

WWDS-DEV 009Ad

Pumping station addendum

Sewerage Sector Guidance - Appendix C

Forward

This addendum is to be used in conjunction with the current approved version of the Design and Construction Guide, where a pumping station forms part of a Section 104 sewer adoption application in the Wessex Water area.

The Design and Construction Guide, refers to design and construction guidance for foul and surface water sewers, offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England ("the code"), Sewerage Sector Guidance Appendix C.

The relevant clause reference in this addendum highlighted in grey should replace and take precedence over the individual clause in the Sewerage Sector Guidance Appendix C.

The clause references in this Addendum, shown in plain text (unhighlighted), are intended to be read in conjunction with the clause in the Sewerage Sector Guidance Appendix C.

Developer Services is your point of contact for sewer adoption by Wessex Water.

We offer a wide range of technical advice and can help provide additional information. The Sewer adoption - pumping station checklist WWDS-DEV 009G highlights the minimum information required for a S104 application submission.

Guidance notes, application forms, and standard drawings for guidance are on our website
wessexwater.co.uk/services/building-and-developing

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Please note: Wessex Water standard drawings are currently under review, so not available.

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Document amendment summary

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PART D - PUMPING STATIONS

D5 PROVISION OF PUMPING STATIONS

Please note: Wessex Water standard drawings are currently under review, so not available.

D5.1 Location

2	The pumping station should not be located where it might be susceptible to flooding from overland flows or flooding at a frequency of more than 1:30 years. Compound cover levels must be 250mm above carriageway level. All electrical control equipment should be water resistant or sited above the 1:200 year flood level, which would be the kiosk plinth level being equivalent to finished floor level (FFL) of nearest new habitable building if the 1:200 level is not available. Wessex Water should be consulted at the earliest opportunity, if compound levels do not meet requirements.
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D5.3 Site Layout

1	g) Wessex Water has standard drawings with typical acceptable layouts for pumping stations for guidance.
2	Prior to making the planning application, Wessex Water must be consulted to confirm the acceptability of location, site layout and potential boundary treatment. Where a permanent fixed lifting system is being proposed, the developer should be aware that planning permission is likely to be required.
4	For all pumping stations, a fenced compound is required. The use of 1.5m high park style fencing is usually acceptable, depending on the location and level of security required. Optional screen planting outside the boundary may also be considered. Wessex Water should be consulted at the earliest opportunity, if site or planning restrictions specify an unfenced compound.
5	Wessex Water standard fence type is 1.8m high steel palisade style, and required on all terminal, high security sites and sites with chemical dosing. Gates should match the fencing type and provide a similar level of security, with drop pins, a slide bolt and padlock. 1.8m high brick walls for boundaries are acceptable, but not preferred. The use of 1.5m high park style fencing may also be considered, depending on the location, level of security, and no chemical dosing is required on site. Wessex Water has a common security system utilising Abloy padlocks at pumping station sites. These padlocks will be provided and fitted at the time of vesting by Wessex Water. The cost of the locks and their installation are included in the charges.
9	The whole compound surface must be a concrete brush finish, with falls that provide a positive drainage route via trapped gullies to the wet well or inlet chamber. Permeable surfaces are not accepted on any sites.
11	For pumping stations in a fenced compound, the whole area should be covered with concrete hard standing. The hard standing surface should extend under the fence line, with edging kerbs positioned 200mm from the fence line on the outside perimeter to delineate the site boundary.
12	Wessex Water require a fenced compound for smaller pumping stations, the whole area should be covered with a concrete hard standing. The hard standing surface should extend under the fence line, with edging kerbs to delineate the site boundary.
16	Typical layouts are shown in figure D2 and figure D3. Wessex Water requires the whole compound to be impermeable concrete finish hard standing and does not accept any permeable hard standing. For operational reasons, and to comply with D5.4.1.C the kiosk shall be positioned with the doors opening towards the wet well, rather than at 90° to it. To prevent unauthorised use of the parking layby D2, or entrance splay D3, a heavy duty lockable and removable/collapsible bollard should be positioned to restrict vehicle access. The bollard must accept a Wessex Water Abloy short-shank 10mm shackle padlocks to BS EN 12320 Grade 3.

D5.5 Storage

2	b) Specifically designed adjacent storage structures that are designed to be self-cleansing. This structure must be connected to the inlet chamber and the connection must enter a minimum of 150mm above main channel invert level, to avoid inflow into the storage during normal peak flow conditions. Direct connection of storage to the wet well is not accepted.
2	c) Wessex Water prefers a wet well diameter of 1.8m or 2.1m, additional storage can be gained by increasing the diameter of the inlet chamber and/or upstream public manholes.

D6 RISING MAINS

D6.3 Hydraulic Design

6	Wessex Water requires a pumping station septicity control application to be completed for all S104 applications including an adoptable or non-adoptable pumping station. The only exceptions are when the pumping station serves a single domestic property, or if the pumped rising main is less than 50m in length. Guidance notes DEV023G and application form DEV0023A are on our website. When adoptable dosing is required, the provisions must meet our current Design Standard which are available on request. All equipment installed must be from our approved framework suppliers.
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D7 DESIGN OF PUMPING STATIONS

D7.3 Wet Well - General

3	The minimum internal dimension on a 'Type 1' and 'Type 2' pumping station wet well shall be 1,500mm. This dimension should ensure that the pumps and the pipework can be accommodated without causing interference with the ultrasonic footprint. The preferred internal dimension on 'Type 3' pumping stations is 1800mm or 2100mm.
4	All concrete benching finishes shall have an epoxy or polyurethane coating applied to the whole floor and benching area up to a level of 150mm above the high-level alarm level/base storage level. The coating is only required within the working zone of the pumps, not all the way up the chamber. The purpose of the epoxy or polyurethane coating is to protect against erosion, chemical attack and provide a smooth finish to reduce floating debris build up. Sikagard-62 is commonly used but other manufacturers may provide products that match the specification, requirements and performance.
7	Provision for isolating the incoming flow by means of a hand-operated soft face wedge gate valve, should be in a chamber immediately upstream of the wet well and not in the wet well itself. Cover and protect the valve flange, nuts, and bolts with Denso tape or similar. Benchng to be formed around the shoulders of the valve, the non-rising spindle should have suitable support brackets and be operated from the surface.

D7.5 Valve Chamber

3	d) for Type 2 and Type 3 pumping stations, a 100mm diameter male Bauer coupling with Bauer cap, mounted vertically on pipework, 90° duck foot bend, connecting to pipework in wet well to allow emptying of the wet well. This should be suitable for connecting to a flexible hose to allow either a tanker to remove flows or mobile pump to over pump into the rising main during plant maintenance or failure.
7	The valve chamber should have a maximum depth of 1.5m from cover to floor of the valve chamber. Depth can be increased by 200mm to maintain minimum 300mm floor to pipe clearance (F4.3.1b) and provide the rising main 1.2m cover from the crown (D6.1.3e) without protection.
8	If an air valve is provided in the valve chamber, an additional separate vent is required, ventilation should be in accordance with standard drawing STD269 - Below Ground Vent detail. The vent must be positioned at least 3m from the kiosk, a minimum of 15m from any habitable building and more than 1m from the wet well vent to stop cross venting.

D7.6 Flow Metering

1	For Type 3 pumping stations a flowmeter and pressure transducer must be provided in the valve chamber or in a separate chamber to monitor discharge performance.
3	For Type 1 and 2 pumping stations a flowmeter and pressure transducer must be provided in the valve chamber or in a separate chamber to monitor discharge performance.

D7.7 Access into Wet Well, Valve Chamber and Flowmeter Chambers

2	b) Wessex Water use Abloy short or long shank 10mm shackle padlocks to BS EN 12320 Grade 3. Each lid should have assistance to ensure a lifting effort not exceeding 25kilogram-force (kgf).
2	e) Applies to all sites; the safety grid should be provided with a 225mm diameter slot to allow a suction hose to pass through.
2	h) Handrail systems are not required for Wessex Water sites.
2	i) Handrails are not required for Wessex Water sites.
3	Where the wet well cannot be vented through the upstream sewer system, ventilation should be provided in accordance with standard drawing STD269 - Below Ground Vent detail. The vent must be positioned at least 3m from the kiosk and a minimum of 15m from any habitable building.
5	In addition, two secure eye-bolt anchorages shall be provided adjacent to the wet well, for attachment of personnel safety harness lines giving fall restraint. The location shall be at distances of 1.5m from the davit socket, each at an angle of 45° to the wet well opening, type of anchorage should be selected to avoid being a trip hazard or rebated into the site surface.

D7.9 Davit Sockets

2	If the pump weight is greater than 250kg, then Wessex Water is to be consulted over the lifting equipment to be provided.
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D7.11 Kiosk Construction

14	Wessex Water use Abloy short-shank 10mm shackle padlocks to BS EN 12320 Grade 3.
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PART F - MECHANICAL AND ELECTRICAL SPECIFICATION FOR SMALL PUMPING STATIONS

F1 GENERAL

F1.2 Operation and Maintenance Documentation

- 1 Operating and Maintenance (O&M) manuals, as-built drawings, test certificates and documentation are to be provided to Wessex Water prior to commencement of the maintenance period in PDF electronic format.

F2 PUMP UNIT SPECIFICATION

F2.1 Introduction

1	Wessex Water has a framework agreement for the supply of submersible sewage pumps. These are currently Flygt and Grundfos pumps. Non framework pumps are not accepted.
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F2.3.4 Mounting arrangements

F2.3.4.2 Auto-coupling system (ACS)

1	h) The ACS must connect directly with Flygt pumps and conversion plates to be used for Grundfos pumps
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F2.3.14 Pump unit lifting arrangements

F2.3.14.1 General

4	a) a PEWAG lifting chain shall be provided for all wet wells regardless of depth.
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F2.3.14.2 Lifting chain location system

1	Not to be provided for any site.
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F2.3.14.3 Lifting chains

9	Lifting chains must be high quality PEWAG chains with CLS type shackle to facilitate a 5 yearly written schedule of examination for LOLER compliance.
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F2.4.2 Testing on Site

5	Wessex Water's own term contractors or operational staff responsible for the future maintenance of the pumping station may be involved with any inspection and testing of the pumping station. Developers should note that any inspections by Wessex Water should not in any way be regarded as a substitution for the supervision or maintenance to be undertaken by the developer or his contractor.
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F3 ELECTRICAL SPECIFICATION

F3.3.7 Connection for a Mobile Generator

3	For populations of 2,500 and above, or for certain industrial/commercial developments, Wessex Water may require a dual power supply to the pumping station from a separate power supply source. The need for such a system must be confirmed with Wessex Water at an early stage of the design. The separate power source can include a permanently wired in standby generator. Appropriate soundproofing, fuel system, bunding and site security will be needed in such cases. Wessex Water has specific requirements for fixed generation which are available on request. A dual supply will be a standard requirement in all cases where the use of a portable generator is not suitable or possible.
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F3.3.9 Telemetry Signals

1-3	The developer will be charged for the installation, testing and commissioning work to connect the integrated controller specified below in F3.6.1 with Wessex Water telemetry system. Current charges are shown on the Wessex Water website and will be invoiced with the additional fees during the S104 application. The developer is required to provide mobile phone signal strength survey information as part of the S104 application, surveys undertaken at the proposed location of the kiosk.
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F3.4.1.3 Luminaires

3	Site compound lighting to be provided with suitably rated IP65 sodium or LED luminaires to illuminate at a minimum of 200 lux at cover level of the wet well and valve chamber. This shall be securely mounted on a 4m high hinged light column, with an electrical isolator mounted behind the column door. The light column must be a counterbalance type which doesn't require a separate winch or hydraulic lowering device. The column to be positioned next to the boundary fence between the wet well and valve chamber, ensuring it does not obstruct normal maintenance operations and can be lowered without clashing with the fence.
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F3.4.5.4 Connection of Pump Unit Cable

2	If the wet well is designated as a hazardous area, ducts direct from wet well shall be labelled with adjacent signs at the Electrical Assembly end, as follows: 'HAZARDOUS AREA DUCT - DUCT SEALING SYSTEM TO BE RETAINED AT ALL TIMES'.
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F3.5.1 Flowmeter specification

1	A flowmeter shall be provided for all Type 1, 2 and 3 pumping stations. In addition, a pressure transducer must be provided in the valve chamber or in a separate chamber to monitor discharge performance. The Pressure transducer sensor, measuring 0-10 Bar with a 4-20mA signal should be installed directly into an isolation valve, which is connected on to a half-inch BSP tapping (welded boss, not a strap type) located on the common section of rising main, ideally not positioned directly at the soffit to avoid fat blocking of the sensor.
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F3.6 Telemetry Outstation

1	Provision for telemetry communication shall be delivered using the DNP3 protocol, implemented through an integrated controller that provides all required functions and signals as defined in Wessex Water's Non Intelligent SPS PLC & Telemetry specification. The developer's M&E contractor can contact Wessex Water on the email below for copies of the document, configuration files and guidance document. Note development.telemetry@wessexwater.co.uk is only for the provision of configuration files and guidance documents, other correspondence should be directed via regional offices shown in the forward.
2	Transmission of telemetry signals must be configured to allow tandem monitoring. The Wessex Water outstation will be installed during the maintenance period to record pumping station performance data only. The developer or their M&E contractor must install an outstation for monitoring and control functionality for the pumping station. The developer's or M&E contractor's outstation must be removed along with associated wiring just prior to adoption at the developer's cost.

F4.4 Miscellaneous

3	Suitable hook to be installed in the valve chamber to hang the inlet penstock key, to be located just below the cover near to the access steps.
4	Pump number identification labels must be fitted in the wet well above the guide rails or on the cover in a visible position. Duplicate labels must be fitted in the valve chamber, fixed to the chamber wall or masonry 200mm above the pipework. Labels should comply with F3.2.2.1