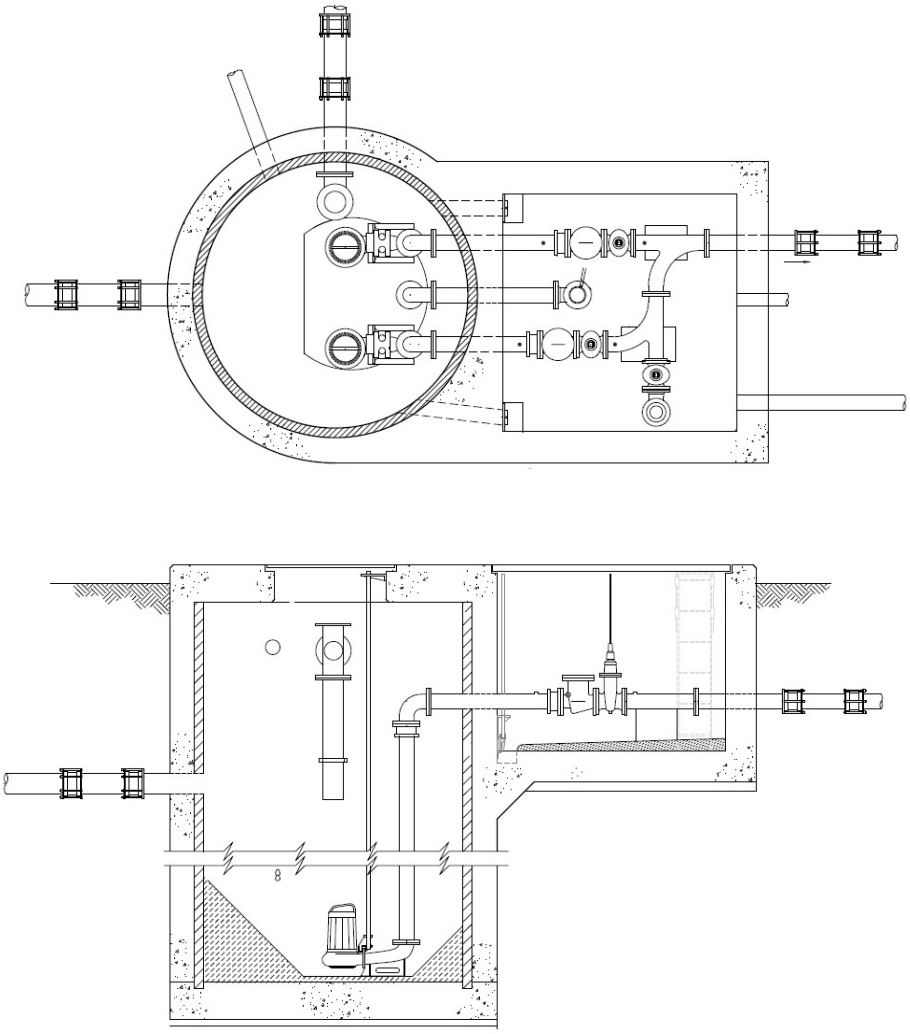
# Sewers for Adoption
# 7th Edition



# Wessex Water Pumping Station Addendum

**THIRD ISSUE – DECEMBER 2015**

Wessex Water
a YTL company

# Wessex Water Pumping Station Addendum to Sewers for Adoption 7th Edition

## Forward

This Addendum is to be used in conjunction with Sewers for Adoption 7th Edition, when a pumping station forms part of a Section 104 sewer adoption application in the Wessex Water area.

The clauses in this Addendum are intended to supplement those in the Sewers for Adoption 7 Edition.

Wessex Water has standard drawings for pumping stations (civil and M&E details). Copies of these drawings are available to developers on request.

Should there be a conflict, then the relevant clause in this Addendum or our standard drawing will take precedence over those in the Sewers for Adoption 7th Edition.

**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.**

Guidance notes, application forms and contact details are on our website **www.wessexwater.co.uk/developers**

## Document amendment summary

| Issue | Date | Reference | Details |
|---|---|---|---|
| 1 | Dec 2012 | - | First issue |
| 2 | Oct 2013 | Changed | F1.2. 1 |
| | | Deleted | F2.3 |
| 3 | Feb 2015 | Added | D4.5. 1, Table F3 |
| | | Changed | D5.3. 4, D.6.3. 3, D6.3. 7, F.3.3.9. 1, F3.4.1.3. -, F3.6. 1, diagram on cover |
| | | Deleted | D4.3. 5 |
| | | General | Padlock reference corrected. |
| | Nov 2015 | Added | D4.3. 5, D4.3. 11, D.4.5. 2c, 5.3, 6.3. 2, 6.7. 2f, 6.7. 2i, 6.7. 2j, F2.1. 4, F.3.2.2.2. 3 ,F3.3.9. 1, F4.4. 3 |
| | | Changed | D4.3. 5, D.6.7 3b, D7.5 |

# Contents

# PART D – PUMPING STATIONS

## D4 PROVISION OF PUMPING STATIONS

### D4.3 Site Layout

1. Wessex Water has standard drawings giving typical acceptable layouts for pumping stations in various situations.

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.

5. The use of brick walls for boundaries is acceptable, but not preferred. Wessex Water has standard drawings for fencing alternatives. Preferred fence type is 1.8m high steel palisade style. Gates should match the fencing type and provide a similar level of security, with drop pins, a slide bolt and padlock.

   The use of 1.5m high park style fencing with optional screen planting outside the boundary may also be considered, depending on the location and level of security required.

   Where chemical dosing or higher security is required, Wessex Water must agree appropriate fencing prior to making a planning application.

   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 staff. The cost of the locks and their installation will be recharged to the developer.

8. The surface treatment of all pumping station sites need to be such that a positive drainage route to the wet well exists in case of any tanker spillage.

11. For pumping stations in a fenced compound, the whole area should be covered with hardstanding. The hardstanding surface should extend under the fence line, with edging kerbs to delineate the site boundary.

12. Where smaller pumping stations are not in a compound, the following will apply:
    - Unpaved areas should be kept to a minimum.
    - The working areas should be level, provided with an agreed type of hard-surfaced (no gravel) and maintenance-free.
    - Edging kerbs should be provided to delineate the site.
    - Wessex Water will advise if on-site storage is required for temporary safety barriers.

15. Standard Wessex Water davits are 1.0m reach. If a non-standard davit is required, then the davit together with suitable secure on-site storage must be provided.

16. Wessex Water has standard drawings for alternative layouts.

### D4.4 Kiosk Positioning

1.d For operational reasons, Wessex Water prefers that the kiosk be positioned with the doors open to face the wet well, rather than at 90° to it.

### D4.5 Storage

1. Wessex Water does not favour the installation of emergency overflows, preferring the alternative of off-line or upstream storage and telemetry warning systems.

   Where an emergency overflow is proposed, Wessex Water must be consulted on the potential terms and conditions of the Consent to Discharge from the Environment Agency before a formal application is made.

   Where a consented emergency overflow is installed, the telemetry system shall provide notification in the event of the overflow operating.

   Prior to adoption, the developer will provide the Environment Agency a written report on every operation of the emergency overflow. A copy of that report must also be given to Wessex Water.

2.c Wessex Water favours the storage structure to be connected to the inlet chamber in preference to direct connection to the wet well.

## D5 RISING MAINS

### D5.1 Layout and Marking

2. The minimum distance between either structures or buildings and rising mains will be dependent on the pipe size, depth, operating pressure and thrust support systems.

### D5.3 Hydraulic Design

- Systems must be checked to confirm whether or not there is a need for chemical dosing in the short and/or long term for all new sites. Wessex Water uses sodium nitrate (NaNO3) based chemical dosing systems which must include for double dosing pumps and an approved controller, not just a timer. Adequate access is essential for chemical deliveries direct to site and the unit must be an approved and fully bunded arrangement.

- Wessex Water requires DEV023 Pumping station septicity control application to be completed. Guidance notes and application forms are on our website www.wessexwater.co.uk/developers

4 To ensure that the break manhole does not suffer from corrosion due to septicity, Wessex Water requires the manhole to be given an epoxy or polyurethane coating as below:

| | Supplier | Manufacturer spec | Primer | Top coat |
|---|---|---|---|---|
| 1 | Currocoat | 3 coat 500µm | Polyglass PPA | Polyyglass VEF |
| 2 | Sika | 3 coat 500µm | Sikaguard 720EPOCEM | Sikagard 53N |
| 3 | Copon | 2 coat 500µm | HYCOTE 630 | Copon 175 |

- All concrete to be blasted clean for key.
- Solvent free epoxy resins and polyurethanes to be brush applied in ventilated areas.
- Coating may be applied to PCC rings before installation.

### D5.7 Testing of Rising Mains

1. Wessex Water requires the ‘dual pressure – log recovery graph’ test to WRc procedure for polyethylene pressure pipes.

# D6 DESIGN OF PUMPING STATIONS

## D6.3 Wet Well – General

2. The minimum internal dimension on a 'Type 1' and 'Type2' pumping station wet well shall be 1,500mm. This dimension should ensure that the pumps can be accommodated and the ultrasonic foot print will not interfere with the pipework. The preferred internal dimension on 'Type 3' pumping stations is 1800mm or 2100mm.

3. Additional requirement for an epoxy or polyurethane coating to be applied to the whole floor and benching area up to a level of 150mm above the high level alarm level (see Wessex Water Addendum 5.3.4 for details). The coating is only required within the working zone of the pumps, not all the way up the chamber.

7. A soft face wedge gate valve is required in the immediate upstream chamber for isolating the incoming flow. Cover and protect the flange, nuts, and bolts with Denso tape or similar. Benching to be formed around the shoulders of the valve, including a non-rising spindle with support brackets to be operated from the surface.

## D6.5 Valve Chamber

1. Refer to Wessex Water standard drawings for the required contents of the valve chamber.

   For 'Type 1' pumping stations, Wessex Water will not require fixed overpumping pipework.

## D6.6 Flow Metering

1. The developer may be required to provide a flow meter as part of the pumping station provision. This needs to be discussed with Wessex Water at early design stage. It would normally be required for flows exceeding 15 litres per second and where the rising main is in joint use with any other pumping station.

## D6.7 Access into Wet Well, Valve Chamber

1. Openings are to be no smaller than 600mm x 600mm, except where definite non-man entry accessible arrangements are specifically required for instrumentation, valve spindles or sampling purposes.

   Single or multiple covers and frames, up to triple covers of 2,100mm x 1,500mm clear opening, are acceptable for the wet well.

2.b Covers are to be lockable by means of a Wessex Water (Abloy) short-shank padlock to BS EN 12320 Grade 3.

2.f Applies to all sites; the safety grid should be provided with a 225mm diameter slot to allow a suction hose to pass through.

2.i Hand rails are not required for Wessex Water sites.

2.j Hand rails are not required for Wessex Water sites.

| | |
|---|---|
| 3.b. | Refer to Wessex Water standard drawing 269 Vent Pipe for Pumping Station and Covered Storm Tank.<br>Vent should be provided and positioned at least 3m from the kiosk and a minimum of 15m from any habitable building. |
| 5. | A secure eye-bolt anchorage shall be provided adjacent to the covers for attachment of personnel safety harness lines giving fall restraint. The location shall be selected to avoid being a trip hazard. |

### D6.9 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.

### D6.11 Kiosk Construction

14. Kiosk doors are to be lockable by means of a Wessex Water (Abloy) short-shank padlock to BS EN 12320 Grade 3.

### D FIGURES

**Figure D2**
**Typical Type 2 pumping station layout**

To prevent unauthorised use of the layby, a lockable and removable/collapsible post is to be locked in the central area of the layby.

Locking of the post shall be with a Wessex Water standard long-shank Abloy padlock.

Signage must be provided stating: 'Wessex Water private property – access required at all times'.

**Figure D4**
**Typical arrangement of a wet well submersible pump station and wet well**

Refer to Wessex Water standard layout drawing.

# PART E – CIVIL ENGINEERING SPECIFICATION

## E7 CLEANSING AND TESTING

### E7.9 Testing of Ductile Iron, GRP and Steel Pressure Pipelines

8. Test pressures for rising mains shall be the greater of:
    - 1.5 times the maximum operating pressure at the lowest point of the main.
    - The maximum operating pressure plus the maximum calculated surge pressure.
    - Or 5 Bar (bar gauge)**.**

# PART F – MECHANICAL AND ELECTRICAL SPECIFICATION FOR SMALL PUMPING STATIONS

## F1 GENERAL

### F1.2 Operation and Maintenance Documentation

1. The Operating and Maintenance (O&M) manuals are to be provided to Wessex Water prior to commencement of the maintenance period, and shall have as a minimum:
    - Hard copies of all original certificates.
    - Back up CD for control software.
    - 4 x CD/DVD of full O&M manual.
    - From the CD/DVD, the following is to be printed off and put in the Site Manual:
        - Specification sheet (draft sample available on request).
        - Site details (draft sample available on request).
        - Performance curves.
        - Electrical drawings.
        - Pump philosophy (if not simple duty/standby).
        - Installation care and maintenance.

    Also to be added to Site Manual:
    - Copies of certificates.
    - 'As built' drawings.
    - Layout of rising main showing point of connection and any air valves or washouts.
    - Layout showing predicted first point of surface flooding.
    - Parameter list for ultrasonics.
    - Plan of extent of Wessex Water land ownership and access rights.

    During the maintenance period, the developer shall supply the following information:
    - Current owner of pumping station and address.
    - Current operating sub contractor and address.
    - Electricity supplier.
    - Distribution Network Operator (DNO).
    - Site reference number.
    - Core Meter Point Administration Number (MPAN).
    - Size of supply (agreed kVA connection capacity).
    - Annual consumption (kWh).
    - Half hourly metering: fitted/not fitted, with tariff arrangements.
    - Meter serial number.
    - Anticipated date of transfer.
    - Copy of a recent meter bill.
    - Site telephone number and service provider (if BT line provided).

    On completion of the maintenance period the developer shall write to the power supplier, with a copy to Wessex Water, advising of site and supply transfer.

    Formal vesting of the pumping station will not be carried out until the supply and telephone line have been transferred.

    The developer will be required to supply the following information prior to the start of any pre-maintenance inspection:
    - Details and contacts for the continuous call out cover for the station.
    - Details of the chemical dosing in operation (if required), together with information of support and automatic refill arrangements.

## F2 PUMP UNIT SPECIFICATION

### F2.1 Introduction

- Wessex Water has a framework agreement for the supply of submersible sewage pumps. These are the preferred pump types.

4. An automatic de-sludging/flushing valve is required for all sites. A second valve may be required for sites containing high levels of suspended solids.

### F2.4.2 Testing on Site

- Wessex Water's own term contractors or operational staff responsible for the future maintenance of the pumping station will also 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 to be undertaken by the developer or his contractor.

  The developer may wish to use the Wessex Water's pre-maintenance inspection checklist to assist in the supervision of any pumping station contractors.

## F3 ELECTRICAL SPECIFICATION

### F.3.2.2.2 Labels

3. Labels 'Pump No1' and 'Pump No2' shall be positioned above the guide rails in the wet well. Duplicates should also be positioned in the valve chamber above the pipework.

### F3.3.7 Connection for a Mobile Generator

- 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.

### F3.3.9 Telemetry Signals

1. The developer will need to budget for the provision, installation and commissioning of the Wessex Water specified telemetry system. Contact local Developer Services for a telemetry application.

   Where the developer provides the telemetry outstation, Wessex Water will undertake the linking (excluding provision of live BT line, if applicable) of the new outstation to the Wessex Water system on a rechargeable basis.

### F3.4.1.3 Luminaires

- Site compound lighting to be provided with suitably rated IP65 sodium, LED or halogen 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 light column, with either a ladder rest or fold down type column to allow maintenance by one person.

### 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'.

### F3.6 Telemetry Outstation

1.a Telemetry outstation requires a separate compartment as shown on Figure F2 typical control panel layout. Minimum internal dimensions H500mm x W500mm x D200mm to meet requirements specified in F3.3.3. 1.

1.b Terminal blocks shall be provided in the telemetry compartment to interface the pumping station and each pump with the telemetry outstation. 230v 6amp fused spur to be included in the telemetry compartment.

- The physical media for telemetry communications, in order of preference, are:
a. A BT line, or contact Wessex Water to discuss if this is not being provided.
b. Mobile telephony – GPRS is the minimum requirement for data transmission (GSM Circuit Switched Data (CSD) is not acceptable).
c. An alternative bearer, e.g. radio or satellite link.

- The telemetry system, including a live BT line if applicable, must be installed and fully operational prior to commencement of the maintenance period. However it is recommended that the system is installed and commissioned as early as possible following the pumping station becoming operational.

  Should the developer or his contractor carry out any works to the pumping station once telemetry has been installed, he shall contact the Wessex Water control room to prevent unnecessary callouts due to alarms operating. Failure to do so may result in Wessex Water charging him for any costs incurred. It is suggested that a temporary sign is fitted to the kiosk as a reminder to contact the Wessex Water control room.

### F4.4 Miscellaneous

3. A galvanised stool plate should be provided for each pump mounting The duck-foot bend needs to be secured to the stool plate, which in turn should be secure to the base of the wet well. The stool plate is to increase the surface area on the wet well floor thus reducing wear and giving multiple fixing points. See F2.3.4.2g.

## F TABLES

### Table F3 Telemetry requirements for pumping station monitoring

| Function | State description | Signal type | Terminal Numbers | Type 1 | Type 2 | Type 3 |
|---|---|---|---|---|---|---|
| Site mains (DNO) power health | Normal/Failed | Digital input | 1 & 2 | ✓ | ✓ | ✓ |
| High wet well alarm (F3.3.8.5) | Normal/High | Digital input | 3 & 4 | ✓ | ✓ | ✓ |
| Pump 1 Failed | Normal/Failed | Digital input | 5 & 6 | ✓ | ✓ | ✓ |
| Pump 2 Failed | Normal/Failed | Digital input | 7 & 8 | ✓ | ✓ | ✓ |
| PLC watchdog | Normal/Failed | Digital input | 9 & 10 | X | ✓ | ✓ |
| NRV Failed or flow monitor failed | Normal/Failed | Digital input | 11 & 12 | X | ✓ | ✓ |
| Pump 1 Running | Running/Stopped | Digital input | 13 & 14 | ✓ | ✓ | ✓ |
| Pump 2 Running | Running/Stopped | Digital input | 15 & 16 | ✓ | ✓ | ✓ |
| Wet well effluent level | | Analogue input | AI/01+ & AI/01- | ✓ | ✓ | ✓ |
| Rising main delivery flow (totalised) | | Analogue input | AI/02+ & AI/02- | X | See D6.6.1 | See D6.6.1 |
| Pump 1 Auto/Manual (digital via resistor) | Auto/Manual | Analogue input | AI/03+ & AI/03- | X | ✓ | ✓ |
| Pump 2 Auto/Manual (digital via resistor) | Auto/Manual | Analogue input | AI/04+ & AI/04- | X | ✓ | ✓ |
| Note 2 – Only required if the design flow rate of each pump unit is above 15 litres per second. | | | | | | |