Decimals)
AC	Construction Material	Select from pick list: domPipeworkConstruction
AD	Fluid Conveyed	Select from pick list: domPipeworkFluidConveyed
AE	Pressure Class	Select from pick list: domPipeworkPressureClass
AF	Joint Type	Select from pick list: domPipeworkJointType
AG	Pipe Installation Method	Select from pick list: domPipeworkInstallationsMethod

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Group of interconnecting pipes to transfer fluid. In pump stations, pipework is usually for water or sewage flow.

This pipework feature / asset is for the group of non-spatial pipes inside the Pump Station Building. We request you to group pipework based on similar Pipe material, Pipe Size and fluid transferred. We request this to be provided as individual pipework asset/s (group/s). This does not need to be captured in GIS.
As an example, a water supply station has pipework for water-supply but also includes stormwater and/or wastewater pipe-work inside the station building. This would require 3 different pipework groups to be captured.

E.g.

Pipework group 1 - size Ø500mm, material Steel, conveying sewage water, Total Length = 5.3meters

Pipework group 2 - size Ø250mm, material Plastic, conveying water supply, Total Length = 6.5meters

Note - we require as-built data for individual pipes coming into the Station Building and leaving the station back to the reticulation. These need to be populated in Reticulation CAT sheet, along with other connections/assets such as man-holes, to help us represent the pipes in GIS.

SAP Object Type: PIPEWORK
SAP Class Type: PIPEWORK (002)
Represented in GIS: No

Classification Information:

1. Pipe Purpose
   [SAP Characteristic Name = ZPM_PIPEPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the pipe installed.
   Data Entry: 30 Characters

   a) GRAVITY – The pipe is sloped downwards and uses gravity to transport the fluid.
   b) PRESSURE – The pipe is used to contain high pressure fluid.
   c) SYPHON – The pipe is an inverted U-shape which is used to transport fluid from a high level vessel/tank to a lower level.
   d) VACUUM – The pipe is used in a central vacuum system.

2. Diameter
   [SAP Characteristic Name = ZPM_DIAMETERMM, NUM]
   Description: The diameter of the pipe installed.
   Unit: mm (millimetres)
   Data Entry: 10 Characters

3. Length
   [SAP Characteristic Name = ZPM_LENGTH, NUM]
   Description: The length of the pipe installed.
   Unit: m
   Data Entry: 12 Characters, 2 Decimal place

4. Construction Material
   [SAP Characteristic Name = ZPM_CONSTRUCTIONMATERIAL, CHAR, SAP Picklist below]
   Description: The Construction material of the pipe.
   Data Entry: 30 Character

a) Aluminium
b) Asbestos Concrete
c) Cast Iron
d) Concrete
e) Ductile Iron
f) Fibreglass
g) Galvanised Steel
h) Mild Steel
i) Not In List
j) Polyethylene
k) PVC - Plastic

5. Fluid Conveyed
[SAP Characteristic Name = ZPM_FLUIDCONVEYED, CHAR, SAP Picklist below]
Description: The type of fluid transported via the pipe.
Data Entry: 30 Characters

a) AIR
b) WATER
c) WASTE WATER
d) STORM WATER
e) FUEL
f) STEAM
g) BIOGAS

6. Pressure Class
[SAP Characteristic Name = ZPM_PRESSURECLASS, CHAR, SAP Picklist below]
Description: The maximum pressure the pipe can withstand at a given temperature under normal conditions.
Data Entry: 30 Characters

a) PN4.5 (0.45 MPa)
b) PN6 (0.6 MPa)
c) PN8 (0.8 MPa)

d) PN9 (0.9 MPa)
e) PN10 (1 MPa)
f) PN12 (1.2 MPa)
g) PN12.5 (1.25 MPa)
h) PN15 (1.5 MPa)
i) PN16 (1.6 MPa)
j) PN18 -1.8 MPa)
k) PN20 (2.0 MPa)

7. Joint Type
[SAP Characteristic Name = ZPM_JOINTTYPE, CHAR, SAP Picklist below]
Description: The type of joint used to connect the pipe to other equipment or piping systems.
Data Entry: 30 Characters

	Pipe joint type	Description	Photo
a)	BAIO (BAIO Flangeless Coupling System)	Flangeless restraint used for valve to pipe connection.	
b)	BFJ (Butt Fusion Weld Joint (Steel))	Simultaneously heat the ends of the two pipe/fitting component until molten state is attained.	
c)	BSWJ (Ball and Socket Weld (Steel))	An external and internal fillet welded joint.	 Source
d)	BWJ (Butt Weld Joint (Steel))		
e)	CJ (Compression Joints)	A tightening threaded nut in a metal ring is used for the connection of pipe	 Source
f)	CWJ (Collar Weld Joint)		
g)	EFJ (Electro Fusion Coupling Weld)	A built in electric heating element used to weld the joint together.	 Source

h)	FJ (Flanged Joint (Iron, PE))	Involves joining/connecting the pipe via internal or external lip. A gasket gets fitted between the two connection to prevent any leakage and bolts are used to seal them tight.	 Source
i)	LJ (Lead Joint)	Molten lead is used to connect/join the pipe.	
j)	MCJ (Mechanical Coupling Joint)	A joint in which a gasket is compressed via a mechanical device.	 Source
k)	PF (Push Fit)	Consists of an O-ring seal and metal-toothed grab ring which is used to secure the pipe and form a tight seal.	 Source
l)	PFJ (Polyester Fairing Joint)	A polyester fairing compound is used to chemically adhere the pipe	
m)	PJ (Plumbite Joint)		
n)	PUJ (Polyurethan Joint)		
o)	RRJ (Rubber Ring Joint)	A rubber ring that is compressed in the socket of the pipe.	 Source
p)	RRJL (Rubber Ring with Metallic Lock)		
q)	SCJ (Solvent Cement Joint)	Cement solvent chemically fuses/joins the pipe at a molecular level.	 Source
r)	SPWJ (Spherical Slip-In Weld (Steel))	The straight end of one pipe is inserted into the bell end of another and joining the two sections with a circumferential fillet weld.	 Source

s)	TL (Tyton Lock)	A single rubber seal joint that employs a circular rubber gasket to join the pipe.	 Source

8. Pipe Installation Method
[SAP Characteristic Name = ZPM_PIPEINSTALLMETHOD, CHAR, SAP Picklist below]
Description: The method of pipe installation.
Data Entry: 30 Characters

a) ABG (Above Ground) – The pipe is installed above the ground.
b) BORED (Bored) – A horizontal directional drilling method is used to install underground pipe.
c) TR (Trench) – A narrow trench is dug in the ground to install pipe.
d) TU (Tunnel) – A tunnel is an underground passageway which is used to install underground pipe.

As-Built requirements (Stations)

SN21: Pump Unit

Name	**Pump Unit**
Equipment Type	**SN21** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN21
B	Pump Type	Select from pick list: domPumpType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Pump Purpose	Select from pick list: domPumpPurpose
AB	Pump Flow Rate in m3/h	data - Decimal Number (12 Chars, 2 Decimals)
AC	Design Lift (m) (Head)	data - Decimal Number (5 Chars, 1 Decimals)
AD	Impeller Model Number	data - Text (30 Characters)
AE	Driver Type	Select from pick list: domPumpDriverType
AF	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AG	RPM	data - Decimal Number (6 Chars, Decimals)
AH	Immersed Pump (Yes/No)	Select from pick list: domPumpImmersed

Pumps are mechanical devices that convert a rotational input into liquid flow. A pump typically requires an external engine or electrical motor to supply the rotational motion.

Centrifugal Pump

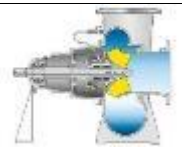
		AI	Best Efficiency Pressure	data - Decimal Number (6 Chars, Decimals)		
		AJ	Installation Company	data - Text (30 Characters)		
		AK	Design Flow Rate (m3/h)	data - Decimal Number (5 Chars, 1 Decimals)		
		AL	Best Efficiency Flow in %	data - Decimal Number (3 Chars, 2 Decimals)		
		Additional Information				
		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: PUMP
SAP Class Type: PUMP (002)
Represented in GIS: No

Classification Information:

1. Pump Type
   [SAP Characteristic Name = ZPM_PUMPTYPE, CHAR, SAP Picklist below]
   Description: The type of pump implemented in the system
   Data Entry: 30 Characters

##	Types	Description	Photos
a)	VERTICAL MULTISTAGE	A centrifugal pump containing two or more impellers. The impellers may be mounted on the same shaft or on different shafts. The shaft is oriented vertically and the design of the shaft is radial split and overhang. Vertical Multistage pumps are installed in applications where higher pressures are required.	 Source
b)	HORIZONTAL MULTISTAGE	A horizontal multistage pump is a centrifugal pump containing two or more impellers. The impellers may be mounted on the same shaft or on different shafts. The shaft is placed horizontally, typically between the bearings or overhung. Horizontal multistage centrifugal pumps are used for pressure boosting systems where there is a constant demand for pressure and flow.	 Source

c)	END SUCTION	A type of centrifugal pump where the suction is axial and the discharge is at 90 degrees to the suction. Has only one impeller.	 Source
d)	SUBMERSIBLE	An electric submersible pump that can be fully submerged in water. The motor is hermetically sealed and close-coupled to the body of the pump. Source	 Source
e)	AXIAL FLOW	A pump that consists of a propeller-type impeller running in the casing. The propeller is powered by a motor. When the fluid flows over the blades of the impeller, the pressure is developed. The fluid flows in the parallel direction to the shaft of the impeller. Source	 Source
f)	SCREW	They are positive-displacement pumps that use two screw shaped intermeshing rotors to move fluid along the screw's axis. They are frequently used in industrial vacuum applications, often in combination with roots blowers and as oil-free roughing pumps in high and ultrahigh vacuum systems. Source	 Source
g)	PROGRESSIVE CAVITY	A positive displacement pump employing a rotor and stator assembly to create temporary chambers to draw fluid into, which 'progress' through the pump resulting in the fluid being expelled through the discharge port. The rotor is a helical-shaped worm component which rotates within the stator. The stator is made from a flexible material and has one more 'worm thread' than the rotor. Source	 Source
h)	MIXED FLOW	A centrifugal pump with a mixed flow impeller. The impellers of mixed flow pumps with a low specific speed are combined with an annular or volute casing; those of mixed flow pumps with a higher specific speed are combined with a diffuser and a tubular casing.	 Source

i)	PISTON	A positive displacement pump has a piston, diaphragm, otherwise plunger for moving liquids. These pumps use check valves as the input and output valves. The general piston-pump is a rotary pump which uses a wheel or revolving shaft for operating the piston. Source	 Source
j)	DIAPHRAGM	A diaphragm pump is a hydraulically or mechanically actuated positive displacement pump that uses a combination of reciprocating action and either a flapper valve or a ball valve to transfer liquids.	 Source
k)	PERISTALTIC	A positive displacement pump which consists of a flexible hose or tube fitted inside the pump casing where the fluid flows. The pumping is an alternating compression and relaxation of the hose or tube, drawing content in and propelling product away from the pump. Source	 Source
l)	ROTARY VANE	A positive-displacement pump which enables the compression of air inside the pump chamber to create suction for the removal of air molecules from a vessel or area. It consists of a rotor, which is mounted eccentrically inside a cylindrical housing or stator. Blades, mounted inside the rotor, move in and out due to centrifugal force following the internal surface of the housing. Source	 Source
m)	HORIZONTAL SPLITCASE	A centrifugal pump whose casing is divided into two distinct chambers, which is different from inline or end suction pumps that are assembled with the suction nozzle, discharge nozzle, and casing in one chamber. The casing can be split vertically or horizontally, relative to the impeller. Source	 Source

n)	CENTRFUGAL MULTISTAGE	A Centrifugal pump which contains 2 or more impellers which may be of the same or different types. Fluid enters the pump and then passes through the various number of impellers in a sequence from the left to right. Source	 Source
o)	CENTRIFUGAL HORIZONTALSPLITCAS	Is this not the same as the HORIZONTAL SPLITCASE	
p)	CENTRIFUGAL ENDSUCTION	Is this not the same as the ENDSUCTION	
q)	SURFACE	Pump water from surface sources like springs, ponds, tanks, or shallow wells. Is not submersible.	
r)	POSITIVE DISPL	A positive displacement pump provides a constant flow at fixed speed, regardless of changes in pressure. **Source**	
s)	DRY MOUNT SUBMERSIBLE		
t)	SPLIT CASE	A type of centrifugal pump whose casing is divided into two distinct chambers, which is different from inline or end suction pumps that are assembled with the suction nozzle, discharge nozzle, and casing in one chamber. Source	
u)	DOUBLE SUCTION SPLIT CASE	A centrifugal pump which has impeller pair arranged back to back on the pump shaft. Source	 Source
v)	JET	A jet pump is a mechanical machine that flows fluids by a driving nozzle that transforms the pressure of the fluid into a high-speed jet. Source	 Source
w)	PRESSURE	A pressure pump is used to increase the pressure of a fluid. The blades of the fan/impeller spin around to increase water movement and are powered by an electric motor	 Source

x)	BORE	Bore pumps are powered by an electric motor that is designed to be submerged. The pump is connected to a riser pipe that delivers the water to the surface. Source	 Source
y)	CENTRIFUGAL SINGLESTAGE	A single-stage centrifugal pump consists of one impeller rotating on a shaft within a pump casing which is designed to produce fluid flow when driven by a motor. Source	 Source

2. Pump Purpose
[SAP Characteristic Name = ZPM_PUMPPURPOSE, CHAR, SAP Picklist below]
Description: The purpose of pump in the system.
Data Entry: 30 Characters

##	Purpose	Description
a)	BOOSTER	Is used to increase the pressure of the fluid.
b)	COOLING	A coolant substance (liquid or gas) is used to regulate the temperature of a system by transferring heat away from the heated device (e.g. Engine).
c)	FLUSHING	Pump is used for cleaning/flushing an area.
d)	FUEL	Pump is used for transferring fuel.
e)	MAIN	Pump acts as a “Main” on-duty?
f)	SECONDARY	Pump acts as a “back-up”?
g)	SUMP	Pumps water away from the house to prevent flooding.
h)	WELL	Pumps that are used for extracting water from a water well.
i)	LIFT	A pump that raises the level of a liquid up through a system
j)	DOSING	Are used to inject/pump chemicals or substances into a flow stream.
k)	IRRIGATION	Used for pumping water
l)	TRANSFER	Used for transferring fluid or gas from one place to another
m)	FLOOD CONTROL	Pumps that have a large volume for extra capacity for prevention of flood
n)	VACUUM	Removes air or gas molecules from a sealed volume to create a partial vacuum

3. Pump Flow rate

[SAP Characteristic Name = ZPM_PUMPFLOWRATE, NUM]
Description: The volume of fluid that travels through the pump in a given time.
Unit: m^3/h
Data entry: 12 Characters, 2 Decimal place

4. Design Lift (Head)
   [SAP Characteristic Name = ZPM_DESIGNPRESSURERATING, NUM]
   Description: The height at which the fluid is pumped.
   Unit: m
   Data Entry: 5 Characters, 1 Decimal place

5. Impeller Model number
   [SAP Characteristic Name = ZPM_IMPELLERMODELNUMBER, CHAR]
   Description: The impeller model number of the pump
   Data Entry: 30 Characters
   Note - This is likely to be printed on the pump manufacturer's specifications or pump plate

6. Driver type
   [SAP Characteristic Name = ZPM_DRIVERTYPE, CHAR, SAP Picklist below]
   Description: Energy medium of the pump.
   Data Entry: 30 Characters

   a) Electrical
   b) Mechanical

7. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: Power of the pump per hour.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

8. RPM
   [SAP Characteristic Name = ZPM_RPM, NUM]
   Description: Revolution per minute. Number of revolutions the rotating system (impeller) makes in a given amount of time

Unit: -
Data Entry: 6 Characters

9. Immersed Pump
   [SAP Characteristic Name = ZPM_IMMERSEDPUMP, CHAR, SAP Picklist below]
   Description: A pump that is submersed in a fluid.
   Data Entry: 7 Characters

   a) YES
   b) NO

10. Best Efficiency Pressure
    [SAP Characteristic Name = ZPM_BESTEFFICIENCYPRESSURE, NUM]
    Description: Ratio of water horsepower output from the pump to the shaft horsepower input for the pump.
    Unit: kPa
    Data Entry: 6 Characters

11. Installation Company
    [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
    Description: The company that has installed the pump.
    Data Entry: 30 Characters

12. Design Flow Rate
    [SAP Characteristic Name = ZPM_DESIGNFLOWRATE, NUM]
    Description: The flow rate that the pump is designed to operate in a normal condition.
    Unit: m^3/h
    Data Entry: 5 Characters, 1 Decimal place

As-Built requirements (Stations)

SN22: Pump/Motor Set

Name **Pump/Motor Set** (PUMP SET)

Equipment Type **SN22** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN22
B	Pump Type	Select from pick list: domPumpSetPumpType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domPumpsetManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Pump Purpose	Select from pick list: domPumpSetPumpPurpose
AB	Pump Flow Rate in m3/h	data - Decimal Number (12 Chars, 2 Decimals)
AC	~~Design Lift (m) (Head)~~	~~data - Decimal Number (5 Chars, 1 Decimals)~~
AD	~~Maximum Lift in meters~~	~~data - Decimal Number (5 Chars, 2 Decimals)~~
AE	~~Screw Diameter in mm~~	~~data - Decimal Number (4 Chars, Decimals)~~

Use PUMPSET asset type for smaller pump-motor sets such as sump-pump, dosing pumps that come up with motor and pump assembled all together.

For all other pumps, use pump (SN21) and motor (SN18) as separate asset types and enter information.

If in doubt, check with project manager or Asset management team.

AF	~~Screw Length in mm~~	~~data - Decimal Number (5 Chars, Decimals)~~		
AG	~~Full Load Current in Amperes~~	~~data - Decimal Number (8 Chars, 2 Decimals)~~		
AH	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)		
AI	~~kVA Rating~~	~~data - Decimal Number (6 Chars, 2 Decimals)~~		
AJ	Voltage	data - Decimal Number (15 Chars, 4 Decimals)		
AK	Current Type	Select from pick list: domPumpSetCurrentType		
AL	RPM	data - Decimal Number (6 Chars, Decimals)		
AM	Immersed Pump	Select from pick list: domPumpSetImmersedPump		
AN	~~Design Flow Rate (m3/h)~~	~~data - Decimal Number (5 Chars, 1 Decimals)~~		
AO	Installation Company	data - Text (30 Characters)		
AP	~~Phase~~	~~Select from pick list: domPumpSetPhase~~		
Additional Information				
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: PUMPSET
SAP Class Type: PUMPSET (002)
Represented in GIS: No

Classification Information:

2. Pump Type
   [SAP Characteristic Name = ZPM_PUMPTYPE, CHAR, SAP Picklist below]
   Description: The type of pump implemented in the system
   Data Entry: 30 Characters

   Note: Please refer to SN21

3. Pump Purpose
   [SAP Characteristic Name = ZPM_PUMPPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of pump in the system.
   Data Entry: 30 Characters

4. Pump Flow rate
   [SAP Characteristic Name = ZPM_PUMPFLOWRATE, NUM]

Description: The volume of fluid that travels through the pump in a given time.
Unit: m^3/h
Data entry: 12 Characters, 2 Decimal place

~~5. Design Lift (Head)~~
~~[SAP Characteristic Name = ZPM_DESIGNPRESSURERATING, NUM]~~
~~Description: The height at which the fluid is pumped.~~
~~Unit: m~~
~~Data Entry: 5 Characters, 1 Decimal place~~

~~6. Maximum lift~~
~~[SAP Characteristic Name = ZPM_MAXIMUMLIFT, NUM]~~
~~Description: The maximum height at which the fluid can be pumped.~~
~~Unit: m~~
~~Data Entry: 5 Characters, 2 Decimal place~~

~~7. Screw diameter~~
~~[SAP Characteristic Name = ZPM_SCREWDIAMETER, NUM]~~
~~Description: The distance from the outer thread on one side to the outer thread on the other side. This only applies to screw pump otherwise leave blank~~
~~Unit: mm~~
~~Data Entry: 4 Characters~~

~~8. Screw length~~
~~SAP Characteristic Name = ZPM_SCREWLENGTH, NUM]~~
~~Description: The distance from the flat head to the tip or blunt end of the screw. This only applies to screw pump otherwise leave blank.~~
~~Unit: mm~~
~~Data Entry: 5 Characters~~

~~9. Full load current~~
~~SAP Characteristic Name = ZPM_FULLLOADCURRENT, NUM]~~
~~Description: The largest current that the pump motor is designed to carry under particular conditions.~~
~~Unit: A~~
~~Data Entry: 8 Characters, 2 Decimal place~~

10. KW Rating
    [SAP Characteristic Name = ZPM_KWRATING, NUM]
    Description: The power supply required to operate the pump motor.
    Unit: kW
    Data Entry: 7 Characters, 2 Decimal place

~~11. kVA Rating~~
    ~~SAP Characteristic Name = ZPM_KVARATING, NUM]~~
    ~~Description: The apparent power of the pump motor~~
    ~~Unit: kVA~~
    ~~Data Entry: 6 Characters, 2 Decimal place~~

12. Voltage
    SAP Characteristic Name = ZPM_VOLTAGE, NUM]
    Description: The Voltage of the pump motor.
    Unit: V
    Data Entry: 15 Characters, 4 Decimal place

13. Current Type
    SAP Characteristic Name = ZPM_VOLTAGE, CHAR, SAP Picklist below]
    Description: Type of current used in the pump motor.
    Data Entry: 15 Characters, 4 Decimal place

    a) AC – Alternating current reverses the direction of the current periodically
    b) DC – Direct current is an electrical current which flows consistently in one direction.

14. RPM
    [SAP Characteristic Name = ZPM_RPM, NUM]
    Description: Revolution per minute. Number of revolutions the rotating system (impeller) makes in a given amount of time
    Unit: -
    Data Entry: 6 Characters

15. Immersed Pump

[SAP Characteristic Name = ZPM_IMMERSEDPUMP, CHAR, SAP Picklist below]
Description: A pump that is submersed in a fluid.
Data Entry: 7 Characters

c) YES
d) NO

~~16. Design Flow Rate~~
~~[SAP Characteristic Name = ZPM_DESIGNFLOWRATE, NUM]~~
~~Description: The flow rate that the pump is designed to operate in a normal condition.~~
~~Unit: m^3/h~~
~~Data Entry: 5 Characters, 1 Decimal place~~

17. Installation Company
[SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
Description: The company that has installed the pump.
Data Entry: 30 Characters

~~18. Phase~~
~~[SAP Characteristic Name = ZPM_PHASE, CHAR]~~
~~Description: The type of distribution load in the pump motor.~~
~~Data Entry: 30 Characters~~

~~a) 1PHASE – Single phase starter uses a single-phase power supply.~~
b) ~~3PHASE – Three phase starter uses three phase power supply.~~

As-Built requirements (Stations)

SN23: RTU and/or PLC

Name **RTU PLC**

Equipment Type **SN23** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN23
B	RTU and/or PLC Type	Select from pick list: domRtuPlcType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Voltage	data - Decimal Number (15 Chars, 4 Decimals)
AB	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

A PLC, or programmable logic controller, is an electronic device for system monitoring and control. PLCs are capable of controlling process units to meet or maintain the conditions set through the HMI or SCADA systems. A RTU, or remote terminal unit, is the slave or controlled component of the SCADA system. A RTU combines a PLC with the SCADA system interface.

SAP Object Type: RTU_PLC
SAP Class Type: RTU_PLC (002)
Represented in GIS: NO

Classification Information:

1. RTU and/or PLC Type
   [SAP Characteristic Name = ZPM_RTU_PLC_TYPE, CHAR, SAP Picklist below]
   Description: Is RTU and/or PLC being installed?
   Data entry: 30 Characters

   a) PLC (Programmable Logic Controller) – Industrial computer that is used for the control of manufacturing processes.
   b) RTU (Remote Terminal Units) – electronic device that is controlled by a microprocessor.

2. Voltage
   [SAP Characteristic Name = ZPM_VOLTAGE, CHAR]
   Description: Voltage of the remote terminal units (RTU) and/or programmable logic controller (PLC).
   Unit: V
   Data entry: 15 Characters, 4 Decimal places

3. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the RTU and/or PLC.
   Data entry: 30 Characters

As-Built requirements (Stations)

SN24: Radio

Name	**Radio**
Equipment Type	**SN24** "Non-Spatial Asset Inputs"

A device for the transmission and reception of data in the form of electromagnetic radiation.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN24
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRadioManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Antenna Type	Select from pick list: domRadioAntenna
AB	Installation Company	data - Text (30 Characters)

Additional Information

Yagi

Whip

Dipole

Dish

		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.		

SAP Object Type: RADIO
SAP Class Type: RADIO (002)
Represented in GIS: No

Classification Information:

1. Antenna Type
   [SAP Characteristic Name = ZPM_ANTENATYPE, CHAR, SAP Picklist below]
   Description: The type of Antenna installed
   Data Entry: 30 Characters

	Network type	Description	Photo
a)	COLINEAR	The antennas are an array of dipole that is mounted in parallel and collinear.	
b)	CORNER REFLECTOR	The antenna consists of two or three flat screens which intersect at 90°	
c)	DIPOLE	An antenna with centre – fed driven element that uses synthetic ground plane for transmitting or receiving radio frequency energy.	

d)	DISH	An antenna that is a dish-shaped type of parabolic antenna	 Source
e)	LOW PROFILE	Antenna that is small in height and width	 Source
f)	OTHER	Other types of antenna	
g)	WHIP	A wire or rod antenna that is straight and flexible.	Source
h)	YAGI	Antenna that consists of an array of dipole and additional closely coupled parasitic elements that are often metal rods.	 Source

2. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the radio.
   Data Entry: 30 Characters

As-Built requirements (Stations)

SN25: Software

Name **Software**

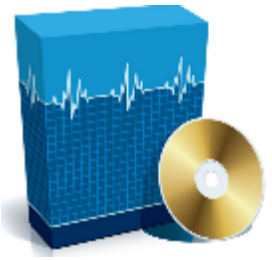
Equipment Type **SN25** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN25
B	Software Type	Select from pick list: domSoftwareType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domSoftwareManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Version	data - Text (30 Characters)
AB	Software Primary Purpose	Select from pick list: domSoftwarePurpose
AC	Installation Company	data - Text (30 Characters)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

A software is a series of instructions that directs a computer to perform specific tasks or operations. In the computing industry, Software is the programme developed for a specific purpose.



SAP Object Type: SOFTWARE
SAP Class Type: SOFTWARE (002)
Represented in GIS: No

Classification Information:

1. Version
   [SAP Characteristic Name = ZPM_VERSION, CHAR]
   Description: Version number of the software.
   Data entry: 30 Characters

2. Software Primary Purpose
   [SAP Characteristic Name = ZPM_SOFTWAREPURPOSE, SAP Picklist below]
   Description: The purpose of the software installed.
   Data entry: 30 Characters

   a) APPLICATION SOFTWARE – Software created for a specific purpose, generally a program or collection of programs.
   b) SYSTEM AND APPLICATION – Software uses both system and application software.
   c) SYSTEM SOFTWARE – Software used as a platform for other software.

3. Software Type
   [SAP Characteristic Name = ZPM_SOFTWARETYPE, CHAR, SAP Picklist below]
   Description: The type of software installed.
   Data entry: 30 Characters

   a) CUSTOM MADE – Software is specifically developed for an organisation or other users.
   b) OFF THE SHELF – Software is designed and developed for a broad range of customers.

4. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the software.
   Data entry: 30 Characters

As-Built requirements (Stations)

SN26: Structure

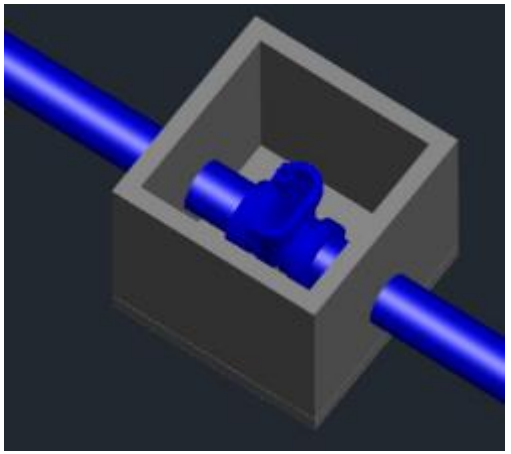
Name **Structure**

Equipment Type **SN26** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN26
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Construction Material	Select from pick list: domStructureConstruction
AB	Structure Capacity in m3	data - Decimal Number (6 Chars, 1 Decimals)
AC	Benchmark (CCC Datum) in meters	data - Decimal Number (6 Chars, 3 Decimals)
AD	Floor RL (CCC Datum) in meters	data - Decimal Number (6 Chars, 3 Decimals)

Additional Information

This Feature is to be used for any other structural assets in the pump station that are not listed in Station's CAT/SAG as a feature. These may include structures such as bridges, dams, bunds, walls (not-retaining), storage units for chemical/ gas bottles, concrete bins/ bays etc.



		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.	 Note: Please enter purpose within the CAT's free-text field "Descriptive Comment (Serving For, Situated at, Purpose of the asset)" and supply photographs. Please get in touch with your project manager / asset engineer if in doubt.	

SAP Object Type: STRUCTURE
SAP Class Type: STRUCTURE (003)
Represented in GIS: No

Classification Information:

1. Construction material
   [SAP Characteristic Name = CONSTRUCTION, CHAR, SAP Picklist below]

Description: The construction material of the structure.
Data Entry: 30 Characters

a) BLOCK
b) BRICK
c) CONCRETE
d) CONCRETE BLOCK
e) CONCRETE TILT SLAP
f) FIBREGLASS
g) PVC
h) SHEET METAL
i) STEEL
j) STEEL-SHEET
k) WOOD
l) WOOD FIBREGLASS
m) STONE
n) STONE / WOOD

2. Structure Capacity
[SAP Characteristic Name = STRUCTURECAPACITY, NUM]
Description: Volume of structure. This gives us a reference of how big or small the structure is. If the structure is used for storage purposes, please specify the maximum volume the structure can hold while still maintaining the functional requirements and without exceeding the normal conditions.
Unit: m^3
Data Entry: 6 Characters, 1 Decimal place

3. Benchmark (CCC Datum)
[SAP Characteristic Name = BENCHMARK, CHAR, SAP Picklist below]
Description: The Structure's surveying point at which a vertical distance is adopted to a datum plane.
Unit: m
Data Entry: 6 Characters, 3 Decimal place

4. Floor RL (CCC Datum)

[SAP Characteristic Name = FLOORRL, CHAR, SAP Picklist below]
Description: The structure floor is the surveying point at which a vertical distance is adopted to a datum plane.
Unit: m
Data Entry: 6 Characters, 3 Decimal place

As-Built requirements (Stations)

SN27: Transformer

Name	**Transformer**
Equipment Type	**SN27** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN27
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Impedance (ohm)	data - Decimal Number (8 Chars, 2 Decimals)
AB	Primary Voltage	data - Decimal Number (15 Chars, 4 Decimals)
AC	Secondary Voltage	data - Decimal Number (15 Chars, 4 Decimals)
AE	Voltage	data - Decimal Number (15 Chars, 4 Decimals)

Additional Information

A transformer is an electrical device for conversion of AC electrical power to different voltages and currents. Small transformers are air-cooled and fitted with solid insulation however larger units used specialised, highly toxic, oils for both cooling and insulation and therefore require additional components for oil drying, circulation and containment.

		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.		

SAP Object Type: TRNSFORMER
SAP Class Type: TRNSFORMER (002)
Represented in GIS: No

Classification Information:

1. Impedance (ohm)
   [SAP Characteristic Name = ZPM_IMPEDANCE, NUM]
   Description: The Current limiting characteristic of the transformer.
   Data Entry: 8 Characters, 2 Decimal places

2. Primary Voltage
   [SAP Characteristic Name = ZPM_PRIMARYVOLTS, NUM]
   Description: The voltage applied to the terminals of the primary winding of the transformer.
   Unit: V
   Data Entry: 15 Characters, 4 Decimal places

3. Secondary Voltage
   [SAP Characteristic Name = ZPM_SECONDARYVOLTS, NUM]
   Description: The voltage delivered by the secondary winding of a transformer.
   Unit: V
   Data Entry: 15 Characters, 4 Decimal places

4. Voltage
   [SAP Characteristic Name = ZPM_VOLTAGE, NUM]
   Description: The voltage of the transformer.
   Unit: V
   Data Entry: 15 Characters, 4 Decimal places

5. kVA Rating
   [SAP Characteristic Name = ZPM_KVARATING, NUM]
   Description: The Transformer's kVA rating.
   Unit: kVA
   Data Entry: 6 Characters, 2 Decimal places

As-Built requirements (Stations)

SN28: Transmission

Name	**Transmission**
Equipment Type	**SN28** "Non-Spatial Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN28
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domTrnsmissnManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Gear Ratio	data - Text (7 Characters)
AB	Input Drive	Select from pick list: domTransmissionInputDrive
AC	Pulley Diameter in mm. (Output/Driven)	data - Decimal Number (7 Chars, 2 Decimals)
AD	Torque Rating	data - Decimal Number (7 Chars, 2 Decimals)
AE	Output Drive	Select from pick list: domTransmissionOutputDrive
AF	Pulley Diameter in mm. (Input/Driver)	data - Decimal Number (6 Chars, Decimals)

Additional Information

		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.		

SAP Object Type: TRNSMISSN
SAP Class Type: TRNSMISSN (002)
Represented in GIS: No

Classification Information:

1. Gear Ratio (for gear-box transmission)
   [SAP Characteristic Name = ZPM_GEARRATIO, CHAR]
   Description: The ratio is the number of teeth on the driven gear (ring) divided by the number of teeth on the drive gear (pinion)
   Data Entry: 7 Characters

2. Input Drive
   [SAP Characteristic Name = ZPM_INPUTDRIVE, CHAR, SAP Picklist below]
   Description: The type of Input Drive
   Data Entry: 30 Characters

   a) DIRECT – The transmitting of torque from electric motor to the output drive occurs without gearing reductions or belts.
   b) BELT DRIVEN – The transmitting of torque from electric motor to the output drive occurs with belts.

3. Pulley Diameter (Output)- Only if belt pulley transmission.
   [SAP Characteristic Name = ZPM_PULLEYDIAMETEROUT, NUM]
   Description: The diameter of the driven pulley.
   Unit: mm
   Data Entry: 7 Characters, 2 Decimal place

4. Torque Rating
   [SAP Characteristic Name = ZPM_TORQUERATING, CHAR, NUM]
   Description: The transmission's continuous torque produced at rated speed under normal conditions.
   Unit: Nm
   Data Entry: 7 Characters, 2 Decimal place

5. Output Drive
   [SAP Characteristic Name = ZPM_OUTPUTDRIVE, CHAR, SAP Picklist below]
   Description: The type of output drive
   Data Entry: 30 Characters

   a) DIRECT
   b) BELT DRIVEN
   c) HYDRAULIC

6. Pulley Diameter (only enter for belt pulley transmission)
   [SAP Characteristic Name = ZPM_PULLEYDIAMETER, CHAR, NUM]
   Description: The diameter of the driver pulley connected to the source (e.g. electrical motor).
   Unit: mm
   Data Entry: 6 Characters

7. Number of Belts (only enter for belt pulley transmission)
   [SAP Characteristic Name = ZPM_NUMBEROFBELTS, CHAR, NUM]
   Description: The number of belts in the transmission.
   Data Entry: 3 Characters

As-Built requirements (Stations)

SN29: Valve

Name	**Valve**
Equipment Type	**SN29** "Non-Spatial Asset Inputs"

A device for controlling the passage of fluid through a pipe or duct.

Ball Valve

Rubber Duck Bill

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN29
B	Valve Type	Select from pick list: domValveType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domValveManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Nominal Size in mm	data - Text (30 Characters)
AB	Installation Company	data - Text (30 Characters)
AC	Valve Purpose	Select from pick list: domValvePurpose
AD	Internal Diameter in mm	data - Decimal Number (6 Chars, Decimals)
AE	Ground Feature Type	Select from pick list: domValveGroundFeatureType
AF	Close Direction	Select from pick list: domValveCloseDirection

Additional Information

		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.		

SAP Object Type: VALVE
SAP Class Type: VALVE (002)
Represented in GIS: No

Classification Information:

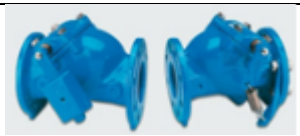
1. Valve Type
   [SAP Characteristic Name = ZPM_VALVETYPE, CHAR, SAP Picklist below]
   Description: The valve type implemented in the system.
   Data Entry: 30 Characters

##	Types	Description	Photos
a)	REFLUX	A reflux valve is designed to prevent the water and sewerage from flowing back into the private property drain when the sewer main or on-site treatment plant becomes inundated during a flood event.	
b)	BUTTERFLY	A Butterfly valve is a quarter-turn rotational motion valve that is used to stop, regulate, and start flow. A butterfly valve has a disc which is mounted on a rotating shaft. When the butterfly valve is fully closed, the disk completely blocks the line. Source	 Source
c)	CONTROL	A control valve regulates the rate of fluid flow as the position of the valve plug or disk is changed by an actuator. Source	 Source

d)	AIR	Air valves allow for the release of air when the pipe is being filled and the release of air accumulating under pressure during normal working conditions without loss of water. Source	 Source
e)	PENSTOCK	A penstock is a water control gate or structure that controls flow. Penstocks is also known as Sluice gates, Slide gates or Stop gates. Penstocks are designed for flow regulation, diversion, level control or isolation. Source	 Source
f)	CHECK-FLOATING BALL	The ball is suspended in the flowing fluid and is kept in position by the compression of two elastomeric seats against it. The shaft is connected at the top of the ball and allows the switch from an open to a closed position When the shaft is moved, a load is applied to the ball which gets pressed against its seats. Source	 Source
g)	BALL	A ball valve is a shut off valve that controls the flow of a liquid or gas by means of a rotary ball having a bore. Source	 Source
h)	DIAPHRAGM	Diaphragm valves have flexible disc which comes into contact with a seat at the top of the valve body to form a seal. A diaphragm is a flexible, pressure responsive element that transmits force to open, close or control a valve. Diaphragm valves use an elastomeric diaphragm to separate the flow stream from the closure element. Source	 Source

i)	DAMPER	A damper is type of valve which stop or regulates the flow of gases, air inside the duct, chimney or air handler equipment. Source	 Source
j)	GATE	Gate valves are designed for fully open or fully closed service. They are installed in pipelines as isolating valves. When operating the valve stem, the gate moves up- or downwards on the threaded part of the stem. Source	 Source
k)	GATE-KNIFE	A knife gate valve works by allowing thick media to easily flow over soft seals with no interference. They work by chopping up the media as it passes through the valve. Source	
l)	GATE-RESILIENT SEATED	A resilient seated gate valve has a plain valve bottom allowing free passage for sand and pebbles in the valve. The rubber surface will close around the impurities while the valve is closed. The impurities will be flushed away when the valve is opened again. The rubber surface will regain its original shape securing a drop-tight sealing. Source	 Source
m)	GLOBE	Globe valves can be used to start, stop, and regulate flow. In operation, a cone-shaped plug moves in and out of the flow of fluid. The flow is controlled by how far away the plug is from its seat. Source	 Source
n)	NEEDLE	Needle valves open and close an orifice with a tapered end that raises and lowers with the spin of a handle. Source	

o)	PINCH	A pinch valve utilizes pressurized air to open or close the valve. A pinch valve consists of three major components: a housing, an internal rubber sleeve and end connections. The rubber sleeve is fitted into the housing from inlet to outlet. The end connections are bolted, screwed or threaded at each end to provide support and connection to the valve. Source	
p)	PISTON	Piston valves incorporate upper and lower sealing rings that are held in place by lantern bushings. Pistons are arranged so that they move only linearly and do not rotate with rotation of the stem. Source	 Source
q)	PLUG	A plug valve is shaped like a cylinder or cone and can be rotated inside the valve body to control flow of fluids. Plug valves have one or more hollow passageways often placed horizontally to allow ease of flow through the valve when open. Source	 Source
r)	SPOOL	A spool is a cylindrical valve element that opens and closes ports when moved axially within the valve bore. Most spool valves use elastomers to seal between flow paths. Source	 Source
s)	THERMAL EXPANSION	Thermal expansion valves are the refrigeration and air conditioning throttling device that controls the amount of refrigerant liquid injected into a system's evaporator called the superheat. It consists of diaphragm (thin flexible material, typically metal), pin/needle, spring, sensing bulb and capillary line. Source	
t)	PRESSURE REDUCING	Pressure reducing valves lower the downstream pressure to match the set point, opening as the pressure falls and closing as it rises. These mechanical valves employ a spring against a diaphragm or piston as the control element. Source	 Source

u)	PRESSURE RELIEF	A pressure relief valve is comprised of three functional elements: Valve element, typically a spring loaded poppet valve, Sensing element, typically a diaphragm or piston and a Reference force element, most commonly a spring. Source	 Source
v)	PRESSURE SUSTAINING		 Source
w)	CHECK-SWING CHECK	A swing check valve is mounted with a disc that swings on a hinge or shaft. The disc swings off the seat to allow forward flow and when the flow is stopped, the disc swings back onto the seat to block reverse flow. The weight of the disc and the return flow has an impact on the shut-off characteristics of the valve. Source	
x)	CHECK-RUBBER DUCK BILL	Duckbill Valve have elastomeric lips in the shape of a duckbill which prevent backflow and allow forward flow. Source	 Source
y)	FLOAT	Float valves are actuated lever valves that are designed to control the level of the liquids. The float could be hollow metal or plastic ball. The float rods in the float valves are made up of brass, stainless steel, or galvanized pipe. Source	 Source
z)	BACKFLOW PREVENTION RPZ	Pressure reducing backflow preventers consist of two independent check valves. They work like a double-check backflow preventer, but they also have an intermediate relief valve that opens to atmosphere if both check valves should fail.	 Source

aa)	BURST CONTROL	Burst Control Valve is a hydraulically operated, diaphragm actuated control valve that—upon sensing flow in excess of setting—shuts off and locks drip tight until it is manually reset. Source	
bb)	FLOW CONTROL	Flow control valve regulates the flow rate in a specific portion of a hydraulic circuit and also controls the rate of energy transfer at a given pressure. Source	 Source
cc)	FOOT	The foot valve is a lift check valve which is usually installed together with suction strainers in the suction line. It prevents the suction line from running empty after the pump is stopped. Source	 Source
dd)	AUTO FLUSH	An automatic flushing valve which regularly flushes the content from the pipe to prevent clogging and debris accumulation. Source	 Source
ee)	ALTITUDE	An altitude valve is a pilot-operated valve that opens and closes to fill a high-level tower or tank hydraulically. The valve performs this function by sensing the static level of water in the tower. has a high-sensitivity three-way positioning pilot that diverts water to the control chamber once the top level is reached, thereby making the valve close. Source	 Source
ff)	NON RETURN	Non-return valves work by allowing media to flow through them in one direction. Non-return valves have two ports with two openings in the body. Source	 Source
gg)	SOLENOID	A solenoid valve is an electrically controlled valve. The valve features a solenoid, which is an electric coil with a movable ferromagnetic core (plunger) in its centre. An electric current through the coil creates a magnetic field, which exerts an upwards force on the plunger opening the orifice. This is the basic principle that is used to open and close solenoid valves. Source	

hh)	TEST COCK		 Source

2. Nominal Size
   [SAP Characteristic Name = ZPM_NOMINALSIZE, CHAR]
   Description: Nominal size (trade size in manufacturing) of the pipework system that the valve supports.
   Unit: - *Enter value in mm*
   Data entry: 30 character (CCC needs to make this Numeric)

3. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the valve.
   Data Entry: 30 Characters

4. Valve Purpose
   [SAP Characteristic Name = ZPM_VALVEPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the valve in the system.
   Data Entry: 30 Characters

##	Purpose	Description
a)	HVAC	Heating, Ventilation, and Air Conditioning System used to control flow in pipes.
b)	AIRIN (Air in)	Air is admitted to increase internal pressure and prevent vacuum
c)	AIROUT (Air out)	Ejecting trapped air for a smooth flow and to decrease internal pressure
d)	AIRINOUT (Air in & out)	Combines the function of AIRIN and AIROUT.
e)	BURSTC (Burst control)	Burst control valves are used to eliminate content loss and damage in case of pipe burst
f)	BYPASS (Bypass)	At high pressure bypass valves vent pressure.
g)	CTRLFLOW (Control-flow)	Used to control the fluid flow by altering the size of the flow passage, which is directed by a controller signal.
h)	CTRLPRESS (Control-pressure)	Used to control the pressure of the fluid by keeping the system pressure below a desired limit to maintain a set pressure level.

i)	CTRLFLPR (Control flow & pressure)	A valve which is used to both control the flow and pressure of fluid flow.
j)	FIREFIGHT (Fire fighting)	Valve is a hydrant used for Fire fighting
k)	FLTP (Flushing point)	Valves that are used for flushing. A flushing point is a capped pipe which is accessible on the surface for maintenance.
l)	IRRIG (Irrigation)	Valves used for irrigation.
m)	ISO (Isolation)	Used to stop the flow for either maintenance or safety purposes. Also, used to provide flow logic and to connect external equipment to a system.
n)	NRV (Non-return/backflow)	Used to allow flow in one direction only.
o)	PRESRG (Pressure regulation)	Used to sustain, reduce and relief pressure in valves to provide safe and efficient operating conditions.
p)	PRESRELF (Pressure relief)	Used to control and limit surges of pressure in fluid flow.
q)	PRM (Pressure maintaining)	Pressure maintaining valves sense the upstream pressure and compare it to the setpoint to determine the valve position.
r)	PRV (Pressure Reducing)	Used to reduce high upstream pressure to lower constant downstream pressure.
s)	SAMPLE (sampling point)	Valves that are used to draw a live sample from the pipe.
t)	SCOUR (Scour)	Used to flush pipeline to remove sediment and allows pipeline to be drained for maintenance and repair.
u)	VACSO (Vacuum Shut off)	Used to shut off, distribute and change the fluid flow direction in pipelines.

5. Internal Diameter
   [SAP Characteristic Name = ZPM_INTDIAMETER, NUM]
   Description: Internal diameter of the valve.
   Unit: mm
   Data entry: 6 Characters

6. Ground Feature Type
   [SAP Characteristic Name = ZPM_GROUNDFEATURETYPE, CHAR, SAP Picklist below]
   Description: The location of the valve relative to ground level.
   Data Entry: 30 Characters

   a) ABOVE
   b) BELOW
   c) COMBINATION

7. Close Direction
   [SAP Characteristic Name = ZPM_CLOSEDIRECTION, CHAR, SAP Picklist below]

Description: The direction in which the valve is closed.
Data Entry: 30 Characters

a) CLOCKWISE
b) ANTI-CLOCKWISE

Section 3: Pump station spatial asset specific as-built data requirements

Station Spatial (SS) asset that are external to the pump station building. These asset are represented in GIS. They require surveyed information to plot on GIS. These are codes with prefix SSxx (Stations Spatial Assets)

As-Built requirements (Stations)

SS01: Backflow Preventer

Name **Backflow Preventer (Equipment)**

Equipment Type **SS01** "Equipment - Point Input"

Backflow preventers are devices that reduce the risk of back-pressure or back-siphonage in a pressure pipe.

CAT Column	SAG Description	Valid Values
A	Equipment type	I03
B	Backflow type	Select from pick list: domBackflowType
C	Existing or New Asset	Select from pick list: domExistingOrNew
D	Differs from design (Yes/No)	Select from pick list: domDiffersFromDesign
E	Unique identifier from drawing	data - text (30 chars)
F	Centre of Asset in Easting coordinate	data - decimal number
G	Centre of Asset in Northing coordinate	data - decimal number
H	Leave Blank	Leave Blank
I	Equipment Sequence Number	data - number
J	Site Name	data - text (30 chars)
K	Short Description	data - text (30 chars)
L	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - text (200 chars)
M	Name of contractor whom installed asset	data - text (30 chars)
N	Manufacturer of the asset	data - text (30 chars)
O	Model of the asset	data - text (20 chars)
P	Model Number of the asset	data - text (24 chars)
Q	Manufacturing Serial Number for the asset	data - text (24 chars)
R	Installation date of the asset	date - dd/mm/yyyy
S	Date of Commission of the asset	date - dd/mm/yyyy
T	Warranty Start Date of the asset	date - dd/mm/yyyy
U	Warranty End Date of the asset	date - dd/mm/yyyy
V	Location certainty - accuracy of data	Select from pick list : domLocationCertainty
W	Date of 'survey-start'	date - dd/mm/yyyy
X	Guideline revision used for survey	data - decimal number
Y	File name of photo, if supplied	data - text (30 chars)

Z	Backflow Internal Diameter in millimetres (mm).	data - number (6 chars)
AA	Backflow Internal Diameter in mm	data - Decimal Number (6 Chars, Decimals)
AB	IQP Number	data - Text (30 Characters)
AC	Tester	data - Text (30 Characters)
AD	Installation Company	data - Text (30 Characters)

RPZ - Reduced Pressure Zone Backflow Preventer

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

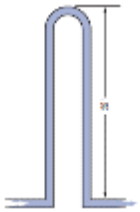
SAP Object Type: BACKFLOW
SAP Class Type: BACKFLOW (002)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Backflow Internal Diameter
   [SAP Characteristic Name = ZPM_BACKFLOWINTDIAMETER, NUM]

Description: Internal diameter of the attachment in the backflow preventer.
Unit: mm
Data Entry: 6 Character

2. Backflow Type
[SAP Characteristic Name = ZPM_BACKFLOWTYPE, CHAR, SAP Picklist below]
Description: The type of backflow preventer.
Data Entry: 30 Character

	Types	Description	Photos
a)	Air Gap Separator (Registered)	A physical air break to prevent backflow	 Source
b)	Atmospheric Vacuum Breaker	It consists of a gravity plunger or float disc that is forced upwards when the supply pressure is turned on, thus sealing off the atmospheric vent overhead. The atmospheric vent with a check valve prevents back siphonage. Source	 Source
c)	Anti-Siphon Valve	A one-way valve that allows water flow in just one direction.	 Source
d)	Barometric Loop	The barometric loop consists of a continuous section of supply piping that abruptly rises and then returns back down to the originating level. It is a loop in the piping system that effectively protects against backsiphonage. Source	
e)	Break Tank	A Break Tank is a non-pressurized, closed water tank, with an air gap to ensure zero backflow. It interrupts or 'breaks' the connection to the water source. Source	

f)	Dual Check Device	A mechanical device designed to prevent backflow into the residential water system, it consists of two independently acting, spring-loaded check valves. Source	 Source
g)	Double Check Backflow Preventer	A double check valve typically contains an inlet shutoff valve and a valve body with two spring-loaded, independently operating check valves, four test valves and an outlet shutoff valve. Source	 Source
h)	Hose Bibb		 Source
i)	Pressure Vacuum Breaker	A pressure vacuum breaker consists of a check device, or check valve, and an air inlet that is vented to the atmosphere (open-air). Source	
j)	Reduced Pressure Backflow Preventer	Pressure reducing backflow preventers consist of two independent check valves. They work like a double-check backflow preventer, but they also have an intermediate relief valve that opens to atmosphere if both check valves should fail.	 Source
k)	Swing Check Valve	A globe style valve body with a hinged valve disc, to block reverse flow. Source	 Source
n)	Single Check		 Source
o)	Testable Double Check		
p)	Testable Reduced Pressure Zone		

3. IQP Number
[SAP Characteristic Name = ZPM_IQPNUMBER, CHAR]

Description: Independent qualified person (IQP) number.
Data Entry: 30 Character

4. Tester
   [SAP Characteristic Name = ZPM_TESTER, CHAR]
   Description:
   Data Entry: 30 Character

5. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the backflow preventer
   Data Entry: 30 Character

As-Built requirements (Stations)

SS02: Cable

Name **Cable**

Equipment Type **SS02** "Line Asset Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN04
B	Cable Type	Select from pick list: domCableType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Cable Purpose	Select from pick list: domCablePurpose
AB	Cable Length in meters	data - Decimal Number (15 Chars, 4 Decimals)
AC	Installation Company	data - Text (30 Characters)
AD	Rating in Amp (for Power Cable)	data - Decimal Number (4 Chars, Decimals)
AE	No. of Cores (for Comms, Control)	data - Decimal Number (2 Chars, Decimals)
AF	Phase	Select from pick list: domCablePhase

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Cables are formed by a conductor surrounded by a shield. Conductors can be an optical fibre, a single solid metallic core or core consisting of a number of smaller diameter metallic strands. Single and multiple core cables are in-use.

Power Cables

Signal Cable

CCC requires the following information about Cables in pump stations.

• All Data Communication Cables to be grouped as "Communication Cables Group" created as an individual row equipment item for the pump station. e.g. "Addington Pump Station - Communications Cables Group"

• All Signal Control Cables to be grouped as "Signal and Control Cables Group" created as an individual row equipment item for the pump station.e.g. "Addington Pump Station - Signal and Control Cables Group"

• Main incoming power cables and Individual Drive power cables (High voltage and low voltage cables) to be created as individual row equipment items (similar to cable schedule) with cable length information provided for each cable.
E.g.
1. "Addington Pump Station - Incoming Power Cabling" (from power source to station switchboard)
2. "Addington Pump Station - Pump 1 Drive Cabling" (from Pump 1 VSD to Pump1)
3. "Addington Pump Station - Pump 2 Drive Cabling" (from Pump 2 VSD to Pump2)

• All other power cables can be grouped as "Other Power Cables Group" created as an individual row equipment item for the pump station.

• Enter "NOT-APP" for Manufacturer, Model, Model #. However Cabling documents such as cables schedules and data sheet, drawings, etc will be required to gather more specific information about the cable to assist CCC with scoping renewals and/or repair work.

Note: For the classification information refer to SN04: Cable

SAP Object Type: CABLE
SAP Class Type: CABLE (002)
Represented in GIS: Yes
GIS Model: (TBC)

As-Built requirements (Stations)

SS03: Chamber

Name **Chamber**

Equipment Type **SS03** "Polygon asset Input"

CAT Column	SAG Description	Valid Values
A	Equipment type	I03
B	Backflow type	Select from pick list: domBackflowType
C	Existing or New Asset	Select from pick list: domExistingOrNew
D	Differs from design (Yes/No)	Select from pick list: domDiffersFromDesign
E	Unique identifier from drawing	data - text (30 chars)
F	Centre of Asset in Easting coordinate	data - decimal number
G	Centre of Asset in Northing coordinate	data - decimal number
H	Leave Blank	Leave Blank
I	Equipment Sequence Number	data - number
J	Site Name	data - text (30 chars)
K	Short Description	data - text (30 chars)
L	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - text (200 chars)
M	Name of contractor whom installed asset	data - text (30 chars)
N	Manufacturer of the asset	data - text (30 chars)
O	Model of the asset	data - text (20 chars)
P	Model Number of the asset	data - text (24 chars)
Cham	Manufacturing Serial Number for the asset	data - text (24 chars)
R	Installation date of the asset	date - dd/mm/yyyy
S	Date of Commission of the asset	date - dd/mm/yyyy
T	Warranty Start Date of the asset	date - dd/mm/yyyy
U	Warranty End Date of the asset	date - dd/mm/yyyy
V	Location certainty - accuracy of data	Select from pick list : domLocationCertainty
W	Date of 'survey-start'	date - dd/mm/yyyy
X	Guideline revision used for survey	data - decimal number
Y	File name of photo, if supplied	data - text (30 chars)
Z	Backflow Internal Diameter in millimetres (mm).	data - number (6 chars)
AA	Backflow Internal Diameter in mm	data - Decimal Number (6 Chars, Decimals)
AB	IQP Number	data - Text (30 Characters)
AC	Tester	data - Text (30 Characters)
AD	Installation Company	data - Text (30 Characters)

Additional Information

Chambers are typically concrete structures housing pumps, valves etc.
They are to be treated as polygon assets. Please survey points along the boundary to help plot the chamber is GIS.

		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.		

SAP Object Type: CHAMBER
SAP Class Type: CHAMBER (002)
Represented in GIS: YES
GIS Model: STRUCTURE - TBC

Classification Information:

1. Chamber Purpose
   [SAP Characteristic Name = ZPM_CHAMBERPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the Chamber. Select primary function from picklist/dropdown values.
   Data Entry: 30 Characters

	Chamber Purpose	Description
a)	MAGFLOW	The chamber is used for holding flowmeters. Magflow meters are type of meters that use magnetic fields and operate by combining a transmitter and sensor together to measure flow.
b)	VALVES	The chamber is used for holding valve/s.
c)	MECHANICAL PLANT	The chamber is used to hold/store a mechanical plant (or machinery) used for a specific purpose in the facility.
d)	WELL HEAD	The chamber holds the Wellhead. Wellhead is the pressure-containing component at the surface of a water well.
e)	WIER/FLUME	The chamber is used to hold together the Wier/flume. A weir/flume is used in open channel flow applications.

2. Floor Area
   [SAP Characteristic Name = ZPM_FLOORAREA, NUM]
   Description: The Floor area of the chamber.
   Unit: m^2
   Data Entry: 7 Characters, 3 Decimal places

3. Height
   [SAP Characteristic Name = ZPM_HEIGHT, NUM]

Description: The vertical distance of the chamber in meters
Unit: m
Data Entry: 12 Characters, 2 Decimal places

4. Sump Pump
   [SAP Characteristic Name = ZPM_SUMPPUMP, CHAR, SAP Picklist below]
   Description: Is there a sump pump in the chamber? Sump pumps is a pump used to remove water from the chamber or sump.
   Data Entry: 7 Characters

   a) YES
   b) NO

5. Benchmark (CCC Datum)
   [SAP Characteristic Name = ZPM_BENCHMARK, NUM]
   Description: The Chamber's surveying point at which a vertical distance is adopted to a datum plane.
   Unit: m
   Data Entry: 9 Characters, 3 Decimal places

6. Construction Material
   [SAP Characteristic Name = ZPM_CONSTRUCTIONMATERIAL, CHAR, SAP Picklist below]
   Description: The construction material of the chamber
   Data Entry: 30 Characters

   a) BRICK
   b) CONCRETE
   c) FIBREGLASS
   d) METAL

7. Floor RL (CCC Datum)
   [SAP Characteristic Name = ZPM_FLOORRL, NUM]
   Description: The chamber floor is the surveying point at which a vertical distance is adopted to a datum plane.
   Unit: m
   Data Entry: 9 Characters, 3 Decimal places

As-Built requirements (Stations)

SS04: Filter Bed

Name **Filter Bed**

Equipment Type **SS04** "Polygon asset Input"

A constructed structure designed to allow a fluid to be passed through a bed of filter media. Contaminants are removed from the fluid stream through a combination of absorption, adsorption, filtration and/or biological action.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS04
B	Filter Bed Type	Select from pick list: domFilterBedType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domFilterbedManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Depth of filter bed (m)	data - Decimal Number (10 Chars, 2 Decimals)
AB	ActV Carbon filter media (kg)	data - Decimal Number (8 Chars, Decimals)
AC	Multi Odour filter media (kg)	data - Decimal Number (8 Chars, Decimals)
AD	Filter Unit Media	Select from pick list: domFilterBedMedia
AE	Filter Purpose	Select from pick list: domFilterBedPurpose

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: FILTRBED
SAP Class Type: FILTRSTRC (002)
Represented in GIS: YES
GIS Model: STRUCTURE TBC

Classification Information:

1. Filter Bed Type
   [SAP Characteristic Name = FILTERBEDTYPE, CHAR, SAP Picklist below]
   Description: The type of filter bed installed.
   Data Entry: 30 Characters

   a) Bark – The filter media of the filter bed is bark.
   b) Soil – Similar to wetlands, soil filters are natural systems treating fluid by using soil as the filter media.
   c) Carbon – The filter media of the filter bed is carbon.

2. Depth of filter bed
   [SAP Characteristic Name = ZPM_BEDDEPTH, NUM]
   Description: The vertical distance of the filter bed.
   Unit: m
   Data Entry: 10 Characters, 2 Decimal places

3. ActV Carbon filter media quantity
   [SAP Characteristic Name = ZPM_CARBONQUANTITY, NUM]
   Description: The mass of the activated carbon filter media. Leave blank if filter bed doesn't include carbon media.
   Unit: kg
   Data Entry: 8 Characters

4. Multi Odour filter media quantity
   [SAP Characteristic Name = ZPM_MULTIODOURQUANTITY, NUM]
   Description: The mass of the multi odour filter media. Leave blank if filter bed has carbon media.

Unit: kg
Data Entry: 8 Characters

5. Filter Unit Media
   [SAP Characteristic Name = ZPM_FILTERMEDIA, CHAR, SAP Picklist below]
   Description: The type of filter unit media used in the filter bed. Select the primary media of the filter bed.
   Data Entry: 30 Characters

   a) BARK
   b) PAPER
   c) CARBON
   d) PAPER CARTRIDGE
   e) SOIL
   f) SAND
   g) CERAMIC CARTRIDGE
   h) PLASTIC
   i) MEMBRANE
   j) COCONUT HUSK
   k) ZEOLITE
   l) GLASS

6. Filter Purpose
   [SAP Characteristic Name = ZPM_FILTERPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the filter bed.
   Data Entry: 30 Characters

   a) WATER – Filter bed used for water treatment.
   b) OIL – Filter bed used for oil treatment.
   c) FUEL – Filter bed used for fuel treatment.
   d) AIR – Filter bed used for filtering contaminated air.
   e) WASTE WATER – Filter bed used for treatment of waste water.

7. Area

[SAP Characteristic Name = ZPM_AREA, NUM]
Description: The area of the filter bed.
Unit: m^2
Data Entry: 13 Characters, 2 Decimal places

8. Installation Company
[SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
Description: The company that has installed the filter bed.
Data Entry: 30 Characters

As-Built requirements (Stations)

SS05: Fuel Tank System

Name **Fuel Tank System**

Equipment Type **SS05** "Polygon asset Input"

A receptacle, container or chamber for flammable liquids/fuel storage

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS05
B	Fuel Type	Select from pick list: domFueltankFuelType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domFueltankManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	HSTC - SCS Certificate	data - Text (30 Characters)
AB	HSTC - SCS Expiry	data - Date (dd/mm/yyyy)
AC	Installation Company	data - Text (30 Characters)
AD	Fuel Capacity (litres)	data - Decimal Number (5 Chars, Decimals)
AE	Construction Material	Select from pick list: domFueltankConstruction
AF	Relocatable	Select from pick list: domFueltankRelocatable
AG	Bund	Select from pick list: domFueltankBund

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

Structure Outline
X Y

Survey minimum of 4 coordinates along the rectangular foundation.

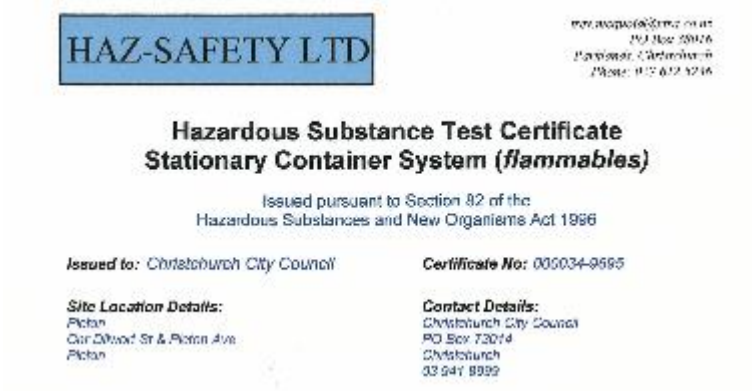
SAP Object Type: FUELTANK
SAP Class Type: FUELTANK (002)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Fuel Type
   [SAP Characteristic Name = ZPM_FUELTYPE, CHAR, SAP Picklist below]
   Description: The type of fuel inside the tank.
   Data Entry: 30 Characters

   a) DIESEL
   b) GAS
   c) DUEL - Diesel & Gas

2. HSTC – SCS (Stationary Container System) Certificate
   [SAP Characteristic Name = ZPM_HSTC-SCSCERTIFICATE, CHAR]
   Description: Hazardous Substance Test certificate (HSTC) number
   Data Entry: 30 Characters
   Example:



HAZ-SAFETY LTD

[redacted]

Hazardous Substance Test Certificate
Stationary Container System (*flammables*)

Issued pursuant to Section 82 of the
Hazardous Substances and New Organisms Act 1996

Issued to: *Christchurch City Council* ***Certificate No:*** *000034-9695*

Site Location Details:
Picton
Cnr Dillwyn St & Picton Ave
Picton

Contact Details:
Christchurch City Council
PO Box 73014
Christchurch
03 941 8999

3. HSTC - SCS Expiry
   [SAP Characteristic Name = ZPM_HSTC-SCSEXPIRY, DATE]
   Description: Expiry date of the Hazardous Substance test certificate (HSTC)
   Data Entry: 10 Characters

4. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that installed the fuel tank.
   Data Entry: 30 Characters

7. Fuel Capacity
   [SAP Characteristic Name = FUELCAPACITY, NUM, SAP Picklist below]
   Description: The capacity that the tank can hold Fuel.
   Unit: L
   Data Entry: 5 Characters

8. Construction Material
   [SAP Characteristic Name = ZPM_CONSTRUCTIONMATERIAL, CHAR, SAP Picklist below]
   Description: The construction material of the tank.
   Data Entry: 30 Character

a) PLASTIC
b) STEEL

9. Relocatable
[SAP Characteristic Name = ZPM_RELOCATABLE, CHAR, SAP Picklist below]
Description: Tanks that can be easily relocated.
Data Entry: 7 Characters

a) No
b) Yes

10. Bund
[SAP Characteristic Name = ZPM_BUND, CHAR, SAP Picklist below]
Description: Containment around the area of the tank.
Data Entry: 3 Characters

a) YES
b) NO

As-Built requirements (Stations)

SS06: Generator Unit

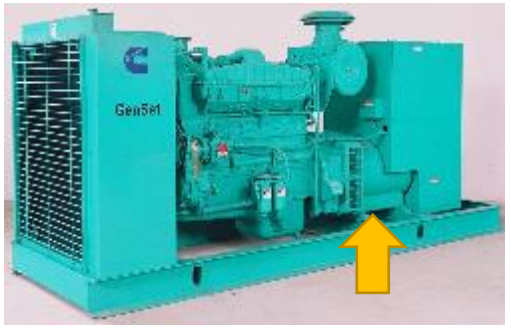
Name **Generator Unit**

Equipment Type **SS06** "Polygon asset Input"

A piece of mechanical equipment for conversion of kinetic energy (rotation) into electrical energy. A generator does not include the engine supplying the rotational motion.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS06
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domGeneratorManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Usage Class	Select from pick list: domGeneratorUsageClass
AB	kW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AC	kVA Rating	data - Decimal Number (6 Chars, 2 Decimals)
AD	Full Load Current in Amperes	data - Decimal Number (8 Chars, 2 Decimals)
AE	Voltage	data - Decimal Number (15 Chars, 4 Decimals)

Generator (Alternator)



Skid-mounted diesel engine and generator (arrowed)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: GENERATOR
SAP Class Type: GENERATOR (002)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Usage Class[SAP Characteristic Name = ZPM_USAGECLASS, CHAR, SAP Picklist below]
   Description: What is the usage of the generator?
   Data Entry: 30 Characters

   a) STANDBY – The generator is installed for the purpose of electrical backup which operates automatically.
   b) NONSTANDBY – The generator is installed as the main electrical system.

2. KW Rating
   [SAP Characteristic Name = ZPM_KWRATING, NUM]
   Description: The resulting power output of the generator.
   Unit: kW
   Data Entry: 7 Characters, 2 Decimal place

3. kVA Rating
   [SAP Characteristic Name = ZPM_KVARATING, NUM]
   Description: The rate of the generator's power output.
   Unit: kVA
   Data Entry: 6 Characters, 2 Decimal place

4. Full Load Current
   [SAP Characteristic Name = ZPM_FULLLOADCURRENT, NUM]
   Description: The maximum current that the generator is designed to carry under normal conditions.
   Unit: A

Data Entry: 8 Characters, 2 Decimal place

5. Voltage
   [SAP Characteristic Name = ZPM_VOLTAGE, NUM]
   Description: Voltage of the generator
   Unit: V
   Data Entry: 15 Characters, 4 Decimal place

6. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the generator.
   Data Entry: 30 Characters

7. Synchronised
   [SAP Characteristic Name = ZPM_SYNCHRONISED, CHAR, SAP Picklist below]
   Description:
   Data Entry: 30 Characters

   a) SYNCHRONISED – The generator's parameters (e.g. voltage, frequency, phase sequence) are synchronised with a running power system.
   b) STAND ALONE – The generator is a back-up electrical system independent of the existing power system.

As-Built requirements (Stations)

SS07: Penstock

Name **Penstock**

Equipment Type **SS07** "Equipment - Point Input"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Point Feature	SS07
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domPenstockManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Width (mm)	data - Decimal Number (10 Chars, Decimals)
AB	Height (mm)	data - Decimal Number (10 Chars, Decimals)
AC	Penstock Material	Select from pick list: domPenstockMaterial
AD	Rated Head in meters	data - Decimal Number (6 Chars, 2 Decimals)
AE	Diameter mm	data - Decimal Number (10 Chars, Decimals)
AF	Installation Company	data - Text (30 Characters)
AG	Operation Method	Select from pick list: domPenstockOperationMethod
AH	Mode	Select from pick list: domPenstockMode

A penstock is an adjustable gate for control of flow. Penstocks differ from valves in that penstocks are designed to fit into channels or over openings while valves are manufactured complete with pipe stubs so as to be installed in pipework.

Asset Position
X Y

Penstock

		AI	Automatic Control	Select from pick list: domPenstockAutomaticControl		
		AJ	Valve Power	Select from pick list: domPenstockValvePower		
		AK	Ground Feature Type	Select from pick list: domPenstockGroundFeatureType		
		AL	Valve Reduced Level in meters	data - Decimal Number (4 Chars, 2 Decimals)		
		AM	Close Direction	Select from pick list: domPenstockCloseDirection		
		Additional Information				
		*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: PENSTOCK
SAP Class Type: PENSTOCK (002)
Represented in GIS: Yes
GIS Model: WwValve (ValveType: Penstock), SwValve (ValveType: Gate), WsValve (ValveType:Gate)

Classification Information:

1. Width
   [SAP Characteristic Name = ZPM_WIDTHMM, NUM]
   Description: The width of the penstock if it is rectangular. (Otherwise, leave this blank and use the Diameter field for circular penstocks)
   Unit: mm
   Data Entry: 10 Characters

2. Height
   [SAP Characteristic Name = ZPM_HEIGHTMM, NUM]
   Description: The height of the penstock if it is rectangular. (Otherwise, leave this blank and use the Diameter field for circular penstocks)
   Unit: mm
   Data Entry: 10 Characters

3. Penstock Material
   [SAP Characteristic Name = ZPM_PENSTOCKMATERIAL, CHAR, SAP Picklist below]
   Description: The construction material of the penstock.

Data Entry: 30 Characters

a) ALUMINIUM
b) CAST IRON
c) MILD STEEL
d) PLASTIC
e) STAINLESS STEEL

4. Rated Head
   [SAP Characteristic Name = ZPM_RATEDHEAD, NUM]
   Description: The maximum height that the penstock can operate.
   Unit: m
   Data Entry: 6 Characters, 2 Decimal place

5. Diameter
   [SAP Characteristic Name = ZPM_DIAMETERMM, NUM]
   Description: The diameter of the penstock
   Unit: mm
   Data Entry: 10 Characters

6. Installation Company
   [SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
   Description: The company that has installed the penstock.
   Data Entry: 30 Characters

7. Operation Method
   [SAP Characteristic Name = ZPM_OPERATIONMETHOD, CHAR, SAP Picklist below]
   Description: The type of method that the penstock is operating.
   Data Entry: 30 Characters

   a) MANUAL
   b) ACTUATED

8. Mode
   [SAP Characteristic Name = ZPM_MODE, CHAR, SAP Picklist below]
   Description:
   Data Entry: 30 Characters

   a) AUTO
   b) MANUAL
   c) SCADA
   d) REMOTE

9. Automatic Control
   [SAP Characteristic Name = ZPM_AUTOMATICCONTROL, CHAR, SAP Picklist below]
   Description: The type of automatic control the penstock employs.
   Data Entry: 30 Characters

   a) PRS (Pressure) – Automatic pressure control regulates the pressure of the fluid stream in the penstock
   b) DEPTH (Depth) – Based on depth/level of fluid stream.
   c) FLOWR (Flow rate) – Automatic flow rate control regulates the flow in the penstock

10. Valve Power
    [SAP Characteristic Name = ZPM_VALVEPOWER, CHAR, SAP Picklist below]
    Description: The type/source of power used to operate the valve.
    Data Entry: 30 Characters

    a) BATTERY (Electrical)
    b) HYDRAULIC
    c) MAINS (Electrical)
    d) MANUAL
    e) PNEUMATIC
    f) SPRING (Mechanical)

11. Ground Feature Type
    [SAP Characteristic Name = ZPM_GROUNDFEATURETYPE, CHAR, SAP Picklist below]

Description: The location of the penstock relative to ground level.
Data Entry: 30 Characters

a) ABOVE
b) BELOW
c) COMBINATION

12. Valve Reduced Level
[SAP Characteristic Name = ZPM_VALVEREDUCEDLEVEL, NUM]
Description:
Unit: m
Data Entry: 4 Characters, 2 Decimal place

13. Close Direction
[SAP Characteristic Name = ZPM_CLOSEDIRECTION, CHAR, SAP Picklist below]
Description: The direction in which the valve is closed.
Data Entry: 30 Characters

a) CLOCKWISE
b) ANTI-CLOCKWISE

As-Built requirements (Stations)

SS08: Pump Station Building

Name **Pump Station Building**

Feature Type **SS08** "Polygon asset Input"

The structure which houses the various equipment of the pump station.

Structure Outline
X Y

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS08
B	Building Type	Select from pick list: domBuildingPumpStationBuildingType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Ground Feature Type	Select from pick list: domBuildingPumpStationGroundFeatureType
AB	Construction	Select from pick list: domBuildingPumpStationConstruction
AC	Floor Area in m2	data - Decimal Number (4 Chars, 1 Decimals)
AD	Toilet	Select from pick list: domBuildingPumpStationToilet

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline.

Pump House

All corner points along outline to be surveyed.

SAP Object Type: BLDPSTN
SAP Class Type: BLDPSTN (003)
Represented in GIS: Yes
GIS Model: TBC

Classification Information

1. Building Type
   [SAP Characteristic Name = BLDPSTNTYPE, CHAR, SAP Picklist below]
   Description: What is the building type? Select from options below. Most Pump Stations are either Pump house, Kiosk or Building
   Data Entry: 30 Characters

	Building type	Description
a)	PUMPHOUSE	A building in which pumps are located and operated along with electrical cabinet.
b)	KIOSK	Is a stand-alone electrical cabinet which connects into the pumps within tanks/structures underground.
c)	BUILDING	A building which includes pumps, tanks, electrical system, HVAC and other facilities such as toilets, offices, cafeteria, etc.
d)	GARAGE	A building used for housing vehicle and may have room for spares, tools and equipment.
e)	SHED	A building with a single story roofed structure used for storage purposes of spares, tools and equipment.

2. Ground Feature Type
   [SAP Characteristic Name = ZPM_GROUNDFEATURETYPE, CHAR, SAP Picklist below]
   Description: The location of the building in reference (*or in relation*) to ground level.
   Data Entry: 30 Characters

   a) ABOVE – Entire building is above ground.
   b) BELOW – Entire building is below ground, accessible via manhole and ladder.
   c) COMBINATION – Building has above and below ground features.

3. Construction Material
   [SAP Characteristic Name = CONSTRUCTION, CHAR, SAP Picklist below]
   Description: The construction material of the building.

Data Entry: 30 Characters

a) BLOCK
b) BRICK
c) CONCRETE
d) CONCRETE BLOCK
e) CONCRETE TILT SLAP
f) FIBREGLASS
g) PVC
h) SHEET METAL
i) STEEL
j) STEEL-SHEET
k) WOOD
l) WOOD FIBREGLASS
m) STONE
n) STONE / WOOD

4. Floor Area in m2
   [SAP Characteristic Name = FLOORAREA, NUM]
   Description: The floor area of the building.
   Unit: m^2
   Data Entry: 4 Characters, 1 Decimal place

5. Toilet
   [SAP Characteristic Name = TOILET, CHAR, SAP Picklist below]
   Description: Does the building have toilet?
   Data Entry: 3 Characters

   a) YES
   b) NO

As-Built requirements (Stations)

SS09: Pump Unit

Name **Pump Unit**

Equipment Type **SS09** "Equipment - Point Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN21
B	Pump Type	Select from pick list: domPumpType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domRtuPlcmanufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Pump Purpose	Select from pick list: domPumpPurpose
AB	Pump Flow Rate in m3/h	data - Decimal Number (12 Chars, 2 Decimals)
AC	Design Lift (m) (Head)	data - Decimal Number (5 Chars, 1 Decimals)
AD	Impeller Model Number	data - Text (30 Characters)
AE	Driver Type	Select from pick list: domPumpDriverType
AF	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)
AG	RPM	data - Decimal Number (6 Chars, Decimals)
AH	Immersed Pump (Yes/No)	Select from pick list: domPumpImmersed
AI	Best Efficiency Pressure	data - Decimal Number (6 Chars, Decimals)

Pumps are mechanical devices that convert a rotational input into liquid flow. A pump typically requires an external engine or motor to supply the rotational motion.

Typically pumps will be installed in a chamber. Please capture approx. x/y points for the pumps to help populate them in GIS.

AJ	Installation Company	data - Text (30 Characters)		
AK	Design Flow Rate (m3/h)	data - Decimal Number (5 Chars, 1 Decimals)		
AL	Best Efficiency Flow in %	data - Decimal Number (3 Chars, 2 Decimals)		
Additional Information				
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: PUMP
SAP Class Type: PUMP (002)
Represented in GIS: Yes
GIS Model: TBC

As-Built requirements (Stations)

SS10: Pump/Motor Set

Name **Pump/Motor Set**

Equipment Type **SS10** "Equipment - Point Inputs"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN22
B	Pump Type	Select from pick list: domPumpSetPumpType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domPumpsetManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Pump Purpose	Select from pick list: domPumpSetPumpPurpose
AB	Pump Flow Rate in m3/h	data - Decimal Number (12 Chars, 2 Decimals)
AC	Design Lift (m) (Head)	data - Decimal Number (5 Chars, 1 Decimals)
AD	Maximum Lift in meters	data - Decimal Number (5 Chars, 2 Decimals)
AE	Screw Diameter in mm	data - Decimal Number (4 Chars, Decimals)
AF	Screw Length in mm	data - Decimal Number (5 Chars, Decimals)

AG	Full Load Current in Amperes	data - Decimal Number (8 Chars, 2 Decimals)		
AH	KW Rating	data - Decimal Number (7 Chars, 2 Decimals)		
AI	kVA Rating	data - Decimal Number (6 Chars, 2 Decimals)		
AJ	Voltage	data - Decimal Number (15 Chars, 4 Decimals)		
AK	Current Type	Select from pick list: domPumpSetCurrentType		
AL	RPM	data - Decimal Number (6 Chars, Decimals)		
AM	Immersed Pump	Select from pick list: domPumpSetImmersedPump		
AN	Design Flow Rate (m3/h)	data - Decimal Number (5 Chars, 1 Decimals)		
AO	Installation Company	data - Text (30 Characters)		
AP	Phase	Select from pick list: domPumpSetPhase		
Additional Information				
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example.				

SAP Object Type: PUMPSET
SAP Class Type: PUMPSET (002)
Represented in GIS: Yes
GIS Model: TBC

Ref. SS22 for attribute requirements and definition.

As-Built requirements (Stations)

SS11: Retaining Wall

Name **Retaining Wall**

Feature Type **SS11** "Line Asset Input"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Line Feature	SS11
B	Retaining Type	Select from pick list: domRetainingWallType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Construction Material	Select from pick list: domRetainingWallConstruction
AB	Length in meters	data - Decimal Number (12 Chars, 2 Decimals)
AC	Height in meters	data - Decimal Number (12 Chars, 2 Decimals)
AD	Thickness in meters	data - Decimal Number (12 Chars, 2 Decimals)
AE	Fall Height in meters	data - Decimal Number (12 Chars, 1 Decimals)
AF	Safety Barrier	Select from pick list: domRetainingWallSafetyBarrier
AG	Construction Style	Select from pick list: domRetainingWallConstructionStyle

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline.

Retaining walls are structures that are designed to support soil laterally or restrain soil to a slope that it would not naturally keep to.

Terraced:

SAP Object Type: RETAINWAL
SAP Class Type: RETAINWAL (002)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Retaining Type
   [SAP Characteristic Name = ZPM_RETAININGTYPE, CHAR, SAP Picklist below]
   Description: The type of retaining wall installed
   Data Entry: 20 Characters

	Retaining Type	Description	Photo
a)	TERRACED	The retaining wall is divided into sections such that the distance between them is engineered as two independent walls.	 Source
b)	BREAKWATER	The retaining wall is created to form a barrier, parallel to the shore.	 Source
c)	LANDSCAPING	The retaining wall is designed for landscaping purposes	 Source

d)	SEAWALL	The retaining wall is created to protect the inland area against waves and storm surges. They are usually large structures.	 Source

2. Construction Material
   [SAP Characteristic Name = ZPM_CONSTRUCTIONMATERIAL, CHAR, SAP Picklist below]
   Description: The construction material of the retaining wall.
   Data Entry: 30 Characters

   a) BRICK
   b) CONCRETE
   c) CONCRETEBLOCK
   d) GABIONBASKET
   e) MASONRY
   f) NOT-IN-LIST
   g) ROCK
   h) STEEL
   i) STONE
   j) WOOD

3. Length
   [SAP Characteristic Name = ZPM_LENGTH, NUM]
   Description: The length of the retaining wall is the horizontal distance of the retaining wall.
   Unit: m
   Data Entry: 12 Characters, 2 Decimal place

4. Height
   [SAP Characteristic Name = ZPM_HEIGHT, NUM]
   Description: The vertical distance from the bottom to the top of retaining wall.
   Unit: m

Data Entry: 12 Characters, 2 Decimal place

5. Thickness
   [SAP Characteristic Name = ZPM_THICKNESS, NUM]
   Description: The thickness of the retaining wall.
   Unit: m
   Data Entry: 12 Characters, 2 Decimal place

6. Fall Height
   [SAP Characteristic Name = ZPM_FALLHEIGHT, NUM]
   Description: Measurement of maximum vertical distance possible for a person to fall from the structure to the ground. The structure may be 1.5 meter, but it may be built on a raised ground or a slope. So fall height is the total distance from top of the structure, till the surface where a falling person could land/hit the ground .
   Unit: m
   Data Entry: 12 Characters, 2 Decimal place

7. Safety Barrier
   [SAP Characteristic Name = ZPM_SAFETYBARRIER, CHAR, SAP Picklist below]
   Description: Does the retaining wall have a safety barrier? A safety barrier is an extension from the retaining wall.
   Data Entry: 10 Characters

   a) NO
   b) YES

8. Construction Style
   [SAP Characteristic Name = ZPM_CONSTRUCTIONSTYLE, CHAR, SAP Picklist below]
   Description: The construction style of the retaining wall.
   Data Entry: 30 Characters

   a) CASTINSITU (Cast In-Situ) – The construction material is assembled at the construction site.
   b) MASONRY (Masonry) – The construction material is assembled by laying individual masonry units (e.g. brick, stone, concrete block)
   c) PRECAST (Pre-Cast) – The construction material is pre-assembled in another location before it is transported to the construction site.

d) PREFABRICATED (Pre-Fabricated) – A variety of components of the retaining wall is constructed at the manufacturing site before it is transported to the construction site.
e) ~~RIVETED (Riveted) – The construction material is fastened with rivets~~
f) ~~SECTIONAL (Sectional) – The retaining wall is constructed into sections which will have different completion date for each sections under the construction contract.~~
g) ~~WELDED (Welded) – The construction material is fused/welded together.~~
h) NONSTRUCTURALFACING (Non-Structural Facing) – The retaining wall has a low landscape feature such as garden walls.
i) REINFORCEDCONCRETE (Reinforced Concrete) – The construction material of the retaining wall is concrete which has steel embedded.
j) GABION (Gabion) – The construction material is in a rectangular baskets made up of hexagonal steel wire mesh.
k) POST&PANEL (Post & Panel) – The construction material is concrete with steel and chemical reinforcement. It is structurally engineered.
l) CRIB – The structure of crib retaining walls are similar to gravity retaining wall. Crib walls are made up of interlocking boxes that are either timber or precast concrete.
m) ~~RENOMATTRESS (Reno Mattress) – The construction material is in a double twisted hexagonal steel wire mesh.~~

As-Built requirements (Stations)

SS12: Station Site

Name **Station Site**

Feature Type **SS12** "Polygon asset Input"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS12
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Power Connection Number	data - Text (30 Characters)
AB	Audible alarm	Select from pick list: domStationAudibleAlarm
AC	Benchmark (CCC Datum) in meters	data - Decimal Number (6 Chars, 3 Decimals)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline.

Station Site is the entire land parcel/block represented as a polygon. Please capture all points along the boundary of the site.

Buildings, tanks, chambers , valves are inside this polygon and to be captured individually as different asset types.

All corner points along outline to be surveyed.

SAP Object Type: STATION
SAP Class Type: STATION (003)
Represented in GIS: Yes
GIS Model: TBC

Classification Information:

1. Power Connection Number
   [SAP Characteristic Name = ZPM_POWERCONNECTION, CHAR]
   Description: The power connection number of the station.
   Data Entry: 30 Characters

2. Audible alarm
   [SAP Characteristic Name = ZPM_AUDIBLEALARM, CHAR, SAP Picklist below]
   Description: Does the station have an audible alarm?
   Data Entry: 30 Characters

   a) YES
   b) NO

3. Benchmark (CCC Datum)
   [SAP Characteristic Name = BENCHMARK, NUM]
   Description: The station surveying point at which a vertical distance is adopted to a datum plane.
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

As-Built requirements (Stations)

SS13: Tank

Name **Tank**

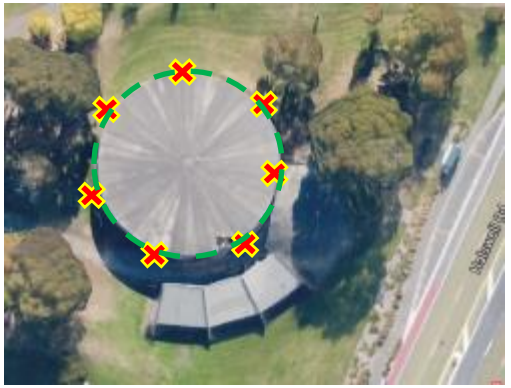
Equipment Type **SS13** ""Polygon asset Input"

A receptacle, container or chamber for liquid or gas storage.

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS13
B	Tank Use	Select from pick list: domTankUse
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domTankManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Tank Contents	Select from pick list: domTankConsent
AB	Construction Material	Select from pick list: domTankConstruction
AC	Capacity in litres	data - Decimal Number (12 Chars, Decimals)
AD	Volume in m3	data - Decimal Number (14 Chars, 2 Decimals)
AE	Double Skinned	Select from pick list: domTankDoubleSkinned
AF	Tank Liner	Select from pick list: domTankLiner
AG	Tank Liner Type	Select from pick list: domTankLinerType
AH	Ground Feature Type	Select from pick list: domTankGroundFeatureType

Structure Outline

X Y



All corner points along outline to be surveyed.

AI	Operating Pressure in kPa	data - Decimal Number (6 Chars, 2 Decimals)		
AJ	Installation Company	data - Text (30 Characters)		
AK	Bund (yes/no)	Select from pick list: domTankBund		
AL	Safe Full Volume in m3	data - Decimal Number (14 Chars, 2 Decimals)		
Additional Information				
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline				

SAP Object Type: TANK
SAP Class Type: TANK (002)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Tank Use
   [SAP Characteristic Name = ZPM_TANKUSE, CHAR, SAP Picklist below]
   Description: The use of the tank
   Data Entry: 30 Characters

   a) DOMESTIC
   b) FIRE
   c) HEATING
   d) IRRIGATION
   e) STOCK
   f) STORAGE
   g) VEHICLES

2. Tank Contents
   [SAP Characteristic Name = ZPM_TANKCONTENTS, CHAR, SAP Picklist below]
   Description: The content inside the Tank
   Data Entry: 20 Characters

a) CHEMICAL
b) DIESEL
c) PETROL
d) SEWERAGE
e) WATER
f) GAS
g) STORMWATER
h) LIQUID PETROLEUM GAS
i) COOLANT
j) CHLORINE

3. Construction Material
   [SAP Characteristic Name = ZPM_CONSTRUCTIONMATERIAL, CHAR, SAP Picklist below]
   Description: The construction material of the tank.
   Data Entry: 30 Characters

   a) CONCRETE
   b) PLASTIC
   c) STEEL
   d) WOOD

4. Capacity
   [SAP Characteristic Name = ZPM_CAPACITY, NUM]
   Description: The capacity that the Tank can hold substance.
   Unit: L (litres)
   Data Entry: 12 Characters

5. Volume
   [SAP Characteristic Name = ZPM_VOLUME, NUM]
   Description: The volume that the substance occupies in the Tank
   Unit: m^3 (Cubic meters)
   Data Entry: 14 Characters, 2 Decimal place

8. Double Skinned
   [SAP Characteristic Name = ZPM_DOUBLESKINNED, CHAR, SAP Picklist below]
   Description: Tanks that have two layered walls.
   Data Entry: 7 Characters

   a) YES
   b) NO

9. Tank Liner
   [SAP Characteristic Name = ZPM_TANKLINER, CHAR, SAP Picklist below]
   Description: Tanks that have thick film.
   Data Entry: 7 Characters

   a) YES
   b) NO

10. Tank Liner Type
    [SAP Characteristic Name = ZPM_TANKLINERTYPE, CHAR, SAP Picklist below]
    Description: The material of the thick film.
    Data Entry: 30 Characters

    a) EPAR
    b) EPOXY
    c) FIBRE GLASS
    d) PLASTIC
    e) SITUCLAD-E
    f) CEMENT

11. Ground Feature Type
    [SAP Characteristic Name = ZPM_GROUNDFEATURETYPE, CHAR, SAP Picklist below]
    Description: The position of the tank in the system.
    Data Entry: 30 Characters

    a) ABOVE

b) BELOW
c) COMBINATION

12. Operating Pressure
[SAP Characteristic Name = ZPM_OPERATINGPRESSURE, NUM]
Description: The pressure that the tank is operating.
Unit: kPa (kilo Pascal)
Data Entry: 6 Characters, 2 Decimal place

13. Installation Company
[SAP Characteristic Name = ZPM_INSTALLATIONCOMPANY, CHAR]
Description: The company that installed the Tank.
Data Entry: 30 Characters

14. Bund
[SAP Characteristic Name = ZPM_BUND, CHAR, SAP Picklist below]
Description: Containment around the area of the tank.
Data Entry: 7 Characters

a) YES
b) NO

15. Safe Full Volume
[SAP Characteristic Name = ZPM_SAFEFULLVOLUME, NUM]
Description: The safe, maximum volume of the tank.
Unit: m^3
Data Entry: 14 Characters, 2 Decimal place

As-Built requirements (Stations)

SS14: Valve

Name **Valve**

Equipment Type **SS14** "Equipment - Point Input"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Non-Spatial Feature	SN29
B	Valve Type	Select from pick list: domValveType
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
H	LEAVE BLANK	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	Select from pick list: domValveManufacturer
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Nominal Size in mm	data - Text (30 Characters)
AB	Installation Company	data - Text (30 Characters)
AC	Valve Purpose	Select from pick list: domValvePurpose
AD	Internal Diameter in mm	data - Decimal Number (6 Chars, Decimals)
AE	Ground Feature Type	Select from pick list: domValveGroundFeatureType
AF	Close Direction	Select from pick list: domValveCloseDirection

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

A device for controlling the passage of fluid through a pipe or duct.

Asset Position
X Y

Ball Valve

Rubber Duck Bill

Note: for classification information refer to SN29: Valve

As-Built requirements (Stations)

SS15: Water Tank

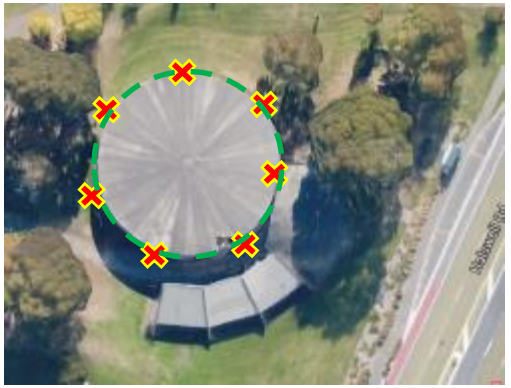
Name **Water Tank**

Equipment Type **I34** ""Polygon asset Input"

CAT Column	SAG Attribute Description	Valid Values
A	Type of Polygon Feature	SS15
B	Purpose	Select from pick list: domWatertankPurpose
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	Vertex Order	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Volume (m3)	data - Decimal Number (9 Chars, 1 Decimals)
AB	Construction Material	Select from pick list: domWatertankConstruction
AC	Internal Diameter in meters	data - Decimal Number (6 Chars, 3 Decimals)
AD	Internal Width in meters	data - Decimal Number (5 Chars, 2 Decimals)
AE	Internal Breadth in meters	data - Decimal Number (5 Chars, 2 Decimals)
AF	Internal Height in meters	data - Decimal Number (6 Chars, 3 Decimals)

A receptacle, container or chamber for water.
Reservoir Tanks, Suction Tanks and Temporary Tanks that store water for drinking purposes will be classed as "WATER TANK"

Structure Outline



Watertanks will be treated as polygon features. All points along periphery to be surveyed.

AG	Overflow Level in meters	data - Decimal Number (6 Chars, 3 Decimals)		
AH	Full Level in meters	data - Decimal Number (6 Chars, 3 Decimals)		
AI	Potability	Select from pick list: domWatertankPotability		
AJ	Min Operating Level in meters	data - Decimal Number (6 Chars, 3 Decimals)		
AK	Inhibit Level in meters	data - Decimal Number (6 Chars, 3 Decimals)		
AL	Outlet RL (CCC Datum) in meters	data - Decimal Number (6 Chars, 3 Decimals)		
AM	Floor RL (CCC Datum) in meters	data - Decimal Number (6 Chars, 3 Decimals)		
Additional Information				
*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT See Appendix C.1.2 for a CAT example. Col G: enter number of vertex along outline				

SAP Object Type: WATERTANK
SAP Class Type: WATERTANK (003)
Represented in GIS: YES
GIS Model: WsReservoir

Classification Information:

1. Purpose
   [SAP Characteristic Name = WTPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the water tank.
   Data Entry: 30 Characters

   a) RESERVOIR
   b) SUCTION
   c) TEMPORARY

2. Volume
   [SAP Characteristic Name = VOLUME, NUM]
   Description: The volume that the water occupies in the tank.
   Unit: m^3
   Data Entry: 9 Characters, 1 Decimal place

3. Construction material
   [SAP Characteristic Name = CONSTRUCTION, CHAR, SAP Picklist below]
   Description: The construction material of the water tank.
   Data Entry: 30 Characters

   a) CONCRETE
   b) STEEL
   c) WOOD

4. Internal Diameter
   [SAP Characteristic Name = INTDIAMETER, NUM]
   Description: The internal diameter of a circular water tank. Leave blank if rectangular tank.
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

5. Internal Width
   [SAP Characteristic Name = INTWIDTH, NUM]
   Description: The internal width of a rectangular water tank. Leave blank if circular tank.
   Unit: m
   Data Entry: 5 Characters, 2 Decimal place

6. Internal Breadth
   [SAP Characteristic Name = INTBREADTH, NUM]
   Description: The internal width of the baffles inside the tank.
   Unit: m
   Data Entry: 5 Characters, 2 Decimal place

7. Internal Height
   [SAP Characteristic Name = INTHEIGHT, NUM]
   Description: The Internal height of the water tank. (or *Vertical distance from the internal base to the top surface of the tank*)
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

8. Overflow Level
   [SAP Characteristic Name = OVERFLOW, NUM]
   Description: The level (*vertical distance*) at which the tank will overflow.
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

9. Full Level
   [SAP Characteristic Name = FULLLEVEL, NUM]
   Description: The maximum operating level of the water tank. (or *The maximum vertical distance the water tank can operate*)
   Unit: m
   Data Entry: 6 Characters, 3 Decimal place

10. Potability
    [SAP Characteristic Name = ZGIS_POTABILITY, Picklist]
    Description: If water tank stores potable (Drinking) water or is it storage of non-potable water.
    Data Entry: 30 Characters

    a) POTABLE
    b) NON-POTABLE

11. Min Operating Level
    [SAP Characteristic Name = MINOPERATING, NUM]
    Description: The minimum level that the water tank can operate. (or *The minimum vertical distance the water tank can operate)*
    Unit: m
    Data Entry: 6 Characters, 3 Decimal place

12. Inhibit Level
    [SAP Characteristic Name = INHIBIT, NUM]
    Description: The level (or *vertical distance*) at which the pump will stop working.
    Unit: m
    Data Entry: 6 Characters, 3 Decimal place

13. Outlet RL (CCC Datum)
    [SAP Characteristic Name = OUTLETRL, NUM]

Description: The surveying measurement at the tank's outlet at which a vertical distance is adopted to a datum plane.

Unit: m
Data Entry: 6 Characters, 3 Decimal place

14. Floor RL (CCC Datum) – Old
[SAP Characteristic Name = FLOORRL, NUM]
Description: The surveying point at the tank floor at which a vertical distance is adopted to a datum plane.

Unit: m
Data Entry: 6 Characters, 3 Decimal place

CAT Column	SAG Attribute Description	Valid Values
A	Type of Point Feature	SS16
B	Leave Blank	Leave Blank
C	Asset Record Capture Type	Select from pick list: domCaptureType
D	Differs from design (yes/no)	Select from pick list: domDiffersFromDesign
E	Asset Unique Identifier	data - Text (30 Characters)
F	Asset Tag	data - Text (16 Characters)
G	mE	data - Decimal Number (11 Chars, 4 Decimals)
H	mN	data - Decimal Number (11 Chars, 4 Decimals)
I	LEAVE BLANK	data - Number
J	Network (WW,SW,WS)	Select from pick list: domNetwork
K	Station Type	Select from pick list: domStationType
L	Station Number	data - Text (6 Characters)
M	Site Name	data - Text (30 Characters)
N	Short Description	data - Text (40 Characters)
O	Descriptive Comment (Serving For, Situated at, Purpose of the asset)	data - Text (70 Characters)
P	Manufacturer	data - Text (30 Characters)
Q	Model	data - Text (20 Characters)
R	Model Number	data - Text (30 Characters)
S	Manufacturing Serial Number	data - Text (30 Characters)
T	Date of commission	data - Date (dd/mm/yyyy)
U	Warranty Start Date	data - Date (dd/mm/yyyy)
V	Warranty End Date	data - Date (dd/mm/yyyy)
W	Acquisition Value - Purchase Cost	data - Decimal Number (8 Chars, 2 Decimals)
X	Acquisition Value - Installation Cost	data - Decimal Number (8 Chars, 2 Decimals)
Y	Survey Date	data - Date (dd/mm/yyyy)
Z	Photo - File Name	data - Text (100 Characters)
AA	Well Head To Ground Level (Above or Below)	Select from pick list: domWellHeadType
AB	Security Cage (Yes/No)	Select from pick list: domWellSecurityCage
AC	Depth of Well Head Chamber in meters	data - Decimal Number (7 Chars, 2 Decimals)
AD	Well Purpose	Select from pick list: domWellPurpose
AE	Lockable Chamber	Select from pick list: domWellLockableChamber
AF	Chamber top Alarm	Select from pick list: domWellChamberTopAlarm
AG	Chamber Diameter (m)	data - Decimal Number (8 Chars, 2 Decimals)
AH	Chamber Top AGL (Above ground level in meters)	data - Decimal Number (8 Chars, 2 Decimals)
AI	Water Sampling Point (Yes/No)	Select from pick list: domWellWaterSamplingPoint
AJ	Chamber top material	Select from pick list: domWellChamberTopMaterial
AK	Screen Material	Select from pick list: domWellScreenMaterial
AL	Casing Material	Select from pick list: domWellCasingMaterial

include a mesh screen to prevent particulate ingress, a steel casing to support the walls and a surface seal to prevent contaminants flowing down the outside of the casing to contaminate the aquifer.

Asset Position
X Y

AM	Internal Diameter of Well in mm	data - Decimal Number (10 Chars, 3 Decimals)
AN	Well is Artesian or not	Select from pick list: domWellArtesian
AO	Well Static level range (meters)	data - Text (30 Characters)
AP	Well rising column length in meters	data - Text (30 Characters)
AQ	Well rising column diameter mm	data - Decimal Number (10 Chars, 3 Decimals)
AR	Well delivery to	Select from pick list: domWellDeliveryTo
AS	Consent Abstraction rate L/s	data - Decimal Number (15 Chars, 4 Decimals)
AT	Aquifer	Select from pick list: domWellAquifer
AU	Depth in meters	data - Decimal Number (15 Chars, 4 Decimals)
AV	Design Draw Down	data - Decimal Number (5 Chars, 2 Decimals)
AW	Free Flow Rate (m3/h)	data - Decimal Number (5 Chars, 2 Decimals)
AX	ECan Bore Number (XX/nnnnn)	data - Text (30 Characters)
AY	Consent Expire Date	data - Date (dd/mm/yyyy)
AZ	ECan Consent Number	data - Text (30 Characters)
BA	Casing Length in meters	data - Decimal Number (15 Chars, 4 Decimals)
BB	Screen Length in meters	data - Decimal Number (15 Chars, 4 Decimals)
BC	Depth of wellhead Chamber (m)	data - Decimal Number (8 Chars, 2 Decimals)

Additional Information

*All other columns must be left "blank" or hold the value "LEAVE BLANK" as default in CAT
See Appendix C.1.2 for a CAT example.

SAP Object Type: WELL
SAP Class Type: WELL (003)
Represented in GIS: YES
GIS Model: TBC

Classification Information:

1. Well Head to Ground Level
   [SAP Characteristic Name = ZPM_WELLHEAD, CHAR, SAP Picklist below]
   Description: The location of the wellhead to ground level.
   Data Entry: 30 Characters

   a) ABOVE
   b) BELOW

2. Security Cage
   [SAP Characteristic Name = ZPM_SECURITYCAGE, CHAR, SAP Picklist below]
   Description: Does the well have a security cage?
   Data Entry: 7 Characters

   a) YES
   b) NO

3. Depth of Well Head Chamber
   [SAP Characteristic Name = ZPM_WELLHEADDEPTH, NUM]
   Description: The vertical distance from the head to bottom of the chamber.
   Unit: m
   Data Entry: 7 Characters, 2 Decimal place

4. Well Purpose
   [SAP Characteristic Name = ZPM_WELLPURPOSE, CHAR, SAP Picklist below]
   Description: The purpose of the well
   Data Entry: 30 Characters

   a) PUBLIC - POTABLE WATER
   b) NON-PUBLIC - WASTE WATER SERVICE
   c) NON-PUBLIC - PLANT PROCESSES
   d) NON-PUBLIC - IRRIGATION

5. Lockable Chamber
   [SAP Characteristic Name = ZPM_LOCKABLECHAMBER, CHAR, SAP Picklist below]
   Description: Is the well chamber lockable?
   Data Entry: 10 Characters

   a) YES
   b) NO

6. Chamber top Alarm

[SAP Characteristic Name = ZPM_CHAMBERTOPALARM, CHAR, SAP Picklist below]
Description: Does the chamber have an alarm?
Data Entry: 10 Characters

a) YES
b) NO

7. Chamber Diameter
   [SAP Characteristic Name = ZPM_CHAMBERDIAMETER, NUM]
   Description: The diameter of the Chamber well.
   Unit: m
   Data Entry: 8 Characters, 2 Decimal place

8. Chamber Top AGL (above ground levels)
   [SAP Characteristic Name = ZPM_CHAMBERTOPAGL, NUM]
   Description: The vertical distance from the ground to the top of the chamber.
   Unit: m
   Data Entry: 8 Characters, 2 Decimal place

9. Water Sampling Point
   [SAP Characteristic Name = ZPM_SAMPLINGPOINT, CHAR, SAP Picklist below]
   Description: Does the Chamber have a sampling point?
   Data Entry: 10 Characters

   a) YES
   b) NO

10. Chamber top material
    [SAP Characteristic Name = ZPM_CHAMBERTOPMATERIAL, CHAR, SAP Picklist below]
    Description: The material of the chamber top.
    Data Entry: 30 Characters

    a) ALUMINIUM
    b) CAST IRON

11. Screen Material
    [SAP Characteristic Name = ZPM_SCREENMATERIAL, CHAR, SAP Picklist below]
    Description: The well screen material. Well screen is a filtered device that permits water to enter the well from the saturated aquifers.
    Data Entry: 30 Characters

    a) MILD STEEL
    b) PVC
    c) STAINLESS STEEL
    d) UNKNOWN
    e) STEEL

12. Casing Material
    [SAP Characteristic Name = ZPM_CASINGMATERIAL, CHAR, SAP Picklist below]
    Description: The casing material of the chamber. The well casing supports the walls of the well and prevents surface water from entering the well.
    Data Entry: 30 Characters

    a) WELDED LINE PIPE
    b) EPOXY COATED FIBER GLASS REINFORCED PLASTIC
    c) UNKNOWN
    d) STEEL
    e) STEEL-EPOXY
    f) STEEL-MILD

13. Internal Diameter
    [SAP Characteristic Name = ZPM_WELLINTDIAMETER, NUM]
    Description: Internal diameter of the well casing.
    Unit: mm
    Data Entry: 10 Characters, 3 Decimal place

14. Well is Artesian or not
    [SAP Characteristic Name = ZPM_ARTESIAN, CHAR, SAP Picklist below]
    Description: Well from which water flows under natural pressure without pumping.
    Data Entry: 7 Characters

a) YES
b) NO

15. Well Static level range
    [SAP Characteristic Name = ZPM_WELLSTATICLEVELRANGE, CHAR, SAP Picklist below]
    Description: The level range at which the level of water in a well is under normal, undisturbed, or no-pumping conditions.
    Data Entry: 30 Characters

16. Well rising column length
    [SAP Characteristic Name = ZPM_WELLRISINGCOLMNLNTH, CHAR, SAP Picklist below]
    Description: The vertical distance of the rising main. The rising main is the pipe attached to the submersible pump at the bottom of the well.
    Data Entry: 30 Characters

17. Well rising column diameter
    [SAP Characteristic Name = ZPM_WELLRISINGCOLMNDIA, NUM]
    Description: The internal diameter of the rising main. The rising main is the pipe attached to the submersible pump at the bottom of the well.
    Unit: mm
    Data Entry: 10 Characters, 3 Decimal place

18. Well delivery to
    [SAP Characteristic Name = ZPM_DELIVERYTO, CHAR, SAP Picklist below]
    Description: Where is the water from the well delivered?
    Data Entry: 30 Characters

    a) SUCTION TANK
    b) RETICULATION
    c) RESERVOIR
    d) PUMPS

19. Consent Abstraction rate
    [SAP Characteristic Name = ZPM_ABSTRACTIONRATE, NUM]
    Description: The consent abstraction rate of the well is the volume of water extracted per unit time.
    Unit: L/s

Data Entry: 15 Characters, 4 Decimal place

20. Aquifer
    [SAP Characteristic Name = AQUIFER, NUM, SAP Picklist below]
    Description: Which aquifer is the well abstracting groundwater? Christchurch has five artesian aquifer.
    Data Entry: 1 Character

    a) 1
    b) 2
    c) 3
    d) 4
    e) 5

21. Depth
    [SAP Characteristic Name = DEPTH, NUM]
    Description: The vertical distance from the ground surface to the bottom of the bore hole.
    Unit: m
    Data Entry: 15 Characters, 4 Decimal place

22. Design Draw Down
    [SAP Characteristic Name = DESIGNDRAWDOWN, NUM]
    Description: The designed drop in level of water in a well when water is being pumped.
    Unit: m
    Data Entry: 5 Characters, 2 Decimal place

26. Free Flow Rate
    [SAP Characteristic Name = FREEFLOWRATE, NUM]
    Description: The volume of groundwater raised from the aquifer per hour under natural pressure. This is applicable to artesian well only.
    Unit: m^3/h
    Data Entry: 5 Characters, 2 Decimal place

27. ECAN Bore number
    [SAP Characteristic Name = ECANBORENUMBER, CHAR]

Description: Environment Canterbury (ECan) is responsible for managing Canterbury's natural resources. Bore compliance report is an approval from ECan and is given a bore number.
Data Entry: 30 Characters

28. Consent Expire Date
    [SAP Characteristic Name = CONSENTEXPIREDATE, DATE]
    Description: The expiry date of the resource consent.
    Data Entry: 10 Characters

29. ECan consent Number
    [SAP Characteristic Name = ECANCONSENTNUMBER, CHAR]
    Description: Environment Canterbury (ECan) is responsible for managing Canterbury's natural resources. A resource consent is a written approval from ECan to carry out a project that has an impact on the environment and every resource consent is given a number.
    Data Entry: 30 Characters

27. Casing Length
    [SAP Characteristic Name = CASINGLENGTH, NUM]
    Description: The vertical distance of the well casing. The well casing supports the walls of the well and prevents surface water from entering the well.
    Unit: m
    Data Entry: 15 Characters, 4 Decimal place

28. Screen Length
    [SAP Characteristic Name = SCREENLENGTH, NUM]
    Description: The vertical distance of the screen. Well screen is a filtered device that permits water to enter the well from the saturated aquifers.
    Unit: m
    Data Entry: 15 Characters, 4 Decimal place