

2015

Submersible 2 Pump Wastewater Pumping Stations



Record of Changes and Amendments

Amendment Number	Amendment Date	Document Section/Clause Reference Number	Document Section/Clause Header	Brief Summary of Change	Document Version Number
001	July 15	N/A	N/A	Procurement Issue	1.0
002	August 15	Drawings	N/A	Drawings embedded	1.1
003	Sept 15	N/A	N/A	Upversion for Implementation	2.0

The terminology used throughout this document is defined below:-

- “Modular Assembly Fabricator” – The supplier of the standard product as detailed within this documentation.
- “Designer” – The party who is selecting the standard product for use and completing the appropriate site specific design documentation. This may be a Consultant, SW Asset Planner, Developer, Contractor or other.
- “Contractor” – This is the party who are responsible for the overall project / site, for example one of Scottish Waters Framework Alliance Partners or Tier 1 Contractors.
- “Standard Product” – a complete item of plant consisting of a number of sub-assemblies and components. For example in this case the Standard Product includes the motor control centre (MCC) and kiosk as a sub assembly which could be omitted when the standard modular product is installed on an existing site.
- “Sub-Assembly” – individual parts of the Standard Product which can be provided in isolation and / or excluded from the installation in certain circumstances.
- “Component” – a single item of plant such as a pump, a valve, the kiosk, etc.



Pumping Station Product Catalogue | Foreword

Background

This Scottish Water Product Catalogue outlines the Wastewater Pumping Station Standard Products for use within the SW Project Portfolio.

The intention of this product catalogue is to act as a design and procurement reference for resources working on Scottish Water projects as a basis for compliant submissions.

The products are designed to meet the present and future business direction and further facilitate strategic development. Each product is pre-approved and requires no further acceptance unless requirements dictate alterations to the products which will instigate the standard acceptance procedure(s).

The underlying philosophy of the catalogue concept is a homogeneous group of compliant, selectable, products with pre-defined capabilities. A user friendly hierarchal product selection matrix and datasheet accompanies the product range for use within the Scottish Water Supply Chain.

The concept of selectable 'Products' is the prime focus with the constituent hardware extensible to incorporate developments and supplier efficiencies.

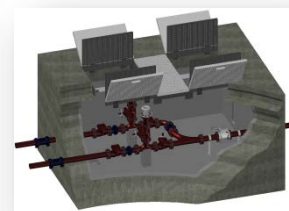
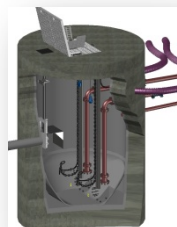
Product Intention

The pumping station products are designed for factory assembly, testing and transportation to site as a series of assemblies. They are intended to be utilised for network pumping stations and interstage/inter-site pumping stations located within secure Wastewater Treatment Sites (WwTW).

The standard products are suitable for the majority of pumping station applications; they may not be suitable for applications where specific exotic, corrosive industrial or commercial effluents are present.

Assembly

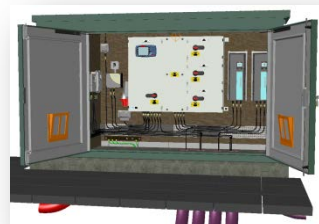
The pumping station products consist of five key assemblies and selectable components, namely;



Wet Well and Valve Chamber



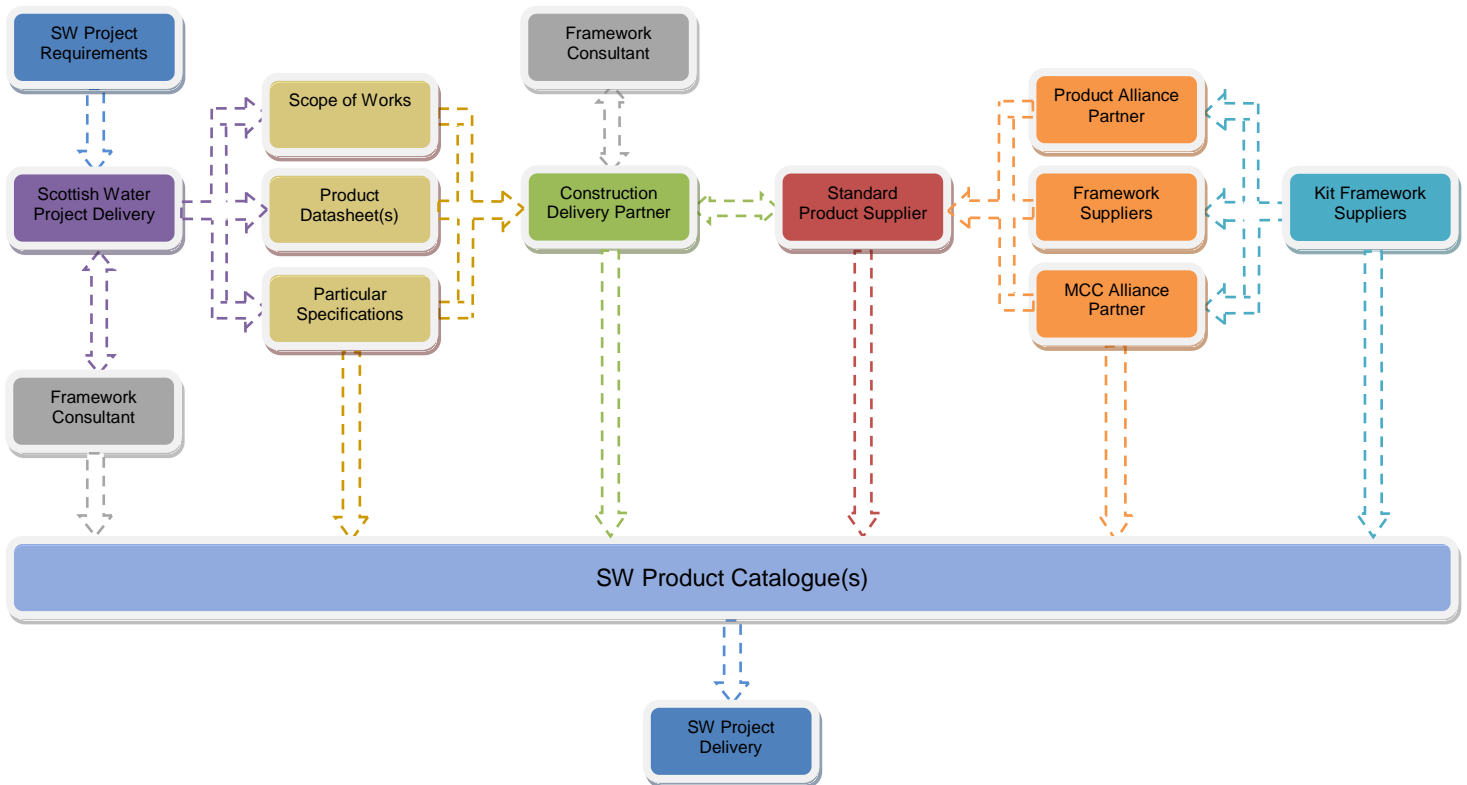
2 no. Pumps (Duty/Standby)



MCC and Kiosk

The MCC and Kiosk are sourced from the SW MCC Catalogue; these components can be tailored to suit specific applications, if required. The baseline MCC and Kiosk products chosen for the pumping stations are detailed in the associated sections herein.

SW Product Catalogue(s) - Singular Delivery Reference



Singular Reference

The above graphic highlights the intended usage through the supply chain for SW Product Catalogue(s).

The product catalogues function as singular points of reference for pre-designed and approved products.

This approach alleviates a significant proportion of the cost associated with design delivery and further targets appropriate assets for the end user.

The designs detailed therein are also a key medium in conveying the purchaser requirements as an extension of the SW Standards and Specifications.

Delivery Model

The product catalogues are tailored to suit the prescribed delivery model whereby the contents complement the transfer of requirements from purchaser, through supply chain, to project delivery for use by the end user.

Visibility

Visibility of the end product from project concept to delivery fosters a right first time approach and facilitates the ownership prospect.

Involvement

Manufacturer and supplier developments can further be incorporated through feedback and continuous improvement.

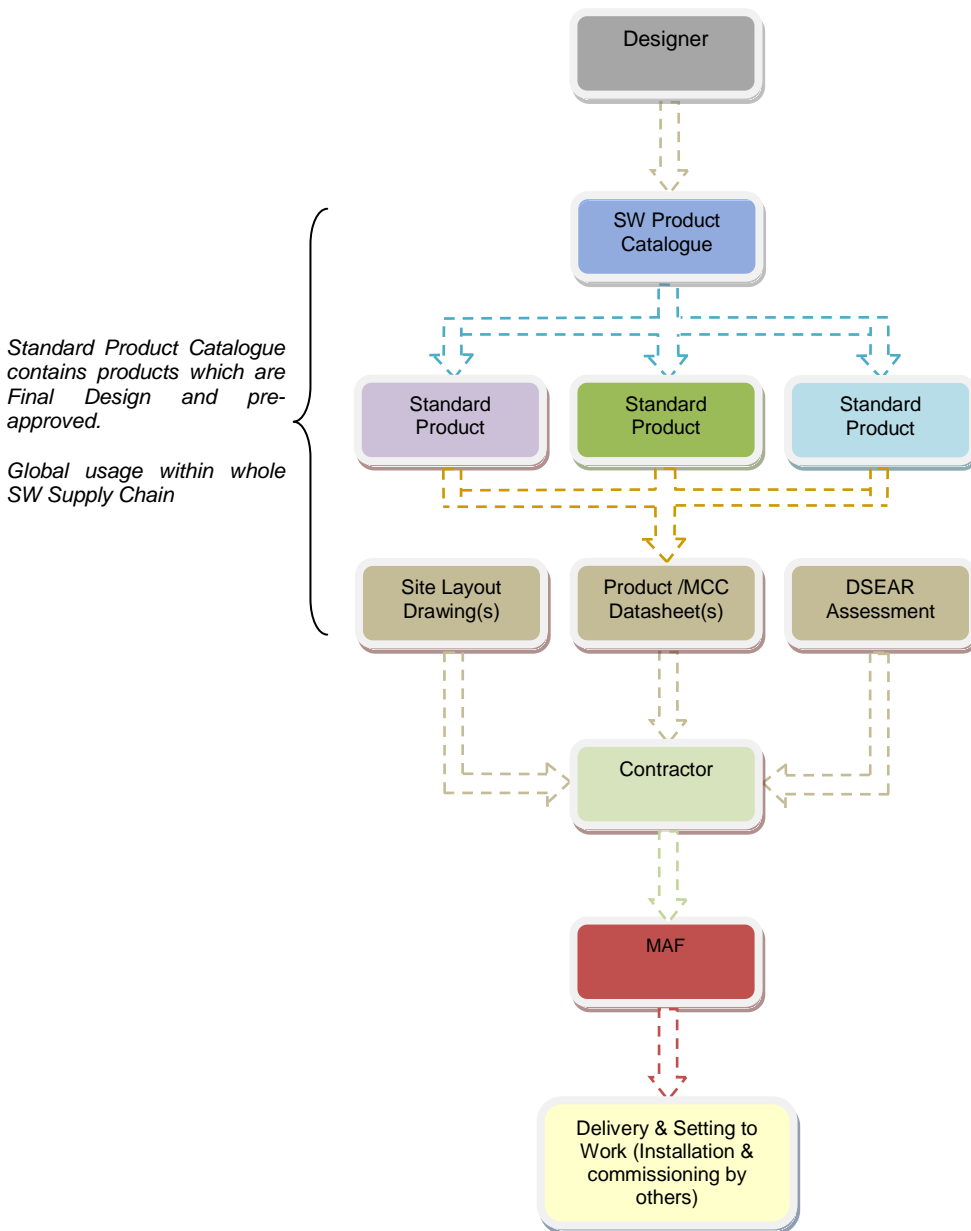
Standard Product Supplier

This development utilises, tiered, alliance partners and standard product suppliers for equipment, products and assembly.

Operational Risk/Acceptability

An underlying intention of this approach is to ensure the correct and appropriate asset is delivered, installed, commissioned and set to work without the introduction of circular re-design, preferential engineering or non-compliances.

Standard Product Catalogue Usage



Standard Products

The above graphic demonstrates the usage of the standard product within the design delivery process and the natural flow of information through the involved parties.

Owing to the prescribed process there is no requirement for circular issuing of documentation, for acceptance, through the supply chain unless deviating from the product detail; this later approach will instigate the acceptance process and introduce cost.

Specifying product usage is a fundamental deviation in approach to designing from basis; the onus lies with the Designer to ensure they have completed the exercise appropriately and not rely on any detailed design being completed By Others.

Usage

The standard product catalogue already contains the final design information for the assemblies; site layout drawing(s), hazardous area(s) and product selection datasheets are all that is required to complete the procurement process.



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Standard Product Conceptual Overview

The graphics in this section are conceptual and do not purport to contain all requirements for construction, installation, health, safety or delivery. The actual Standard Products and details thereof are contained within the relevant section(s); the purpose of this section is to convey the principal only.



Initial site preparation, excavation and pouring of base slabs.



Installation of wet well and valve chamber, followed by pouring of concrete surround.



Installation of cover slabs, back fill and re-instatement of surrounding area.

The above conceptual graphics highlight the standard product principal from a site installation perspective; these key activities cover procurement to completion with the intention being a seamless process. The principal details required for the Designer and Contractor are contained within the Standard Product Section(s).

The products are specified through the associated datasheet(s) and do not require further acceptance from the purchaser other than ongoing Quality Assurance (QA) inclusive of the required site installation activities.

The proceeding pages explore the process in greater depth prior to focusing on the actual products.

Standard Product Delivery



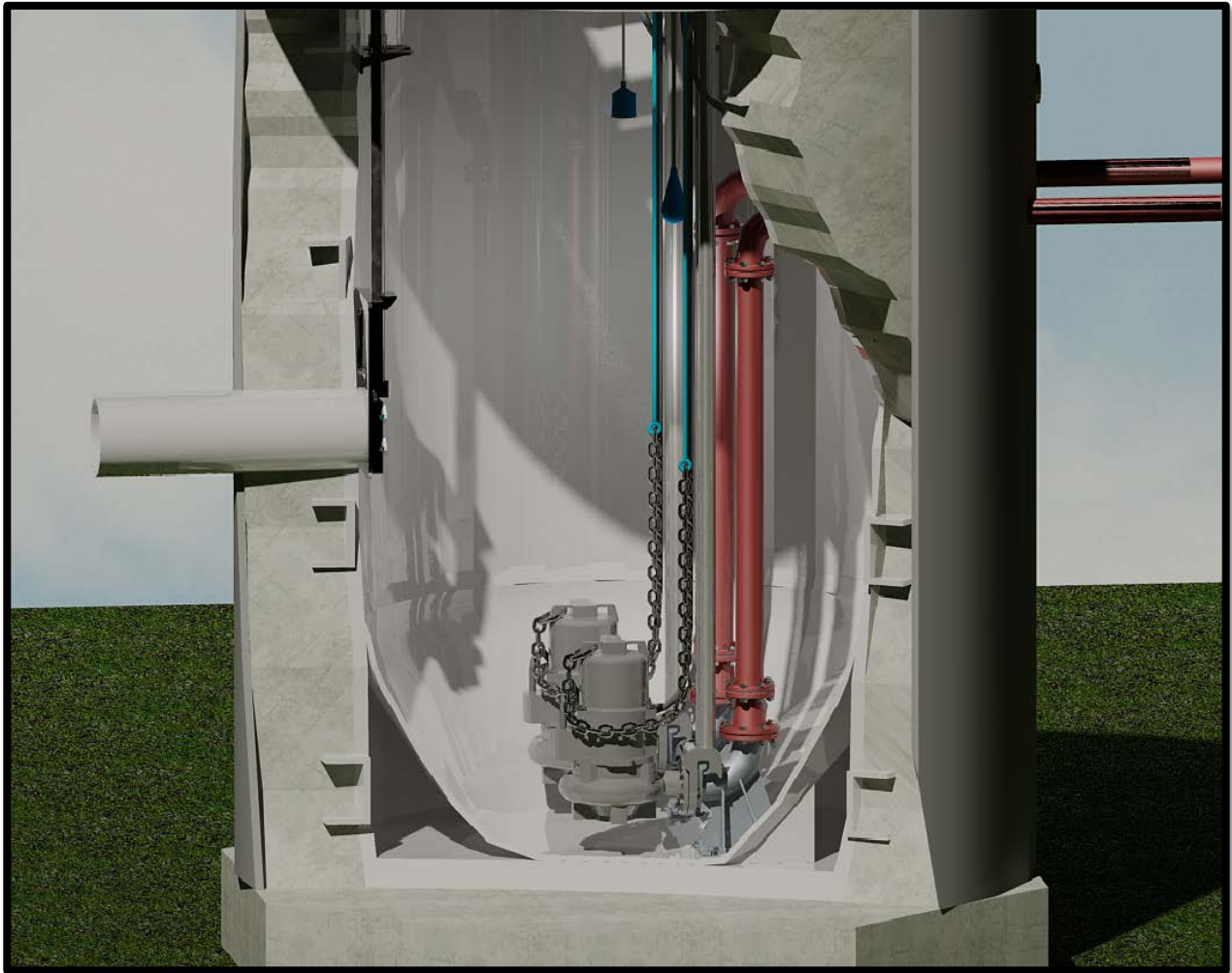
Standard Product ready to be delivered (Ex Works)

Pumping Station Standard Products are intended to be delivered as complete sub-assembly packages; the above conceptual graphic demonstrates the planned delivery method.

The standard product sub-assembly components shown are the following;

- Pumping Station Wet Well + Pumps;
- Pumping Station Wet Well Roof Slab;
- Valve Chamber;
- Valve Chamber Roof Slab;
- GRP Kiosk (inc. Control Panel + SW Telemetry);
- Interconnection pipe work and VJ Couplings;

Standard Product Pumping Station Structures – Plastic Fabrication



Standard product fitted with manufacturers' pumps

The graphic shown above is the wet well structure for:

PS01b-VC01

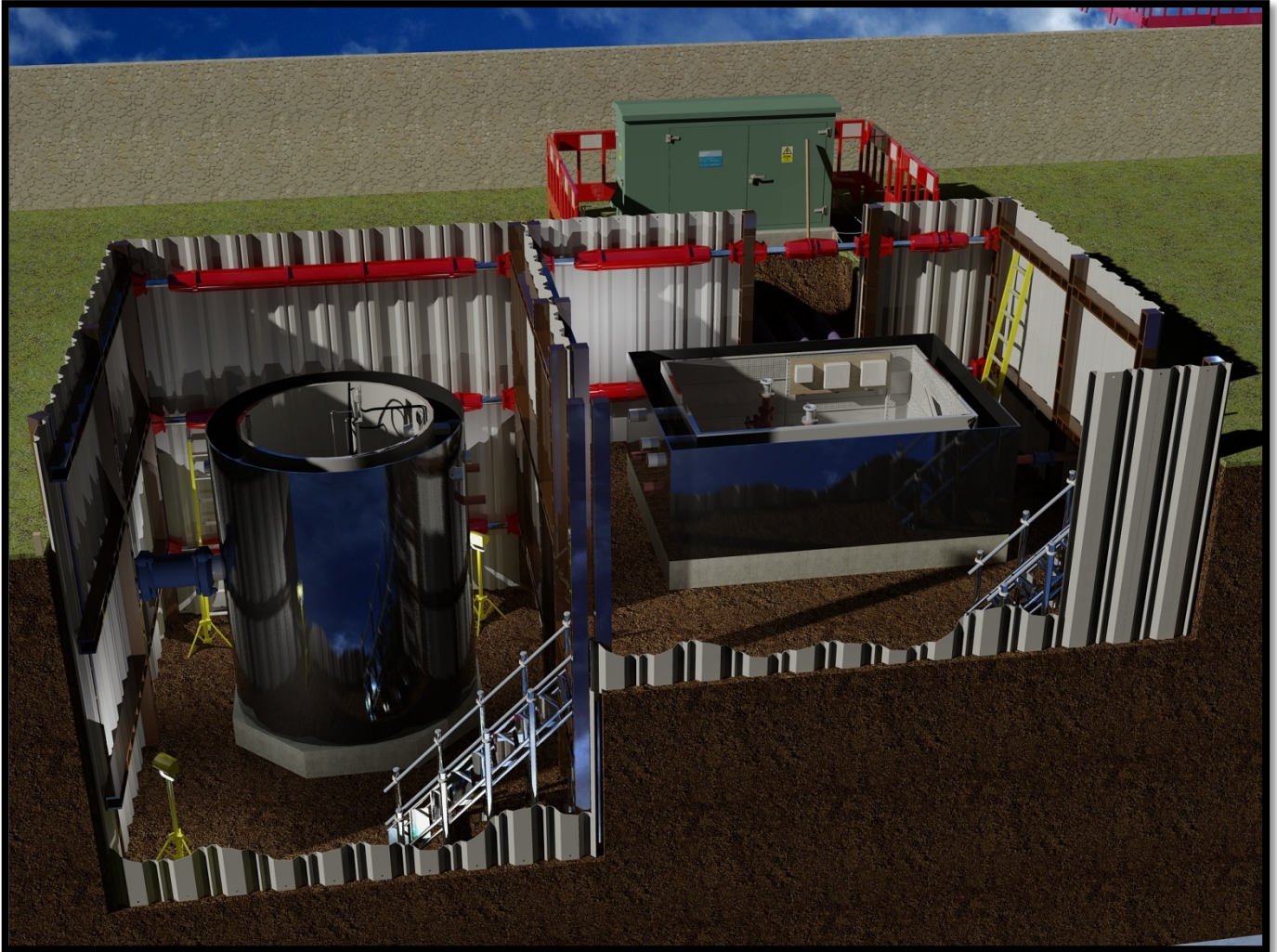
- Flow range of 5.0 to 14.0 l/sec; households served – typically up to 280 no.;
- Station pipework diameter of 100 mm;
- 2 no. Submersible pumps (Duty/Standby);
- Wet Well diameter of 2.10m (Internal);

Both structures share common components, for example:

- Wet well access covers;
- Inlet penstock arrangement;
- Baffle Plates;
- Instrumentation;

Standard Product Installation

The three standard product assemblies are delivered and installed on the pre-formed concrete bases (if required).



Site layout showing wet well, valve chamber and sacrificial shuttering (details omitted)

The kiosk requires to be bolted to the base slab and sealed with water repellent infill; the wet well and valve chambers require to be aligned inclusive of the inlet/outlet pipework. Lifting points and installation details will be provided by the standard product supplier.

The invert level of the wet well is a variable which requires to be defined in the datasheet; there is no default value.

Prior to delivery to site and in addition to all other documentation required by the SW Specifications; the Standard Product Supplier will undertake testing and issue the following:-

- Factory self certification testing of the individual sub-assemblies and the completed standard product;
- Submersible pumps will be “type tested”; witness testing will not be required. Type test certificates to be provided with the supply;
- Pipework modules (Wet Well and Valve Chamber) will be flushed and pressure tested with completed test certificates provided. Pressure Testing will be hydrostatic as defined in WIMES 8.03 – Mechanical Installation clause 6.4.2 Pressure (Strength) Testing with the pressure test criteria defined in the site specific Standard Product Datasheet;

Setting to Work & Commissioning

This installation phase is now complete. Initially the MAF shall be responsible for setting the installation to work. This will then be followed by the formal commissioning process which will be undertaken by the Contractor.



Site layout showing completed back filling; ready for commissioning (details omitted)

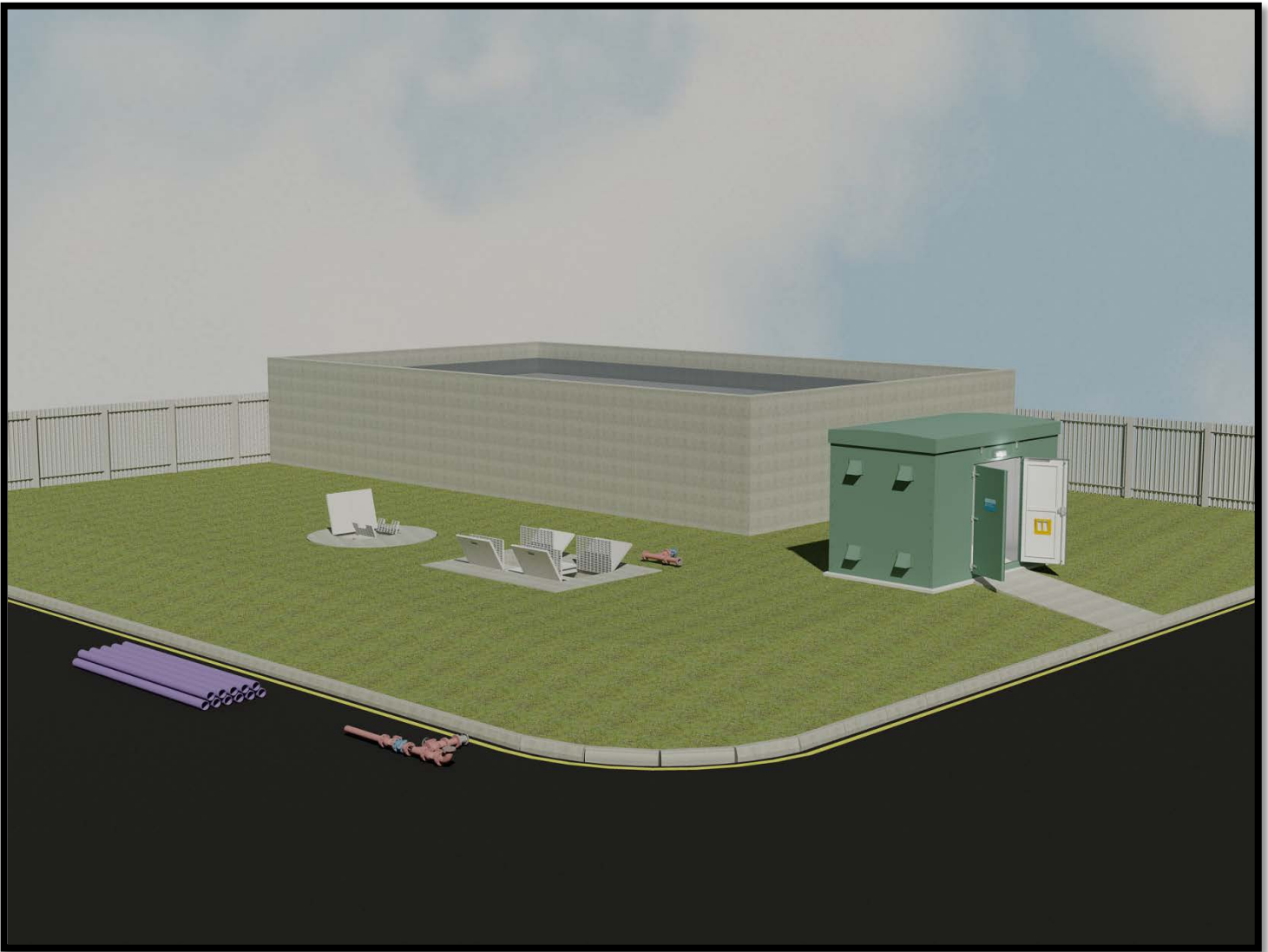
The MAF will carry-out setting to work of the standard product following delivery and the completed site installation including:-

- Dry testing of plant & equipment including safety and regulatory checks;

Following setting to work, the Contractor will carry out the commissioning of the standard product including but not limited to:-

- Wet testing that will demonstrate functionality of the standard product as an integrated package including operation of the pumps in conjunction with the rising main to confirm pump duty point and system curve. The Contractor will provide water for testing and dispose of any arisings;
- Commissioning that will include completion of a 1 Month Reliability/Functionality Test;
- Site Acceptance Test demonstrating full functionality of the individual sub-assemblies and complete standard product inclusive of offsite SW Telemetry;

Control System & Treatment Site Interface



Standard Product installed on Treatment Works using KS07

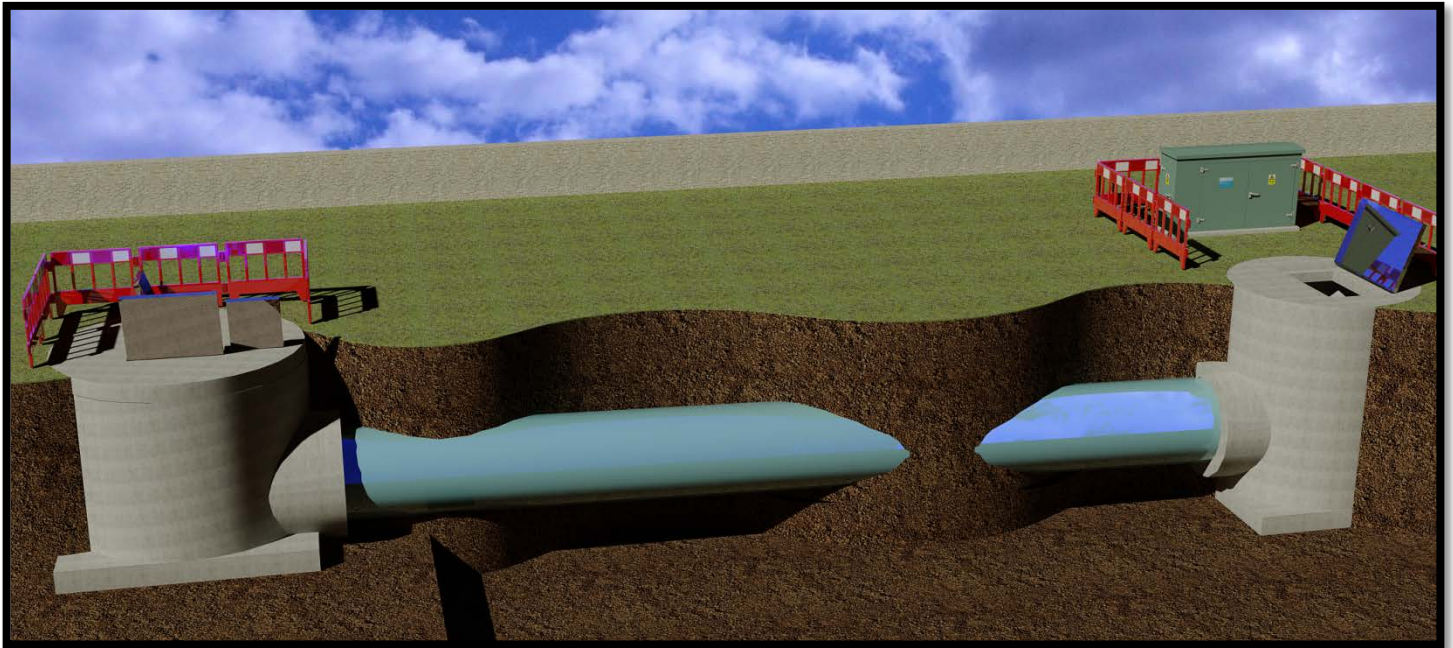
When installed as a standalone network site, the pumping station is controlled by a dedicated Local Control Panel (LCP) that will provide full local operator monitoring & control and standard interfaces with the SW Telemetry system.

When installed on a treatment works site the MCC, GRP Kiosk and SW Telemetry sub-assemblies may be omitted from the standard product and addressed as part of the overall project scope; this would be detailed by the Designer in the product datasheet(s).

The above graphic shows an example site installation utilising KS07 (SW MCC Catalogue); the installed panel would incorporate the 2 no. MCC Cubicles required for the pumps, instrumentation and integrate the PLC Software modules and HMI application configuration within the site control node.

The modularity and extensibility of the PLC sub system facilitates seamless integration of the developed standard product software for the pumping station; there is no requirement to develop site specific product software with this approach unless the project specifically requires additional functionality.

CSO & Pumping Station Support

*Unsupported CSO & Pumping Station Installation*

Combined Sewer & Overflow's (CSO) installations which further incorporate standard pumping stations are supported by the standard products; CSO's which utilise storage or pipelines between the CSO and Pumping Station are not presently supported by the standard products (shown above).

Standard Product Baseline

This standard product catalogue contains a number of pumping station products based on duty/standby pumps and associated equipment; full details are contained within the relevant product sections.

Within these sections are a number of framework supplier components; the standard product supplier will order, manufacture, assemble and factory test the complete standard product as an integrated assembly prior to transport. Offloading and site installation (fixing in place) will be the responsibility of the site contractor.

There are 3No. standard sizes of wastewater pumping station which cover flow rates from 0 l/s to 56 l/s. The standard sizes are as follows:

PS01-VC01

- Flow range of 0 to 14 l/s
- Wet Well pipework – option 'a' 80mm (0 to 5 l/s)
- Wet Well pipework – option 'b' 100mm (5 to 14 l/s)
- Valve Chamber pipework – 100mm (no options)
- Wet Well diameter 2.10m (internal)

PS02-VC02

- Flow range of 14 to 32 l/s
- Wet Well pipework – 150mm
- Valve chamber pipework – 150mm
- Wet Well diameter 2.50m (internal)

PS03-VC03

- Flow range of 32 to 56l/s
- Wet Well pipework – 200mm
- Valve Chamber pipework – 200mm
- Wet Well diameter 3.00m (internal)

Sub-Assemblies

The sub-assemblies (including their relevant component parts) incorporated within the baseline standard product are:-

- MCC and associated GRP Kiosk;
- Wet Well and pumps, pipework, covers, etc;
- Valve Chamber and pipework, valves, covers etc;

Limit of Supply

The baseline standard product pumping stations, as supplied, include the following:

- HDPE wet well supplied complete with integral, sacrificial shuttering for pouring of concrete surround; complete with all required valves, pipework, cover slabs with access covers and miscellaneous equipment pre-installed;
- HDPE valve chamber supplied complete with integral, sacrificial shuttering for pouring of concrete surround; all required valves, pipework, cover slabs complete with access covers and miscellaneous

- equipment pre-installed;
- Motor Control Centre, Kiosk and associated fit-out;
- 2 no. Submersible centrifugal pumps (Duty/Standby);
- Pipework and fittings required between the wet well and valve chamber;
- All field cabling and instrumentation to complete the standard product, inclusive of onsite wiring and connection of plant and equipment for the product;
- Local lifting facilities for each pump (excluding portable lifting equipment);
- Telemetry Installation and Testing;
- Testing & Setting to work;
- Documentation including O&M manual template;
- Pump Chain Lifting Adaptor (PCLA);
- Pump Lifting Chains;

The following items will be completed by the assigned Construction Delivery Partner and are specifically excluded from the scope of the standard product supply:

- All excavations, including any associated de-watering;
- Construction of base slabs for the wet well, valve chamber and kiosk;
- Site installation of the kiosk, wet well, valve chamber and associated cover slabs;
- Pouring of the concrete surrounds or bases;
- Ducts and draw pits etc. external to the standard product, i.e. incoming power supply, phone line and interconnecting ducts between the various sub-assemblies;
- All new roads, access paths, bollards, turning and parking areas etc;
- Incoming power supply, phone line and site wide network connections;
- Main earthing (electrical) installation (surveys, mats/rods, ducts, etc.) out with the standard product;
- Site Flooding Risk Assessment;
- Harmonic Mitigation;
- CSO / EO requirements;

The supplier of the standard pumping station assemblies will confirm the tolerances required for the base slabs within the detailed drawings.

CSO panels or Septicity dosing arrangements do not form part of the pumping station standard product, however, on a site specific basis these additional product sub assemblies may be utilised with some minor modifications to accommodate the control interface.

Key Selection Data

The pumping station size selection is based on a series of flow ranges which have been calculated to maintain the velocity in the station pipework to within the range 0.75-1.80 m/s as per Scottish Water Specifications.

The submersible pumps listed within are selected from the Scottish Water Framework Suppliers as defined in the product section and to suit site specific flow and head requirements.

The basis of the selection will be the pump size in relation to the wet well size and the requirement for the pump to operate between 85% and 105% of the pumps' best efficiency point.

MCC & Kiosk Selection

Baseline MCC and GRP Kiosk selections are detailed within the product section and are pre-selected to offer an appropriate solution; albeit, the whole of the SW MCC Catalogue is available to allow alternative selections for project specific requirements.

See table below.

Instrumentation

The standard product contains the following baseline instrumentation;

- o 1 no. Ultrasonic (Siemens Hydromanager 200)
- o 1 no. High Level Float Switch (Triton)
- o 1 no. Outlet Flowmeter (Siemens or ABB)

The above instruments are supplied as part of the standard product supply.

Site Specific Requirements

The standard product supplier will procure, manufacture, supply, install, test and commission each sub assembly to meet the Site Specific requirements defined within the Standard Product Datasheet(s).

The requirements will be detailed within the following selection documents:

- o Pumping Station Standard Product - Datasheet;
- o SW MCC Product Catalogue - Datasheet;
- o Site Specific General Arrangement drawing: showing kiosk location, duct routes, draw pits, valve chamber and wet well location;
- o DSEAR Report and Hazardous Area drawing (where applicable);

The above documents will be completed or provided by the Designer as part of the procurement process; they should not require any further design input unless specifically requested.

Selection of a standard pumping station by the Designer will incorporate three stages, namely:

- o Site specific pumps to be installed within the Wet Well;
- o Selection of the Wet Well/Valve Chamber Products;
- o Selection of the MCC and GRP Kiosk Products;

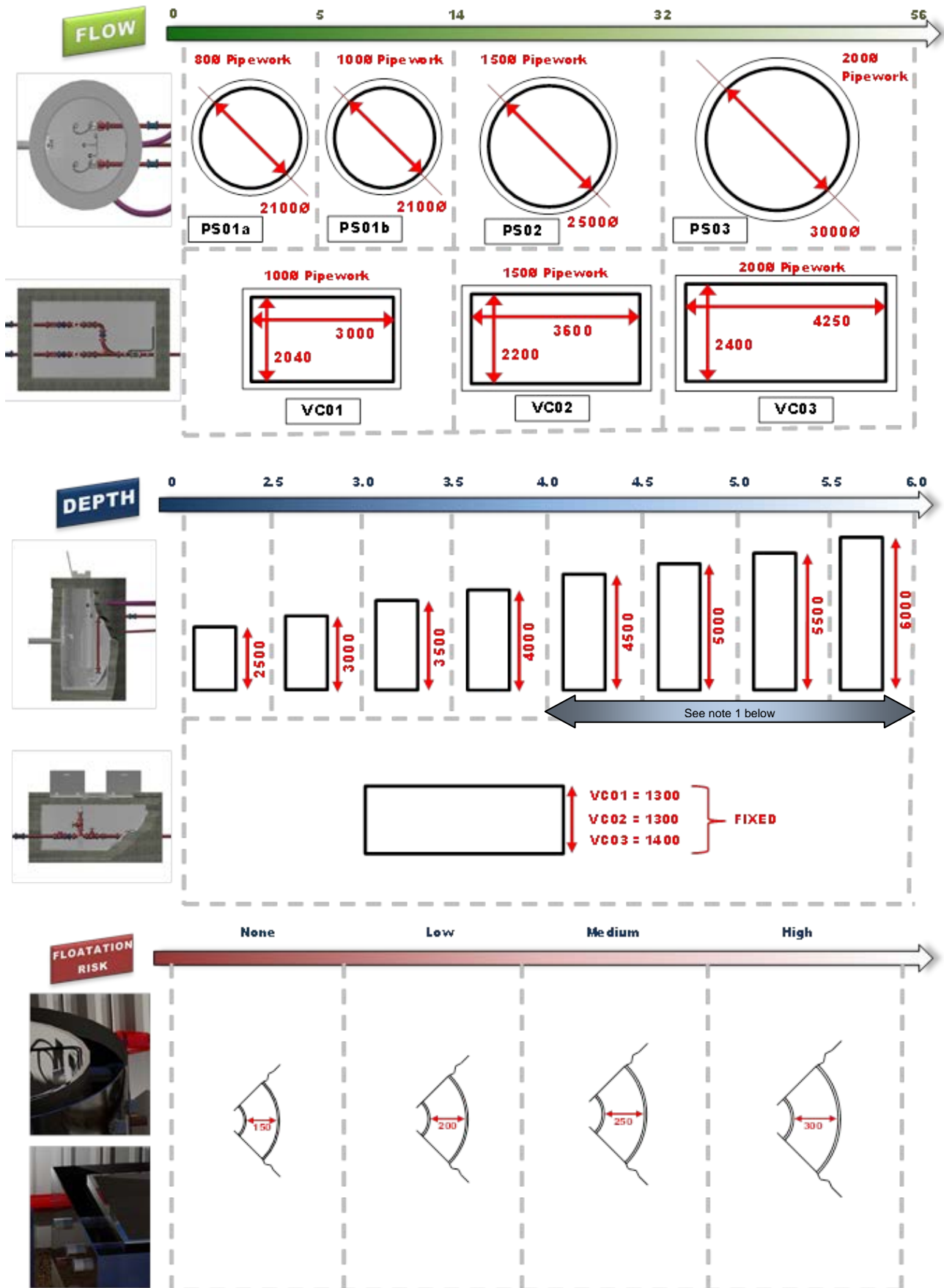
The following selection methodology outlines guidance for each stage of standard product installation

Motor Control Centre & Kiosk - Selection Chart

Drive Configuration	Pump Rating (kW)						Pumping Station Controller	General Arrangement	Generic Kiosk	Ultrasonic Level Controller Base Unit	Electromagnetic Flowmeter Base Unit	Services DB
	0	4	5.5	7.5	15	22						
DOL	Green	Green	Green	Red	Red	Red	SFS3-ULC	Form 1-TBD	TBD	ICA Section	MCC Kiosk	MIGI Section
STAR-DELTA	Red	Red	Green	Green	Red	Red	SFS3-ULC	Form 4-TBD	KS03	ICA Section	MCC Kiosk	MIGI Section
DOLR	Green	Green	Green	Red	Red	Red	WP01	GA01B	KS03	MCC Kiosk	MCC Kiosk	MIGI Section
	Green	Green	Green	Red	Red	Red	WP03	GA01B	KS03	MCC Kiosk	MCC Kiosk	MIGI Section
External VSD's	Red	Red	Green	Green	Red	Red	WP04	GA01B	KS12	MCC Kiosk	MCC Kiosk	MIGI Section
VSD's Internal to the MCC	Green	Green	Green	Red	Red	Red	WP02	GA01B	KS03	MCC Kiosk	MCC Kiosk	MIGI Section
	Green	Green	Green	Red	Red	Red	WP03	GA01B	KS03	MCC Kiosk	MCC Kiosk	MIGI Section
	Green	Green	Green	Red	Red	Red	WP05	GA01B	KS03	MCC Kiosk	MCC Kiosk	MIGI Section
VSD's Internal to the MCC	Red	Red	Red	Green	Green	Red	WP02	GA15-MIGI	KS07	ICA Section	ICA Section	Feeder Section
	Red	Red	Red	Green	Green	Red	WP03	GA15-MIGI	KS07	ICA Section	ICA Section	Feeder Section
	Red	Red	Red	Green	Green	Red	WP05	GA15-MIGI	KS07	ICA Section	ICA Section	Feeder Section

Key	
	Not Acceptable or Pump kW Rating Exceeds Panel Capacity
	Preferred

Selection Methodology



Note 1 – for depths greater than 4000mm there is an option to have the wet well delivered as two separate sections.

Standard Product Numbering System

Product Number – Pumping Station Standard Products

Component	Code	XXXX	XXXXX	XXXXXXXXX
Pumping Station	PS01a to PSxx			
Valve Chamber	VC01 to VCxx			
Pumps	XXX XX XXX			

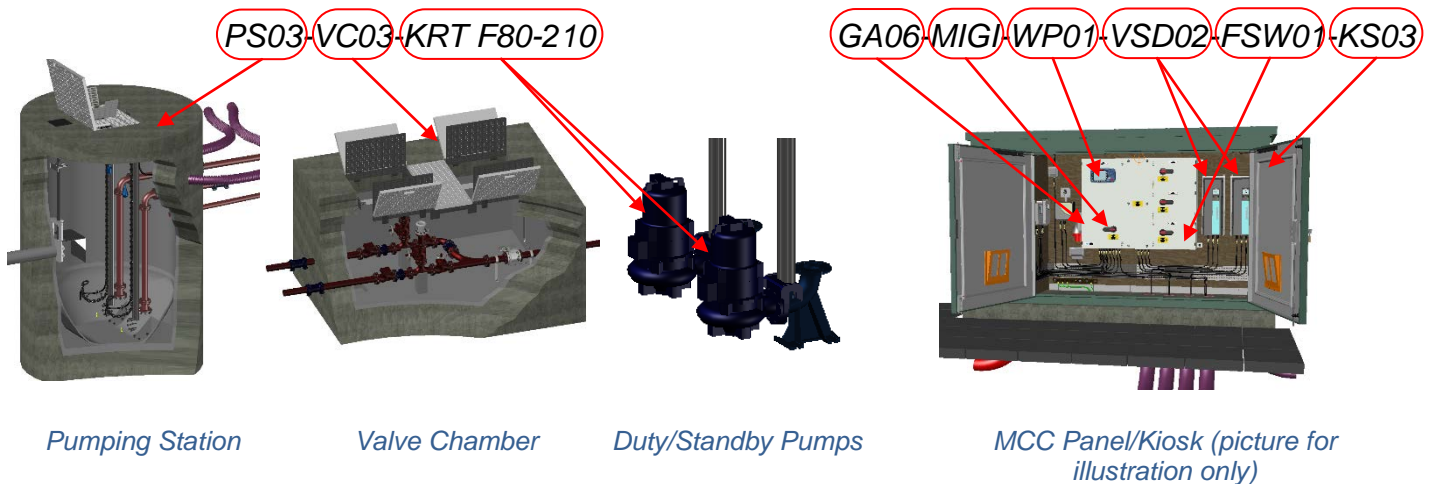
Example Pumping Station Standard Product selection can be;

PS03-VC03-KRT F80-210

Associated MCC & Kiosk selection would be;

GA06-MIGI-WP01-VSD02-FSW01-KS03

These selections would result in supply of the following components;



Points of note;

- Quantities are not required as it is implicit;
- Pump manufacturer part numbers are utilised to avoid duplicate reference;
- MCC and GRP Kiosk selection is via the SW MCC Datasheet;
- Depth of wet well as stated in the Product Datasheet;
- Hazardous Area is defined within the Product Datasheet;

The underlying intention of the product number approach is to facilitate ease of reference; the product delivery can be understood by quoting this number, for example;

PS02-VC02-NF100-220

This is pumping station product number two (PS02), valve chamber number two (VC02) and 2 no. KSB Pump(s) (NF100-220). All the component design details required by the Contractor and Supplier are contained within the Product Catalogue.

GA06-MIGI-WP01-VSD02-FSW01-KS03

This is general arrangement six (GA06) fitted with a mains/generator changeover switch (MIGI), using a Multismart pump controller (WP01), external variable speed drives (VSD02) and fuse switch feeder (FSW01); all fitted within kiosk number three (KS03).

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- Wet Well & Valve Chamber GAPage 19

Pumping Station PS01b & VC01

- Pumping Station Overview & Generic Layout IllustrationPage 20
- Wet Well & Valve Chamber GAPage 21

Pumping Station PS02 & VC02

- Pumping Station Overview & Generic Layout IllustrationPage 22
- Wet Well & Valve Chamber GAPage 23

Pumping Station PS03 & VC03

- Pumping Station Overview & Generic Layout IllustrationPage 24
- Wet Well & Valve Chamber GAPage 25

Control Panel & Kiosk Options

- Please refer to MCC Catalogue for Control Panel and Kiosk General Arrangements
- Please refer to MCC Catalogue for P&ID's and Single Line Diagrams

Pumping Station PS01a & VC01 - Wet Well and Valve Chamber

Features

PS01a (wet well)

- 2100mm diameter (internal)
- 80mm diameter pipework
- 2No. duty / standby submersible pumps
- Sacrificial shuttering (optional)
- Cover slabs
- Access covers

VC01 (valve chamber)

- 2040mm by 3000mm (internal)
- 100mm diameter pipework & valves
- 80:100mm taper external to chamber
- Sacrificial shuttering (optional)
- Cover slab
- Access cover

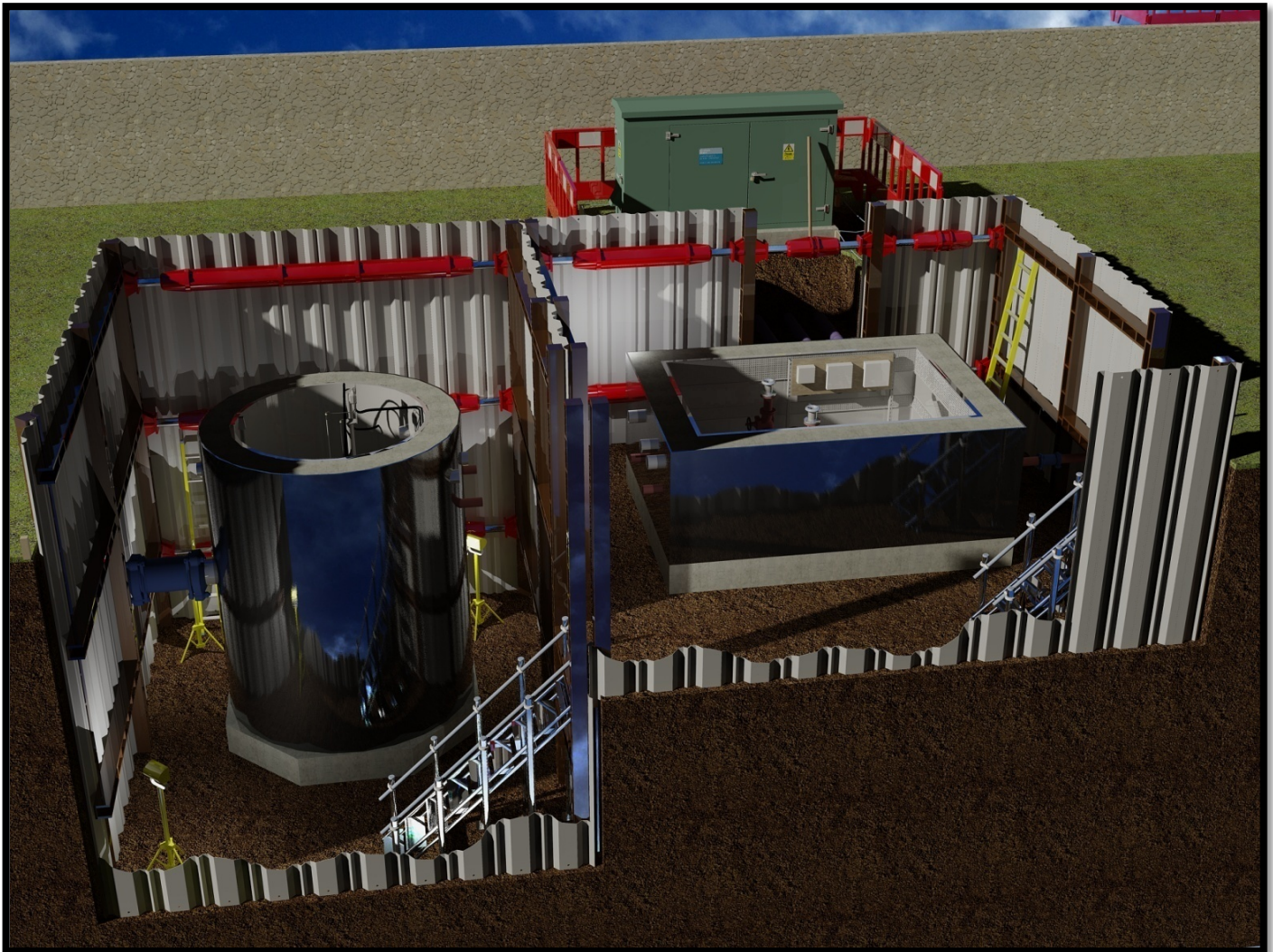
Applications

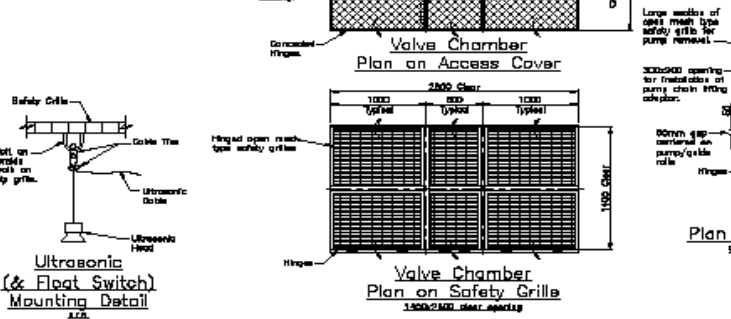
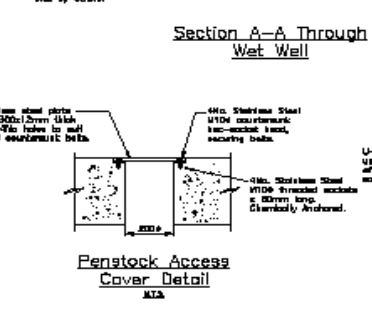
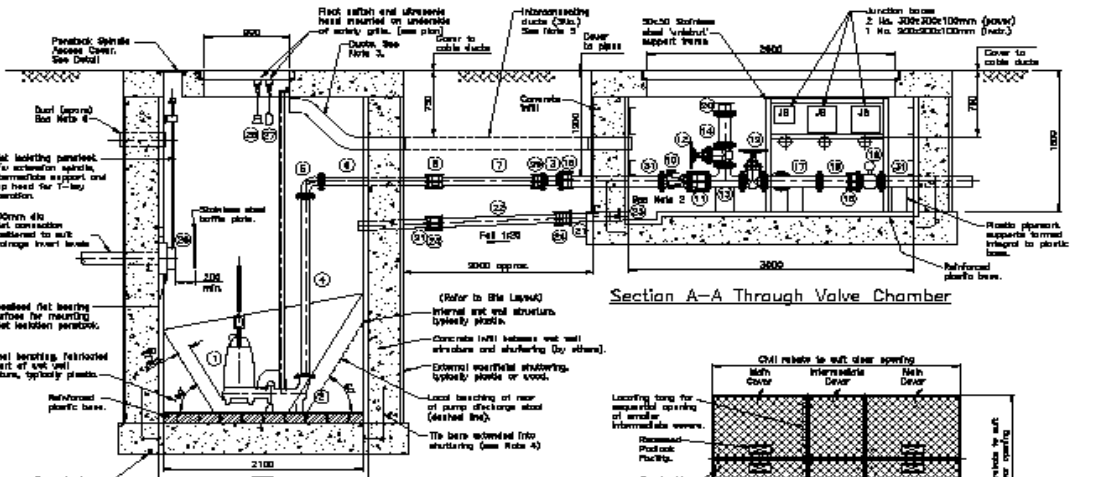
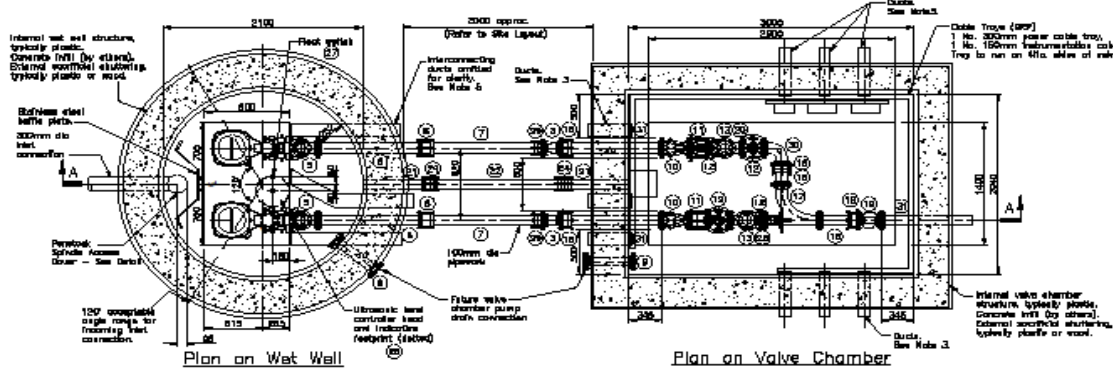
- Network PS
- Housing developments
- WWTW
- Etc.

Description

Small 2 pump wastewater PS. Can be used in isolation or as part of a new / existing treatment works site. Wet well and valve chamber can be provided individually if required.

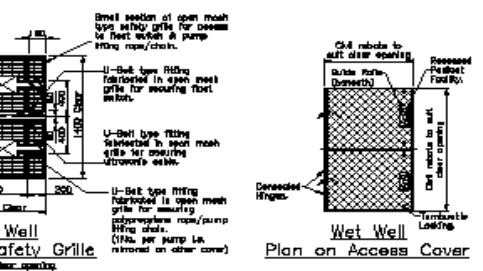
Associated MCC and kiosk to be selected to suit chosen pump size and any ancillary requirements.





Item No.	Description	Quantity	Notes
1	Submersible Sewage Pump	2	
2	Pump Effluent Regulator (300x200) Square Steel	2	
3	200 dia Flange to Spigot Pipe, 200mm Long	2	
4	30 dia 90° Short Radius Bend	2	Maximum individual pipe length = 2000mm. Multiple double flanged sections to suit wet well depth with appropriate section consisting of a single flanged pipe and self-restraining flange adaptor.
5	30 dia 90° Short Radius Bend	2	
6	30 dia Flange to Spigot Pipe, 100mm Long	2	Dut to suit, pipe to terminate 300mm from external face of shafting.
7	30 dia Double Spigot Roster Pipe 2000mm Long	2	Dut to suit.
8	30 dia Flexible Pipe Coupling	2	
9	30 dia Double Flanged Pipe, 200mm Long	2	o/n blank flange after weld.
10	100 dia Non Return Valve (Check Valve)	2	To be double iron with PN16 flange o/n lower stem in open mesh guard.
11	100 dia Descending Joint	2	
12	100 dia Gate Valve	4	To be double iron with PN16 flange o/n horizontal.
13	100x100x100 dia T-Place	2	
14	100 dia Double Flanged Pipe, 400mm Long	2	
15	100 dia Flange to Spigot Pipe, 200mm Long	1	Dut to suit.
16	100 dia Flange to Spigot Pipe, 200mm Long	1	Dut to suit.
17	100 dia 90° Restraining Flange (100x100)	4	
18	100x100x100 dia 90° T-Place	1	
19	100 dia Flange to Spigot Pipe, 100mm Long	1	Dut to suit.
20	100 dia Flange to Spigot Pipe, 200mm Long	1	Dut to suit.
21	100 dia Flange to Spigot Pipe, 100mm Long	1	Dut to suit.
22	300 dia Penstock, stainless steel construction, non-ferric stem.	1	Well mounted, off shafting type, max. pressure of 0.5 bar.
23	Ultrasonic Head (Clamson WFS10)	1	
24	Float Switch (Wilton LDR-15)	1	
25	100 dia Ferrous Bearer Coupling	1	Complete with cap.
26	300 dia Penstock, stainless steel construction, non-ferric stem.	1	Well mounted, off shafting type, max. pressure of 0.5 bar.
27	Ultrasonic Head (Clamson WFS10)	1	
28	100 dia Ferrous Bearer Coupling	1	Complete with cap.
29	100 dia 90° Restraining Flange (100x100)	2	
30	100 dia 90° Short Radius Bend	1	
31	100 dia Flange to Spigot Pipe, 100mm Long	3	Dut to suit.

Components Table



Scottish Water
Always serving Scotland better

SCOTTISH WATER SOLUTIONS
GENERAL APPROVALS OF THE FOLLOWING: [List of products]

Project Title: WASTEWATER PUMPING STATION STANDARD PRODUCT

Drawing No: WASTEWATER PUMPING STATION GENERAL APPROVALS OF THE FOLLOWING: [List of products]

Scale: 1:50

DATE: 09/02/2011

BY: [Name]

CHECKED BY: [Name]

APPROVED BY: [Name]

DATE: 09/02/2011

PROJECT: WASTEWATER PUMPING STATION STANDARD PRODUCT

DRAWING NO: WASTEWATER PUMPING STATION GENERAL APPROVALS OF THE FOLLOWING: [List of products]

SCALE: 1:50

DATE: 09/02/2011

BY: [Name]

CHECKED BY: [Name]

APPROVED BY: [Name]

DATE: 09/02/2011

Pumping Station PS01b & VC01 - Wet Well and Valve Chamber

Features

PS01b (wet well)

- 2100mm diameter (internal)
- 100mm diameter pipework
- 2No. duty / standby submersible pumps
- Sacrificial shuttering (optional)
- Cover slabs
- Access covers

VC01 (valve chamber)

- 2040mm by 3000mm (internal)
- 100mm diameter pipework & valves
- Sacrificial shuttering (optional)
- Cover slab
- Access cover

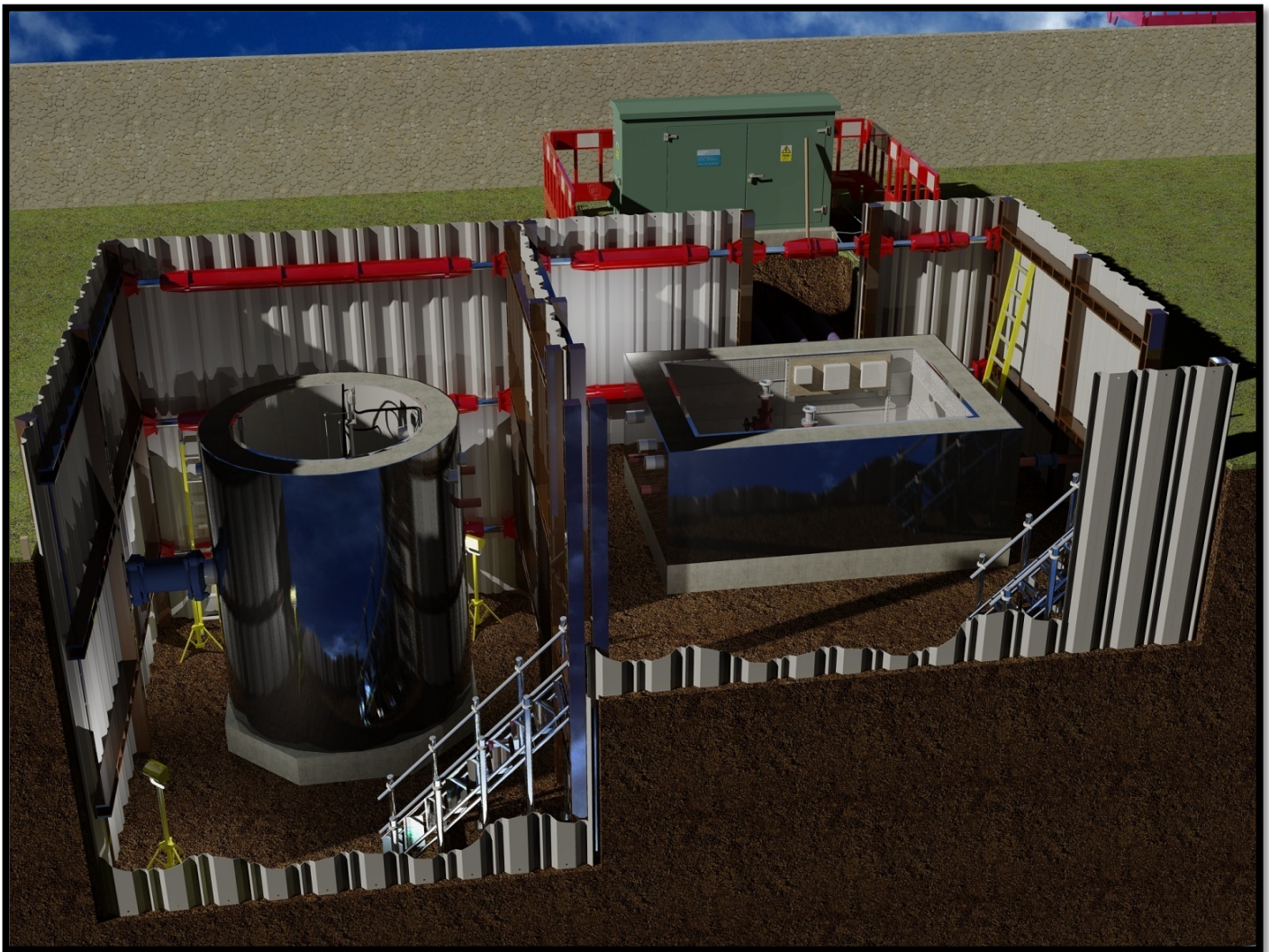
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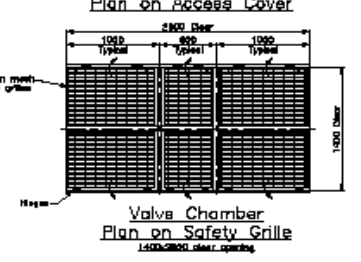
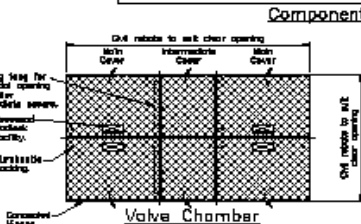
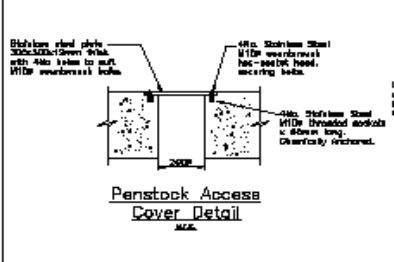
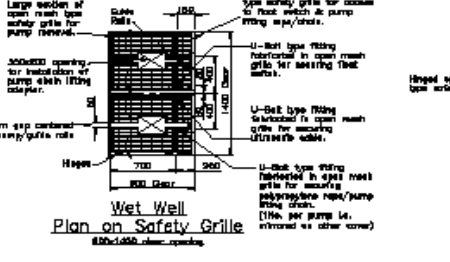
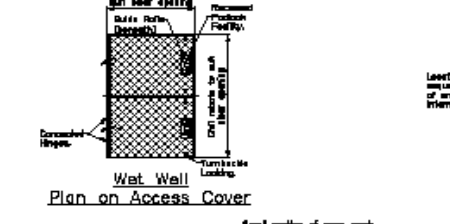
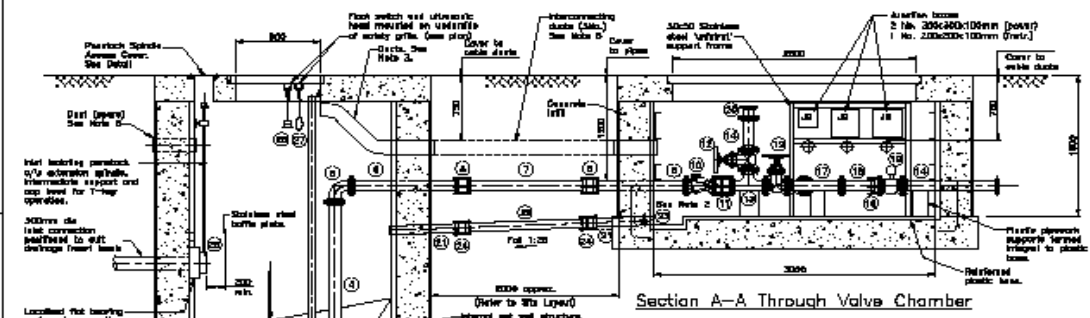
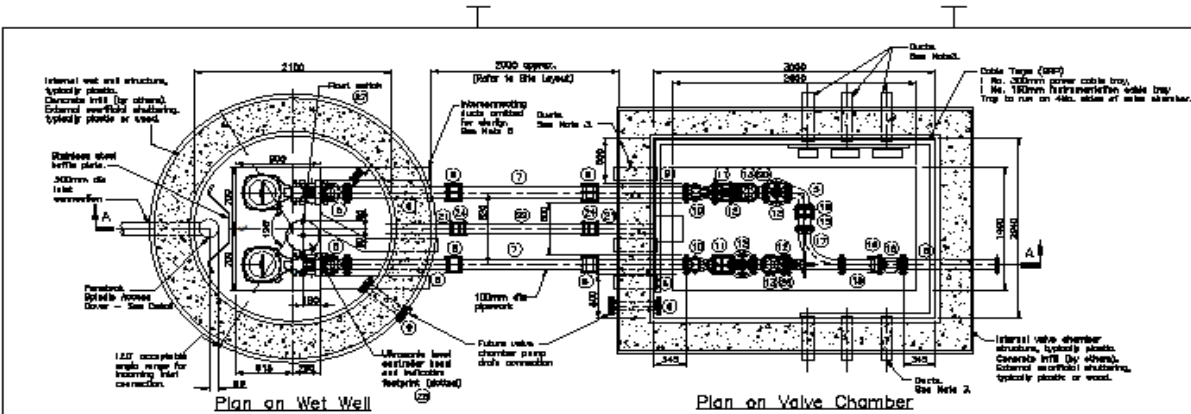
- Network PS
- Housing developments
- WWTW
- Etc.

Description

Small 2 pump wastewater PS. Can be used in isolation or as part of a new / existing treatment works site. Wet well and valve chamber can be provided individually if required.

Associated MCC and kiosk to be selected to suit chosen pump size and any ancillary requirements.





Item No.	Description	Quantity	Notes
1	Submersible Storage Pump	2	
2	Pump System Proprietary Discharge Support Steel	2	
3	AD100 Eccentric Taper	2	Size may vary, may not be required
4	100 dia Pipe	2	Minimum finished pipe length = 2000mm. Multiple double flanged sections to suit wet well depth with upstream section consisting of a single flanged pipe and self-restoring flange adaptor.
5	100 dia 90° Short Radius Bend	3	
6	100 dia Flange to Spigot Pipe 1500mm Long	3	Cut to suit, pipe to terminate 300mm from external face of structure.
7	100 dia Double Spigot Rubber Pipe 2000mm Long	2	Cut to suit.
8	100 dia Flexible Pipe Coupling	6	
9	40 dia Double Flanged Pipe, 300mm long	2	o/w blank flanges either end.
10	100 dia Wet Return Valve (valve check type)	2	To be ductile iron with PN10 flanges o/w linear area in open mesh guards
11	100 dia Overlapping Joint	2	
12	100 dia Gate Valve	4	To be ductile iron with PN10 flanges o/w headshot.
13	100/100/100 dia T-Piece	2	
14	100 dia Double Flanged Pipe, 400mm/400mm long	3	
15	100 dia Flange to Spigot Pipe, 200mm long	1	Cut to suit.
16	100 dia Self Restoring Flange Adaptor	1	
17	100/100/100 dia Radial T-Piece	1	
18	100 dia Flange to Spigot Pipe, 1000mm long	1	Cut to suit.
19	100 dia Electromagnetic Flowmeter	1	
20	100 dia Valve Bearer Coupling	1	Complete with cap
21	40 dia Pipe, 600mm long	2	Cut to suit, pipe to terminate 300mm from external face of structure.
22	40 dia Double Spigot Rubber Pipe, 2000mm long	1	Cut to suit.
23	40 dia Inertia Type (Upstream Champ) Duct 500 Type Iron Return Valve	1	
24	40 dia Flexible Pipe Coupling	2	
25	300 dia Parastock stainless steel stainless steel 100mm/100mm	1	Wall mounted, of mating type max. pressure of 4.5 bar
26	Ultrasonic Head (Sonotek SP3140)	1	
27	Float Switch (Hase LR2-6)	1	
28	100 dia Parastock Rubber Coupling	1	Complete with cap

All diameters are in mm and internal bore. All pipework to be PN10 Ductile Iron

Components Table

HEALTH AND SAFETY INFORMATION			
IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAIL IN THIS DRAWING, PLEASE NOTE THE FOLLOWING:			
CONSTRUCTION PHASE			
ISSUE RISK THAT COULD NOT BE CHANGED TO A LOWER RISK	ACTION REQUIRED TO CONTROL THE RISK		
BEFORE ACCESS	VERTICAL	PERSONAL PROTECTIVE EQUIPMENT	
POINTS REQUIRING ACCESS	METHOD OF ACCESS		
BEFORE HANDLING LIFTING/ELEVATING			
TASKS REQUIRING HANDLING	METHOD OF HANDLING		
IT IS REMEMBERED THAT ALL WORK SHALL BE COVERED OFF BY A COMPETENT PERSON HOLDING SUITABLE APPROVED TO BE APPROVED SAFE BY OTHERS.			

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25 BATHURST STREET
GLASGOW G2 3JH

Project No: WASTEWATER PUMPING STATION STANDARDS PRODUCT

Drawing No: WASTEWATER PUMPING STATION GENERAL ARRANGEMENT DRAWING PART 001 - 100 DIA PIPING

Scale: AS SHOWN

Revision No: 1

Author: MJC

Check: MJC

Issue Date: 06/09/2002

Project Name: WASTEWATER PUMPING STATION STANDARDS PRODUCT

Drawing Title: WASTEWATER PUMPING STATION GENERAL ARRANGEMENT DRAWING PART 001 - 100 DIA PIPING

Scale: AS SHOWN

Revision No: 1

Author: MJC

Check: MJC

Issue Date: 06/09/2002

Project Name: WASTEWATER PUMPING STATION STANDARDS PRODUCT

Drawing Title: WASTEWATER PUMPING STATION GENERAL ARRANGEMENT DRAWING PART 001 - 100 DIA PIPING

Scale: AS SHOWN

Revision No: 1

Author: MJC

Check: MJC

Issue Date: 06/09/2002

Pumping Station PS02 & VC02 - Wet Well and Valve Chamber

Features

PS02 (wet well)

- 2500mm diameter (internal)
- 150mm diameter pipework
- 2No. duty / standby submersible pumps
- Sacrificial shuttering (optional)
- Cover slabs
- Access covers

VC02 (valve chamber)

- 2200mm by 3600mm (internal)
- 150mm diameter pipework & valves
- Sacrificial shuttering (optional)
- Cover slab
- Access cover

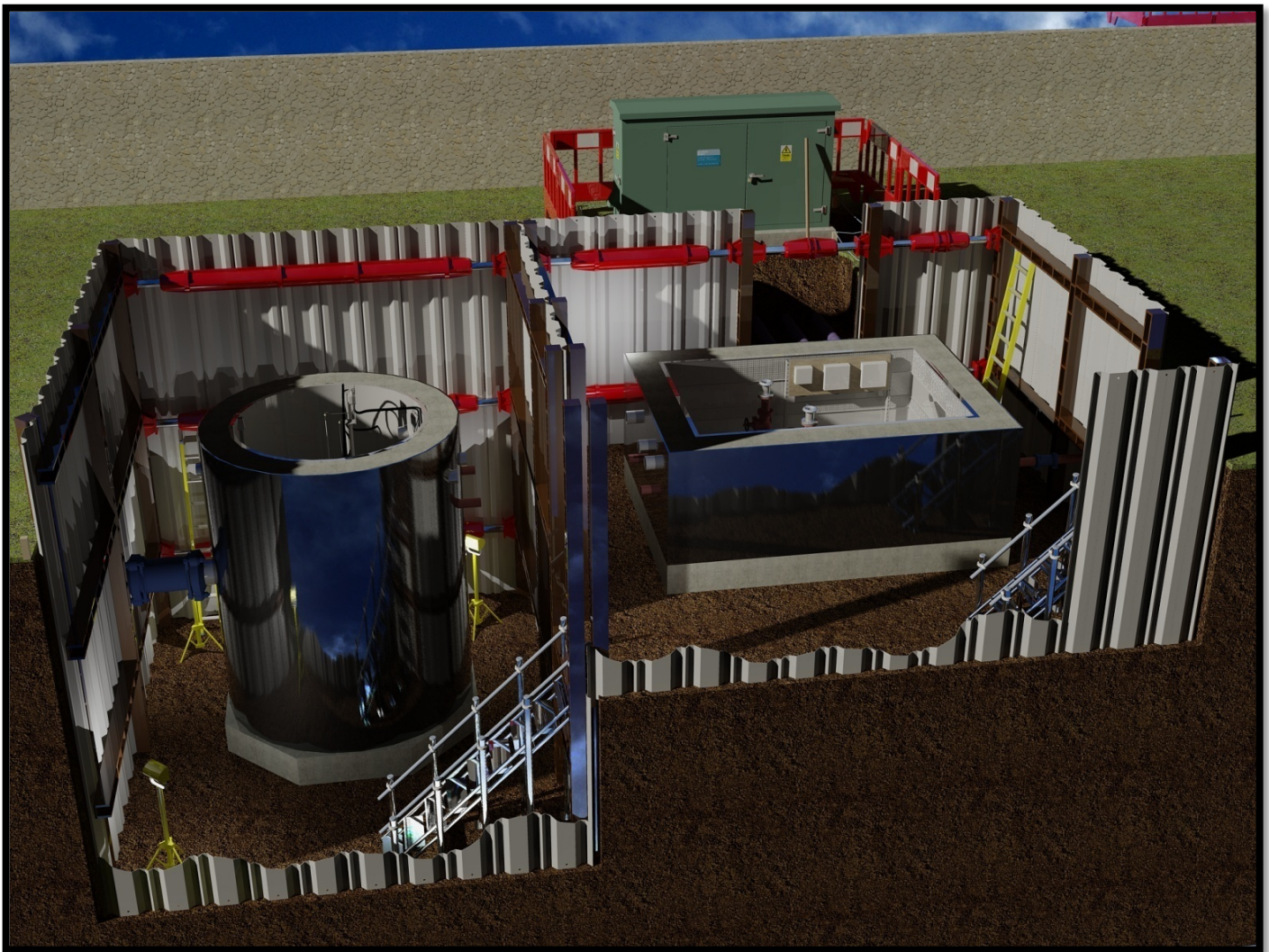
Applications

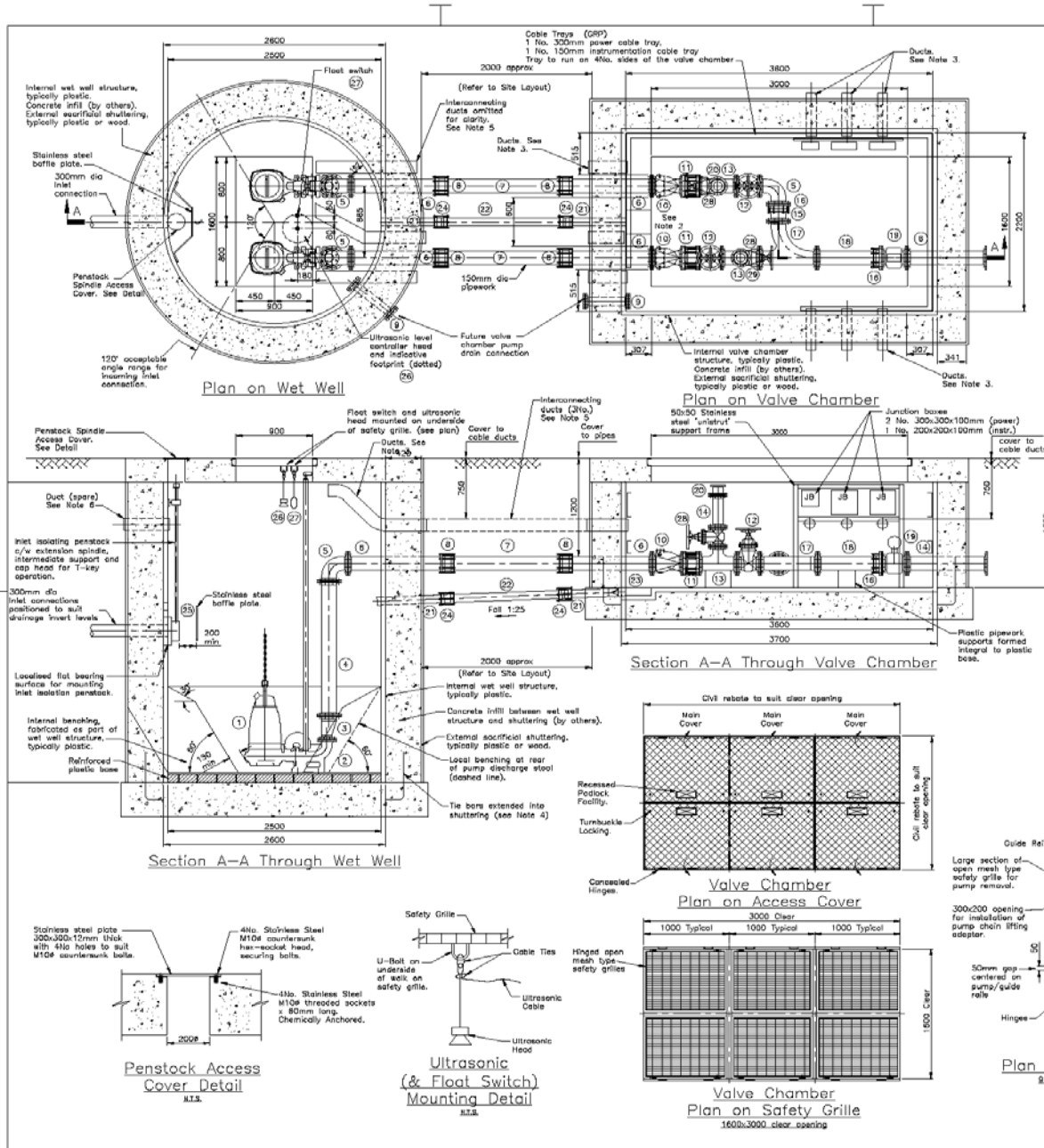
- Network PS
- Housing developments
- WWTW
- Etc.

Description

Small 2 pump wastewater PS. Can be used in isolation or as part of a new / existing treatment works site. Wet well and valve chamber can be provided individually if required.

Associated MCC and kiosk to be selected to suit chosen pump size and any ancillary requirements.





Item No.	Description	Quantity	Notes
1	Submersible Sewage Pump	2	
2	Pump Suppliers Proprietary Discharge Support Steel	2	
3	100:150 Eccentric Taper	2	Size may vary. May not be required
4	150 dia Pipe	2	Maximum individual pipe length = 2000mm. Multiple double flanged sections to suit wet well depth with upstream section consisting of a single flanged pipe and self-restraining flange adaptor.
5	150 dia 90° Short Radius Bend	3	
6	150 dia Flange to Spigot Pipe 1500mm Long	5	Cut to suit, pipe to terminate 300mm from external face of shuttering.
7	150 dia Double Spigot Rucker Pipe 2000mm Long	2	Cut to suit.
8	150 dia Flexible Pipe Coupling	4	
9	80 dia Double Flanged Pipe, 500mm long	2	c/w blank flanges either end.
10	150 dia Non Return Valve (Swing check type)	2	To be ductile iron with PN18 flanges c/w lever arms & open mesh guards
11	150 dia Dismantling Joint	2	
12	150 dia Gate Valve	2	To be ductile iron with PN18 flanges c/w handwheel.
13	150:150-100 dia T-Piece	2	
14	100 dia Double Flanged Pipe, 400mm/900mm long	3	
15	150 dia Flange to Spigot Pipe, 200mm long	1	Cut to suit.
16	150 dia Self Restraining Flange Adaptor	2	
17	150:150:150 dia Radial T-Piece	1	
18	150 dia Flange to Spigot Pipe, 1000mm long	1	Cut to suit.
19	150 dia Electromagnetic Flowmeter	1	
20	100 dia Mole Bauer Coupling	1	Complete with cap
21	80 dia Pipe, 500mm long	2	Cut to suit, pipe to terminate 300mm from external face of shuttering.
22	80 dia Double Spigot Rucker Pipe, 2000mm long	1	Cut to suit.
23	80 dia Insertion Type (Upstream Clamp) Duck Bill Type Non Return Valve.	1	
24	80 dia Flexible Pipe Coupling	2	
25	300 dia, Penstock, Stainless steel construction, non-rising stem.	1	Well mounted, off seating type, max. pressure of 0.5 bar
26	Ultrasonic Head (Siemens XPS10)	1	
27	Float Switch (Ritson LR02-B)	1	
28	100 dia Gate Valve	2	To be ductile iron with PN18 flanges c/w handwheel.
29	100 dia Female Bauer Coupling	1	Complete with cap

All diameters are in mm and internal bore. All pipework to be PN18 Ductile Iron

Components Table

Original Size	
A1	

Notes:
 1. All dimensions are in millimetres unless noted otherwise.
 2. 300mm by 100mm deep sump in base of valve chamber. Gravity drain to wet well to be c/w an insertion type (Upstream Clamp) Duck Bill Type Non Return Valve.
 3. Plastic pipes for cable duct entry into chamber, consisting of 2No. 150dia power and 1No. 150dia instrumentation. Penetration pipes to be open ended internally and capped externally. 300mm separation between power and instrumentation penetrations.
 4. Concrete shall be grade GEN3/ST4, C16/20 to BS 8500 as a minimum. Bars shall be high yield 16mm dia. steel bars at 500mm centres around the circumference of the bases/c, centred between the wetwell structure and shuttering, extending a minimum of 800mm into both the base/c end and into section between the wet well and shuttering.
 5. 3No. 150mm dia interconnecting ducts supplied and installed by the Contractor.
 6. 1No. Spare plastic duct penetration (150mm dia.). Pipe to be open ended internally and capped externally.

Scottish Water HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING:

CONSTRUCTION PHASE

REVERSAL RISK THAT COULD NOT BE REDUCED TO A 'COMPETENT CONTRACTOR'	ACTION REQUIRED TO CONTROL THE RESIDUAL RISK
SW ORS ACCESS - HORIZONTAL, VERTICAL, PEDESTAL, VEHICULAR	METHOD OF ACCESS
POINTS REQUIRING ACCESS:	METHOD OF ACCESS:
SW ORS HANDLING / LIFTING STRATEGY	METHOD OF HANDLING:

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT PERSON/ PERSONS, WHOSE RESPONSIBILITY, TO AN APPROVED SAFE SYSTEM OF WORK.

1:0 DRAFFT

No.	Description	Drawn	Checked	Apprv.	Date
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 56 RIVINGTON STREET, GLASGOW, G2 7HX

Designed by	Drawn by	Checked by	Approved by
Date	Date	Date	Date
Scale	Scale SPECIFICATION		

Project Title: WASTEWATER PUMPING STATION STANDARD PRODUCT

Drawing Title: WASTEWATER PUMPING STATION GENERAL ARRANGEMENT DRAWING PDS02002 - 150 DIA PIPEWORK

ELLIPSE EQUIPMENT NO.:
 ELLIPSE PLANT NO.:
 Drawing No.: SSP-SP-DRA-09002003-1.0

Pumping Station PS03 & VC03 - Wet Well and Valve Chamber

Features

PS03 (wet well)

- 3000mm diameter (internal)
- 200mm diameter pipework
- 2No. duty / standby submersible pumps
- Sacrificial shuttering (optional)
- Cover slabs
- Access covers

VC03 (valve chamber)

- 2400mm by 4250mm (internal)
- 200mm diameter pipework & valves
- Sacrificial shuttering (optional)
- Cover slab
- Access cover

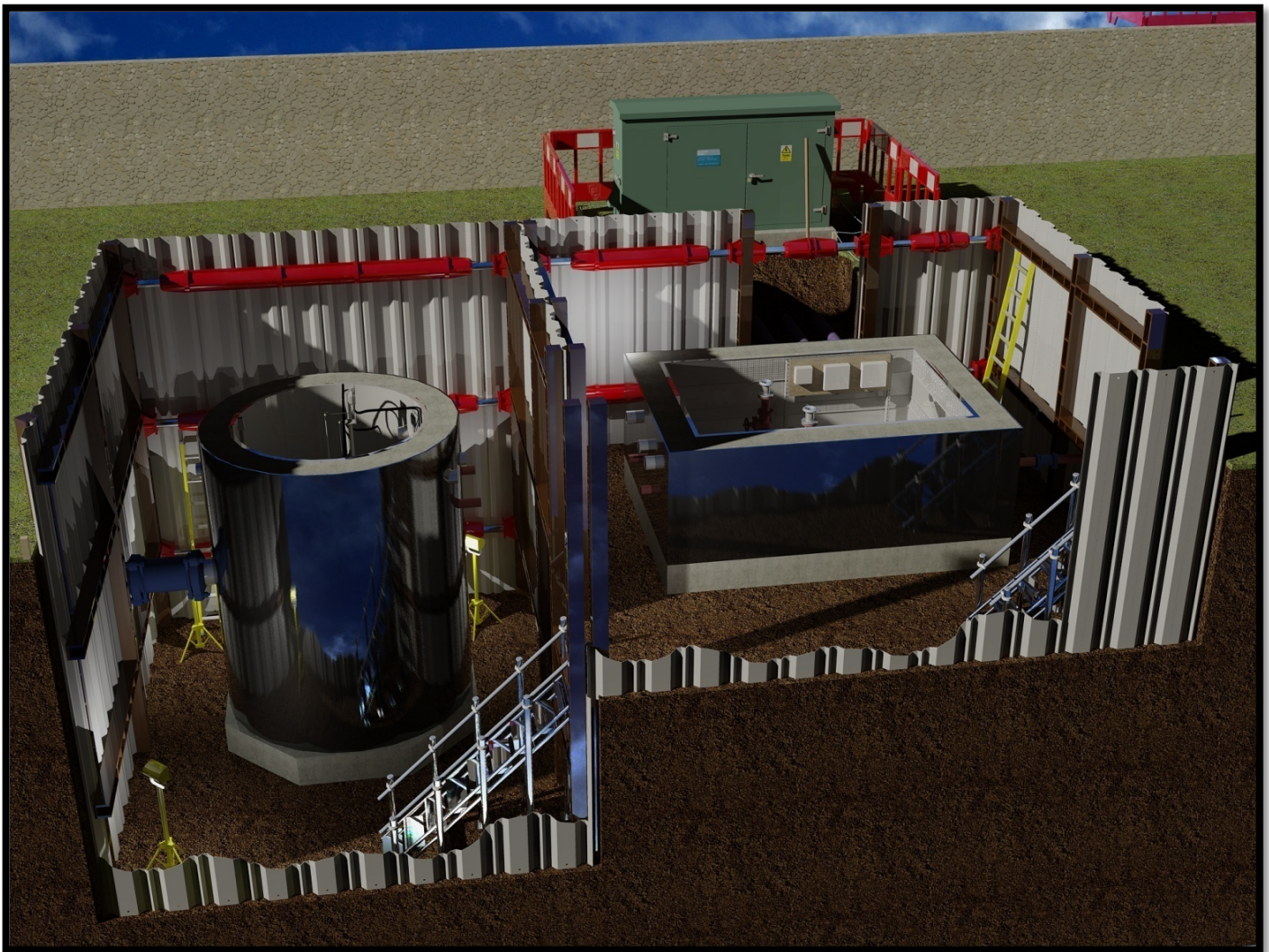
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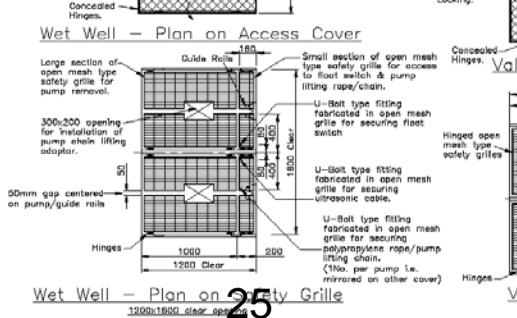
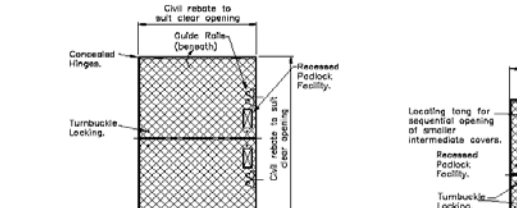
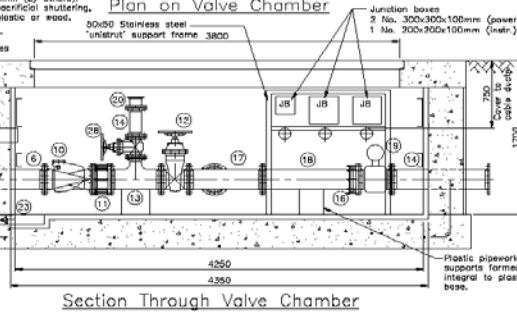
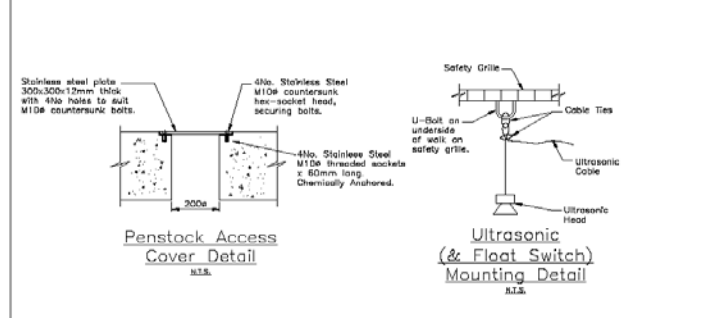
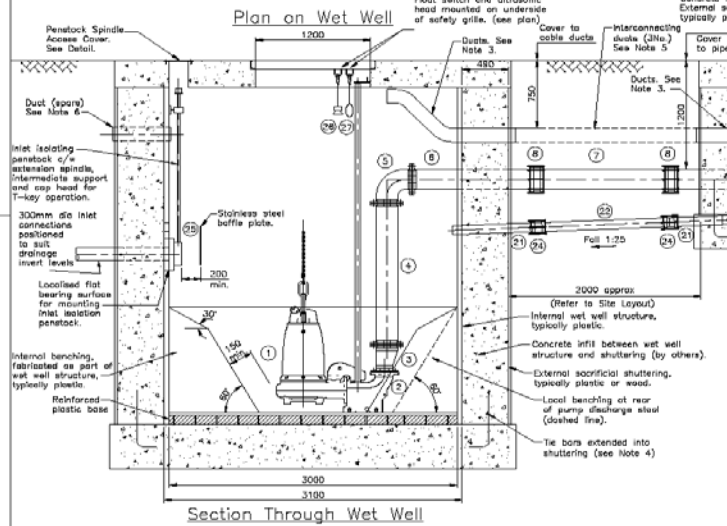
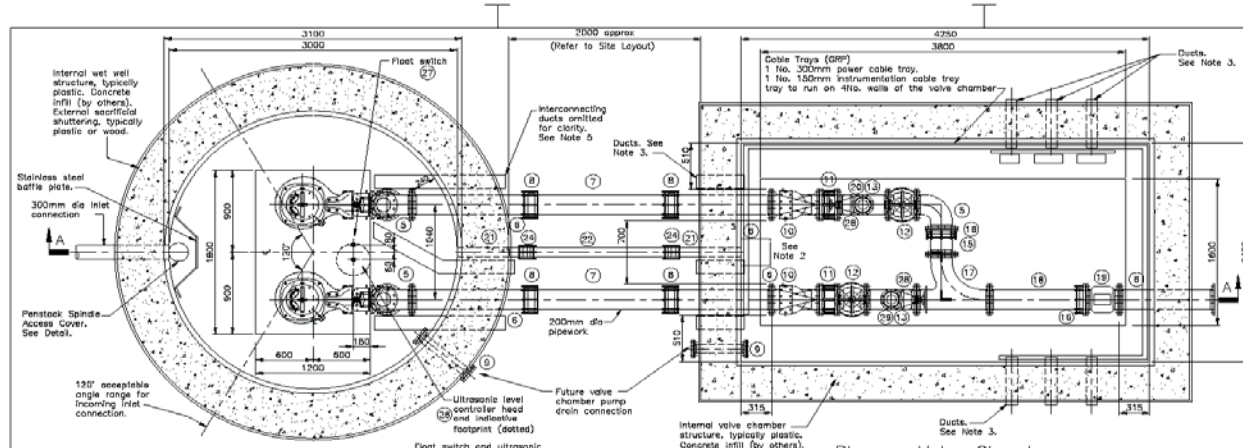
- Network PS
- Housing developments
- WWTW
- Etc.

Description

Small 2 pump wastewater PS. Can be used in isolation or as part of a new / existing treatment works site. Wet well and valve chamber can be provided individually if required.

Associated MCC and kiosk to be selected to suit chosen pump size and any ancillary requirements.





Item No.	Description	Quantity	Notes
1	Submersible Sewage Pump	2	
2	Pump Suppliers Proprietary Discharge Support Stool	2	
3	150:200 Eccentric Taper	2	Size may vary. May not be required
4	200 dia Pipe	2	Maximum individual pipe length = 2000mm. Multiple double flanged sections to suit wet well depth with upstream section consisting of a single flanged pipe and self-restraining flange adaptor.
5	200 dia 90° Short Radius Bend	3	
6	200 dia Flange to Spigot Pipe 1500mm Long	8	Cut to suit, pipe to terminate 300mm from external face of shuttering.
7	200 dia Double Spigot Rocker Pipe 2000mm Long	2	Cut to suit.
8	200 dia Flexible Pipe Coupling	4	
9	80 dia Double Flanged Pipe, 500mm Long	2	c/w blank flanges either end.
10	200 dia Non Return Valve (Swing check type)	2	To be ductile iron with PN16 flanges c/w lever arms & open mesh guards
11	200 dia Dismantling Joint	2	
12	200 dia Gate Valve	2	To be ductile iron with PN16 flanges c/w handwheel.
13	200:200:100 dia T-Piece	2	
14	100 dia Double Flanged Pipe, 400mm/800mm Long	3	
15	200 dia Flange to Spigot Pipe, 200mm Long	1	Cut to suit.
16	200 dia Self Restraining Flange Adaptor	2	
17	200:200:200 dia Radial T-Piece	1	
18	200 dia Flange to Spigot Pipe, 1000mm Long	1	Cut to suit.
19	200 dia Electromagnetic Flowmeter	1	
20	100 dia Male Bower Coupling	1	Complete with cap
21	80 dia Pipe, 500mm Long	2	Cut to suit, pipe to terminate 300mm from external face of shuttering.
22	80 dia Double Spigot Rocker Pipe, 2000mm Long	1	Cut to suit.
23	80 dia Insertion Type (Upstream Clamps) Duck Bill Type Non Return Valve.	1	
24	80 dia Flexible Pipe Coupling	2	
25	200 dia, Penstock, Stainless steel mainline, non-slag stem.	1	Wall mounted, off seating type, max. pressure of 0.5 bar.
26	Ultrasonic Head (Siemens XP510)	1	
27	Float Switch (Triton LK02-S)	1	
28	100 dia Gate Valve	2	To be ductile iron with PN16 flanges c/w handwheel.
29	100 dia Female Bower Coupling	1	Complete with cap

Components Table

Item No.	Description	Quantity	Notes
1	2000 approx (Refer to Site Layout)		
2	2000 approx (Refer to Site Layout)		
3	2000 approx (Refer to Site Layout)		
4	2000 approx (Refer to Site Layout)		
5	2000 approx (Refer to Site Layout)		
6	2000 approx (Refer to Site Layout)		
7	2000 approx (Refer to Site Layout)		
8	2000 approx (Refer to Site Layout)		
9	2000 approx (Refer to Site Layout)		
10	2000 approx (Refer to Site Layout)		
11	2000 approx (Refer to Site Layout)		
12	2000 approx (Refer to Site Layout)		
13	2000 approx (Refer to Site Layout)		
14	2000 approx (Refer to Site Layout)		
15	2000 approx (Refer to Site Layout)		
16	2000 approx (Refer to Site Layout)		
17	2000 approx (Refer to Site Layout)		
18	2000 approx (Refer to Site Layout)		
19	2000 approx (Refer to Site Layout)		
20	2000 approx (Refer to Site Layout)		
21	2000 approx (Refer to Site Layout)		
22	2000 approx (Refer to Site Layout)		
23	2000 approx (Refer to Site Layout)		
24	2000 approx (Refer to Site Layout)		
25	2000 approx (Refer to Site Layout)		
26	2000 approx (Refer to Site Layout)		
27	2000 approx (Refer to Site Layout)		
28	2000 approx (Refer to Site Layout)		
29	2000 approx (Refer to Site Layout)		

This drawing is based on the 1:1 scale drawings of the wet well and valve chamber. It is intended for use as a guide only and does not constitute a contract. All dimensions are in millimetres unless noted otherwise.

Notes:

- All dimensions are in millimetres unless noted otherwise.
- 300mm by 300mm by 100mm deep slump in base of valve chamber. Gravity drain to wet well to be c/w an insertion type (Upstream Clamps) Duck Bill Type Non Return Valve.
- Plastic pipes for cable duct entry into chamber, consisting of 3No. 150dia power and 1No. 100dia instrumentation. Penetration pipes to be open ended internally and capped externally. 300mm separation between power and instrumentation pipework penetrations.
- Concrete shall be grade GEN2/ST4, C16/20 to BS 8500 as a minimum. Bore shall be high yield 16mm dia. steel bars at 500mm centres around the circumference of the basins, centred between the actual structure and shuttering, extending a minimum of 400mm into both the basins and in situ section between the wet well and shuttering.
- 3No. 150mm dia interconnecting ducts supported and installed by the Contractor.
- 1No. 150mm dia plastic duct penetration (150mm dia). Pipe to be open ended internally and capped externally.

Scottish Water HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, PLEASE NOTE THE FOLLOWING:

CONSTRUCTION PHASE

RESIDUAL RISK THAT COULD NOT BE REDUCED TO A COMPATIBLE CONSTRUCTION

SW ON ACCESS: HORIZONTAL, VERTICAL, PEDESTAL, VEHICLE/PLANT

POINTS REQUIRING ACCESS: METHOD OF ACCESS:

SW ON HANDLING / LIFTING STRATEGY

ITEMS REQUIRING HANDLING: METHOD OF HANDLING:

IT IS ASSUMED THAT ALL WORKS WILL BE CARRIED OUT BY A COMPETENT PERSON WORKING UNDER THE SUPERVISION OF AN APPROVED SAFE SYSTEM OF WORK.

Revision Table:

No.	Rev.	Description	Drawn	Checked	Approved	Date
1	01					

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G2 2JX

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G2 2JX

Prepared by: [Name] Drawn by: [Name] Checked by: [Name] Approved by: [Name]

Date: [Date] Date: [Date] Date: [Date] Date: [Date]

Scale: 1:10 @ A1

Project Title: WASTEWATER PUMPING STATION STANDARD PRODUCT

Drawing Title: WASTEWATER PUMPING STATION GENERAL ARRANGEMENT DRAWING PDSB-020 - 200 DIA PIPE/WORK

ELLIPSE EQUIPMENT No. [Number] AUTOCODE No. [Number]

ELLIPSE PLANT No. [Number]

Drawing No. SSP-SP-DRA-09002004-1.0