



APPENDIX TO SEWERS FOR ADOPTION – 6TH EDITION ADDENDUM TO PUMPING STATIONS

This document sets out specific requirements where there is a need for guidance which is outside the scope of Sewers for Adoption 6th Edition. The page numbers and references shown below refer to the relevant sections of the Sewers for Adoption 6th Edition. Additional clauses are shown in *italics*.

Pump station design criteria

In order to achieve consistency between flow assessments made as part of our pre-planning process and adoptable pumping stations delivered by developers, the following actual water consumption figures should be used to calculate the dry weather flow:

- 💧 2.35 persons per property
- 💧 125 litres per head per day
- 💧 25% infiltration

The use of realistic criteria also leads to smaller pumps and reduced power costs, smaller rising mains and a lower emergency storage requirement.

- 💧 Pump rate = 4 x DWF (increased if necessary to achieve velocity between 0.75-1.8m/s)
- 💧 Emergency storage is 4 hours at 1DWF
- 💧 The peak inflow is considered to be 2.12 x DWF

General notes:

Vesting: Anglian Water promotes the policy that the adoption process, where possible, is completed within the timescales given in the national document. Should the developer fail to complete the Agreement within the timescales AW may complete the works and charge all costs to the developer or where applicable recover costs from the bond. Once completed, the works will be Vested and a Vesting declaration completed.

Surety: The Surety will be reduced on pumping stations to 15% of the value of the pumping station upon issue of the Provisional Certificate.

Fees: Anglian Water will produce annually a schedule of rates to be used to calculate the costs of the works. If the submission/construction of the works is not of a conventional nature or changes are made to the design/layout of the site and re-checking/re-inspections are required, additional charges may be made in accordance with our current charges document.

Additional Services: Anglian Water can provide monitoring of the pumping station via telemetry. Please liaise with our Telemetry Coordinator at the appropriate time who can confirm monitoring costs.

Acknowledgements: This appendix has been produced by the Developer Services Drainage Team. If you have any questions relating to the content, please contact us on 03456 066087.

<u>Page</u>	<u>Clause</u>	<u>Description</u>
30	2.16.5	<i>The use of staged start and stop routines on the motor drives should be explored to avoid high surge pressures on long rising mains.</i>
41	2.17.2	Surface water pumping stations should only be used where there is no other practicable method of surface water drainage and an exceedance flood route is provided in the event of failure of the pumping station.
41	2.17.7	Emergency storage for domestic foul flows should be calculated as per 'pump station design criteria' shown on Page 1 of this document.
41	2.17.8	For surface water pumping stations, 125m ³ of additional storage should be provided above that required for the critical 1in30yr storm event, per hectare of impermeable surface drainage to the pumping station.
41	2.17.10	<i>All pipework within the pumping station and valve chamber shall be ductile iron and the preferred material for the rising main shall be black polyethylene.</i>
41	2.17.11	<i>Arrangements need to be made to transfer the energy supplier to AW's supplier at the time of vesting.</i>
42	2.18.2	The hard standing areas shall be concrete slab or tarmac. The tanker hard standing should drain to the wet well.
42	2.18.6	<i>Secure Sites: Unless otherwise agreed the site should have a boundary brick wall with a minimum height of 1.8m, 225mm width and have an Engineering Brick DPC. The type of brick shall be matched to the surround buildings. The gates should be clear 3.8m opening with galvanised mild steel vertical bars 1.8m high or match the height of the boundary wall. Open sites: (special circumstances only or where local planning restrictions are imposed, subject to agreement with AW) The size and layout shall be similar to that shown for secure sites and demarcated.</i>
42	2.18.7	<i>The station compound, primarily the wet well/valve chamber shall be illuminated with an energy efficient floodlight (5,000 lumen minimum) mounted on a pole, that can be lowered for maintenance purposes, from an approximate height of 4m above the working area.</i>

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43	2.21.3	A hand-operated gate or plug valve with extension spindle is required.
43	2.21.5	The depth of the valve chamber should not exceed 2.0m. The type of cover should be as per 2.22.3 or galvanised mild steel interlocking open mesh with hinged sections to provide access and holes/slots to allow operation of valves from ground level (to be agreed in discussion with the Engineer). Covers to be flush with a recessed 14mm padlock. Where the valve chamber depth is 1.5m or more and has mesh covers, permanent or temporary hand railing must be provided, where practicable. Hand railing must be a minimum height of 1100mm with no gaps greater than 470mm between the top rail, intermediate rail and platform. Access should be via a stainless steel ladder with retractable top section (or using hand railing in place of top section).
44	2.22.4	The venting arrangement shall be type (c) positioned adjacent the compound wall at a height no greater than the compound wall.
<u>Part 3 – M&E Specification for Small Pumping Stations:</u>		
57	3.3.11	The wet well flushing device shall be type b) a hydraulically actuated valve fitted to one of the pumpsets.
57	3.3.13	A synthetic (non corrosive and smooth) loop of line/rope shall be fitted to all pumps and terminate on wall mounted hooks accessible at the cover level. Pumps shall have a minimum-lifting loop of 120mm diameter to facilitate the use of this lifting methodology.
58	3.4.1	Pumps of any KW rating shall have the motor protection fitted as recommended by the pumpset manufacturer
59	3.8.3.4	Pump cables shall terminate in a weatherproof (see clause 3.8.3.4 (b)) and lockable pump cable termination junction box above ground at the wellhead, with facilities for glanding incoming and outgoing cables. The outgoing cable ducts shall be sealed with foam after installation of the cables. A notice shall be fixed to the front of the door stating, "Isolate elsewhere before opening". Ensure cross-ventilation as per clause 3.11.2.10.
61	3.10.1.2	>4kw DOL and above 4kw star delta or other method as required i.e. inverter drive
63	3.10.3	2 copies (1 paper copy and 1 electronic) of Operation and Maintenance manuals shall be provided during the maintenance period including an inventory of all electrical and mechanical items installed together with 2 sets of keys.
63	3.11.2.4	A separate compartment but within the main kiosk construction shall be provided with external access for the regional electricity supplier's meter, fuses etc.

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64	3.11.2.12	All doors shall be fitted with Abloy locks.
64	3.11.3.1	The kiosk should be mounted on a re-batted concrete plinth.
65	3.11.7	Telemetry shall be in accordance with Anglian Water's manual of telemetry and process control. No part of the aerial installed within the compound may extend beyond the boundary of the compound.
70	3.13.1.3(a)	The switch shall be interlocked in the 'off' position and the compartment remain closed when secured by means of a padlock.
71	3.13.2.2	Lamps shall be LED with integral lamp test facility.
71	3.13.3.3(b)	With auto available lamp.
72	3.13.3.8	Emergency Stopping devices are not required.
72	3.13.4.1(c)	<p>The ultra sonic level controller mounted on the front of the common control compartment/fixed to the back board and the transducer mounted on flexible conduit easily accessible for maintenance/cleaning within the wet well and shall comply with the following (for small pumping stations):-</p> <ul style="list-style-type: none"> (i) Operating minimum range of 0.30-15 metres. The developer to select the appropriate transducer for the duty required. (ii) The controller to have a real time clock with facility to automatically correct for GMT/BST and clear visual display of settings and conditions using standard engineering units. The display must be visible during times of low light (e.g. by means of a back light.) (iii) Capable of accurately gathering total pumped volume data efficiency, hours run, starts, etc. (iv) Controller suitable for rack, panel and wall mounted applications. Wall mounted version to be enclosed to I.P. 65 standards. Transducer to be IP 68 ingress protection. (v) Enable restricted access only to parameter settings (e.g. by means of password protection). (vi) Continually monitor pumps performance and alarm deterioration. (vii) Capable of switching to a second pump after a predetermined period regardless of the liquid level being at the off position to provide even pump wear. (viii) Level control system to be Zone 1 hazardous area with the option of Zone 0 where a risk assessment deems necessary. (ix) Output from controller to be 4-20mA as standard with options for additional outputs, where required. (x) On storm/surface water pumping stations the controller shall have the facility to start a pump during long periods of dry weather or inactivity to check pump operation provided a selected minimum head is available and alarm on failure.

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Part 4 – M&E Specification for Micro Pumping Stations:

as per 'Part 3' above with the addition of:-

83	4.2.1	The maximum operating speed shall be 2900 rpm.
89	4.7.2	The electrical supply may be 230v single phase where applicable.
91	4.9.1(h)	<i>A separate distribution board after the incoming supply to feed the control panel, telemetry and other services i.e. lighting, heating, 13amp socket.</i>
101	4.13.4.1(c)	As clause 3.13.4.1(c) but delete (ii), (iii), (vi), (vii) & (x)

Part 5 – Civil Engineering Specification:

142	5.7.9.8 & 5.7.10.2	Pumping mains are to be subjected to and pass a 10-bar Type 2 water pressure test.
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