Approved document H.1 2.36

“Where gravity drainage is impracticable, or protection against flooding due to surcharge in downstream sewers is required, a pumping installation would be needed.”
Practicability of gravity drainage

Not possible
- Use pumping station

Long or difficult route
- Use pumping station if least whole life cost

Minimum gradients not achievable
- Consult undertaker

Through 3rd party land
- Requisition off-site drainage
Previously small private pumping stations not offered for adoption

Definition of types of pumping station in SfA7

Company differences reduced

Two WIS’s for package pumping stations developed
## Pumping station types

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1</td>
<td>Up to 0.25 l/s&lt;br&gt;Typically serving 2 to 5 houses</td>
</tr>
<tr>
<td>Type 2</td>
<td>0.25 l/s to 1 l/s&lt;br&gt;Typically serving 6 to 20 houses</td>
</tr>
<tr>
<td>Type 3</td>
<td>&gt; 1 l/s but &lt; 30kW&lt;br&gt;Typically serving over 20 houses</td>
</tr>
<tr>
<td>Type 4</td>
<td>&gt; 30 kW per pump</td>
</tr>
</tbody>
</table>
Options

Package pumping stations

• New Water Industry Specifications

Bespoke designs

• Details given in SfA Parts D & F
Package pumping stations

- Lockable wet well cover
- Concrete surround
- Wet well
- Domestic wastewater inlet
- Pump units
- Gate valve
- Check valve
- Rising main
- Valve chamber
- Lockable chamber cover
- Chamber
- Pump unit
- Gate valve
- Domestic wastewater inlet
- Pumping assembly
- Collection tank

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Typical bespoke pumping station

Minimum 200mm grade GEN3 concrete surround, base and cover slab (designed to BRE Special Digest 1 Concrete in Aggressive Ground)

Concrete plinth for seating cover frame

Cable ducts as required

Hinged cover

Gate valves

Precast concrete chamber sections

Rocker pipe

Start level

Benching 60° minimum slope

6000 maximum

500 mm minimum

100 mm maximum

Pump guide rails

Support stool

Blindings concrete

Submersible sewage pump

Blindings concrete

Gravity drain to wet well with hand operated valve

Check valve

150 mm grade GEN3 concrete base (designed to BRE Special Digest 1 Concrete in Aggressive Ground)

Section A-A

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Stand-by provision

- Stand by pumps
- (minimum 2 pumps)

- 6 hours storage
  (160 l per dwelling)

- Telemetry

- Overland flow route
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“Where foul water drainage from a building is to be pumped, the effluent receiving chamber should be sized to contain 24-hour inflow to allow for disruption to service. The minimum daily discharge of foul drainage should be taken as 150 litres per head per day for domestic use. For other types of building, the capacity of the receiving chamber should be based on the calculated daily demand of the water intake for the building. Where only a proportion of foul sewage is to be pumped, then the capacity should be based pro-rata. In all pumped systems the controls should be so arranged to optimise pump operation.”
Notes:
1. Not to scale, dimensions in millimetres
2. Typical layout showing minimum dimensions
3. There should be a clear opening in front of the gates to ensure adequate access

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Layout - Type 3
Notes:
1. Not to scale, dimensions in millimetres
2. Typical layout showing minimum dimensions
Layout – Type 1
Kiosk location
Fencing and Security
Separate valve chamber

- Valves should be accessible without entering the wet well
- Normally should not be located in wet well.
  - Health and Safety.
  - Operation and maintenance.
Hazardous areas

• Pumping stations may have hazardous zones

• DSEAR Ratings
  • Zone 0 – frequent explosive atmospheres
  • Zone 1 – explosive atmospheres likely
  • Zone 2 – explosive atmospheres unlikely

• Isolation of harmful gases
  • Sealing of ducts
Control panels

- Separation of panel
  - Form 2 for smaller stations
  - Form 4 for larger stations
Telemetry

• Cannot rely on customers to inform water company of a failure
• Telemetry of some type is therefore necessary
• Complexity related to size
• Options
  • Terminal block for water company to fit outstation
  • WITS DNP output direct from controller

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