

Appendix E: Existing Site Drainage

Drainage & Water Search (Commercial Extra)



Search Details

Prepared for: CP Law Solicitors

Matter: J006290014

Client address: 2 Anvil Court, 50 Denmark Street, Wokingham, RG40 2BB

Property:

Munday, Ashford Hill, Thatcham

Water Company:

Thames Water Utilities Ltd

Thames Water Plc, PO Box 286, Swindon, SN38 2RA

Date Returned:
26/03/2021

Property type:
Commercial

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Search address supplied	Munday, Field off Little Knowle Hill at, Ashford Hill, Thatcham, RG19 8BJ
Your reference	13099039
Our reference	CDWS/CDWS Extra/2021_4371262
Received date	25 February 2021
Search date	25 March 2021

Keeping you up-to-date

Commercial Drainage and Water Enquiry

The Commercial Drainage and Water Enquiry is specifically designed for those purchasing or leasing land or commercial property.

With comprehensive information regarding water and sewerage services and infrastructure assets, combined with appropriate guarantees for commercial property and land transactions, the Commercial Drainage and Water Enquiry mitigates risk and provides peace of mind for commercial property professionals and their advisers.



Thames Water Utilities Ltd
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0800 009 4540

Question

Summary Answer

Maps, Wayleaves, Easements, Manhole Cover and Invert levels

1.1	Where relevant, please include a copy of an extract from the public sewer map.	Map Provided
1.2	Where relevant, please include a copy of an extract from the map of waterworks.	Map Provided
1.3	Is there a wayleave/easement agreement giving Thames Water the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?	No
1.4	On the copy extract from the public sewer map, please show manhole cover, depth and invert levels where the information is available.	See Details

Drainage

2.1	Does foul water from the property drain to a public sewer?	See Details
2.2	Does surface water from the property drain to a public sewer?	See Details
2.3	Is a surface water drainage charge payable?	See Details
2.4	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	No
2.4.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?	No
2.5	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	See Details
2.5.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the 50metres of any buildings within the property?	No
2.6	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
2.7	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	No
2.8	Is the building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?	Not At Risk
2.9	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	0.163 Kilometres

Water

3.1	Is the property connected to mains water supply?	See Details
3.2	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	No
3.3	Is any water main or service pipe serving or which is proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	No
3.4	Is the property at risk of receiving low water pressure or flow?	See Details
3.5	What is the classification of the water supply for the property?	See Details
3.6	Please include details of the location of any water meter serving the property.	See Details

Question

Summary Answer

Charging

4.1.1	Who are the sewerage undertakers for the area?	Thames Water
4.1.2	Who are the water undertakers for the area?	Southern
4.2	Who bills the property for sewerage services?	See Details
4.3	Who bills the property for water services?	See Details
4.4	Is there a meter installed at this property?	No
4.5	Are there any trade effluent consents relating to this site/property for disposal of chemically enhanced waste?	No

Search address supplied: Munday, Field off Little Knowle Hill at, Ashford Hill, Thatcham, RG19 8BJ

Any new owner or occupier will need to contact Thames Water on 0800 316 9800 or log onto our website www.thameswater.co.uk and complete our online form to change the water and drainage services bills to their name.

The following records were searched in compiling this report: - the map of public sewers, the map of waterworks, water and sewer billing records, adoption of public sewer records, building over public sewer records, the register of properties subject to internal foul flooding, the register of properties subject to poor water pressure and the drinking water register.

Thames Water Utilities Ltd (TWUL) holds all of these.

TWUL, trading as Property Searches, are responsible in respect of the following:-

- (i) any negligent or incorrect entry in the records searched
- (ii) any negligent or incorrect interpretation of the records searched
- (iii) any negligent or incorrect recording of that interpretation in the search report
- (iv) and compensation payments

Please refer to the attached [Terms & Conditions](#). Customers and clients are asked to note these terms, which govern the basis on which this Commercial Drainage and Water search is supplied.

Maps, Wayleaves, Easements, Manhole Cover and Invert levels

1.1 Where relevant, please include a copy of an extract from the public sewer map.

A copy of an extract of the public sewer map is included, showing the public sewers, disposal mains and lateral drains in the vicinity of the property.

1.2 Where relevant, please include a copy of an extract from the map of waterworks.

A copy of an extract from the map of waterworks is included in which the location of the property is identified.

1.3 Wayleaves & Easements

Is there a wayleave/easement agreement giving Thames Water the right to lay or maintain assets or right of access to pass through private land in order to reach the Company's assets?

No.

1.4 Manhole

On the copy extract from the public sewer map, please show manhole cover, depth and invert levels where the information is available.

Details of any manhole cover and invert levels applicable to this site are enclosed.

Drainage

2.1 Does foul water from the property drain to a public sewer?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.

2.2 Does surface water from the property drain to a public sewer?

Records indicate that this enquiry relates to a plot of land or a recently built property. It is recommended that the drainage proposals are checked with the developer. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

2.3 Is a surface water drainage charge payable?

This enquiry appears to relate to a plot of land or a recently built property. It is recommended that charging proposals are checked with the developer. If the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System (SuDS). Further information may be available from the Developer.

2.4 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundary of the property?

The public sewer map indicates that there are no public sewers, disposal mains or lateral drains within the boundaries of the property. However, from the 1st October 2011 there may be lateral drains and/or public sewers which are not recorded on the public sewer map but which may prevent or restrict development of the property.

2.4.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within the boundaries of the property?

The public sewer map included indicates that there is no public pumping station within the boundaries of the property.

2.5 Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

The public sewer map indicates that there are no public sewers within 30.48 metres (100 feet) of any buildings within the property.

However, from the 1st October 2011 many private sewers were transferred into public ownership and may not be recorded on the public sewer map and it is our professional opinion that if the property is connected to a foul sewer it is likely that there will be a public sewer within 30.48 metres (100 feet) of any buildings within the property.

2.5.1 Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

The public sewer map included indicates that there is no public pumping station within 50 metres of any buildings within the property.

2.6 Are any sewers or lateral drains serving, or which are proposed to serve, the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that Foul sewers serving the development, of which the property forms part are not the subject of an existing adoption agreement or an application for such an agreement.

The Surface Water sewer(s) and/or Surface Water lateral drain(s) are not the subject of an adoption agreement.

2.7 Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

There are no records in relation to any approval or consultation about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain. However, the sewerage undertaker might not be aware of a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.

2.8 Is the building which is or forms part of the property, at risk of internal flooding due to overloaded public sewers?

The property is not recorded as being at risk of internal flooding due to overloaded public sewers.

From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership. It is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.

2.9 Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

The nearest sewage treatment works is Ashford Hill STW which is 0.163 kilometres to the north east of the property.

Water

3.1 Is the property connected to mains water supply?

The enquiry appears to relate to a plot of land or a recently built property. It is recommended that the water proposals are checked with the developer.

3.2 Are there any water mains, resource mains or discharge pipes within the boundary of the property?

The map of waterworks does not indicate any water mains, resource mains or discharge pipes within the boundaries of the property.

3.3 Is any water main or service pipe serving, or which is proposed to serve, the property the subject of an existing adoption agreement or an application for such an agreement?

Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.

3.4 Is the property at risk of receiving low water pressure or flow?

Records confirm that the property is not recorded on a register kept by the water undertaker as being at risk of receiving low water pressure or flow.

3.5 What is the classification of the water supply for the property?

The water supplied to the property has an average water hardness of 296.88mg/l calcium which is defined as Hard by Southern Water.

3.6 Please include details of the location of any water meter serving the property.

This enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.

Charging

4.1.1 – Who is responsible for providing the sewerage services for the property?

Thames Water Utilities Limited, Clearwater Court, Reading, RG1 8DB is the sewerage undertaker for the area.

4.1.2 – Who is responsible for providing the water services for the property?

Southern Water, Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX is the water undertaker for the area.

4.2 Who bills the property for sewerage services?

If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk

4.3 Who bills the property for water services?

If you wish to know who bills the water services for this property then you will need to contact the current owner. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk

4.4 Is there a meter installed at this property?

Records indicate that there is no meter installed at this property.

4.5 Trade Effluent Consent

Are there any trade effluent consents relating to this site/property for disposal of chemically enhanced waste?

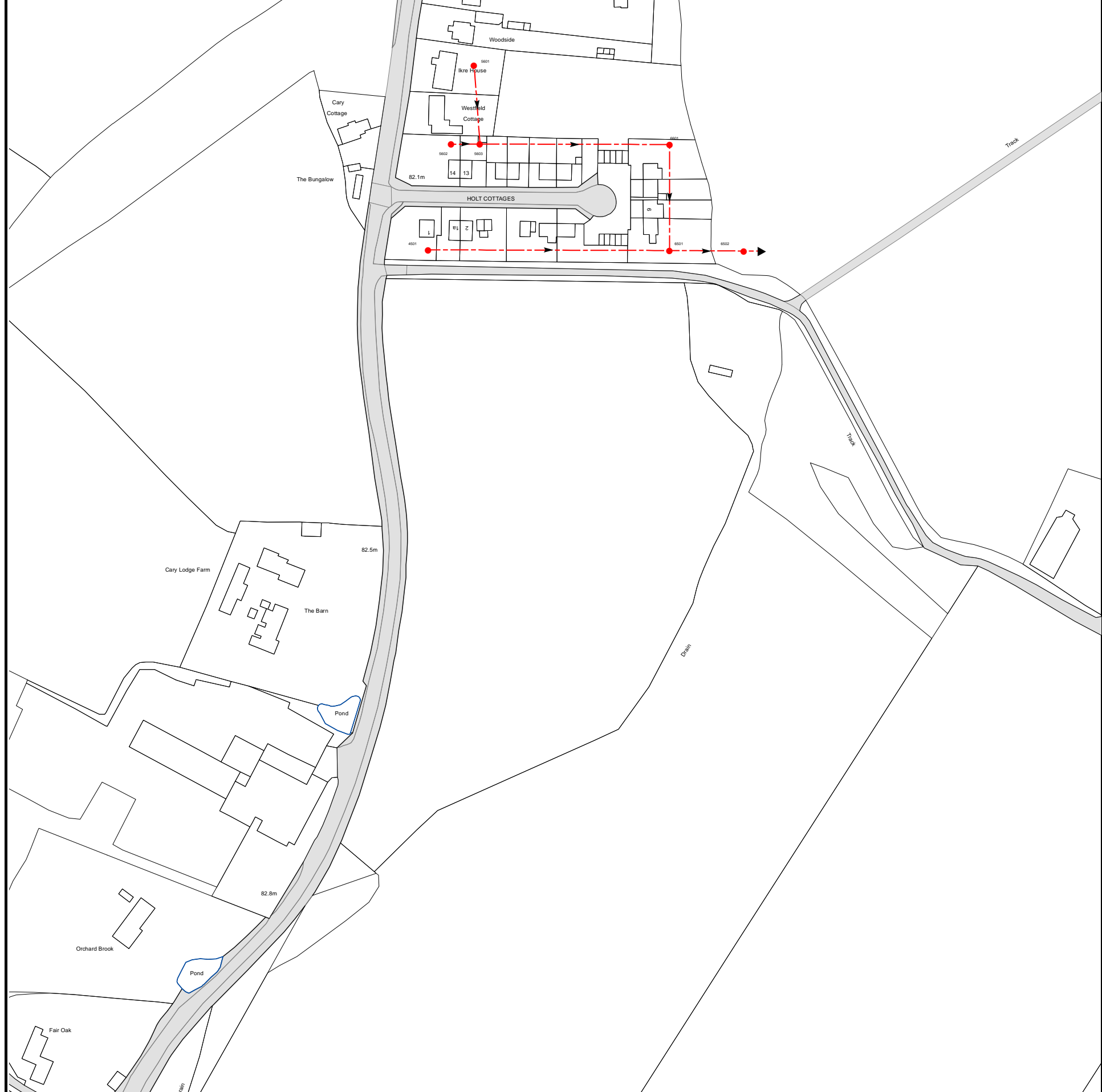
No.

Payment for this Search

A charge will be added to your suppliers account.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information.

CommercialDW Drainage and Water Enquiry Extra Sewer Map- CDWS/CDWS Extra/2021_4371262

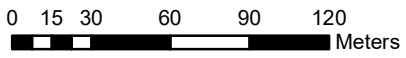


The width of the displayed area is 500m
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.
Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no survey information is available.

Manhole Reference	Manhole Cover Level	Manhole Invert Level
4501	n/a	n/a
6502	n/a	n/a
6501	n/a	n/a

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The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved



















Scale: 1:2863
Width: 800m
Printed By: Rveldhur
Print Date: 26/03/2021
Map Centre: 455555,161443
Grid Reference: SU5561SE

Comments:








Sewer Key - Commercial Drainage and Water Enquiry

Public Sewer Types (Operated & Maintained by Thames Water)

-  **Foul:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  Trunk Surface Water
-  Trunk Foul
-  Storm Relief
-  Trunk Combined
-  Vent Pipe
-  Bio-solids (Sludge)
-  Proposed Thames Surface Water Sewer
-  Proposed Thames Water Foul Sewer
-  Gallery
-  Foul Rising Main
-  Surface Water Rising Main
-  Combined Rising Main
-  Sludge Rising Main
-  Proposed Thames Water Rising Main
-  Vacuum





Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Dam Chase
-  Fitting
-  Meter
-  Vent Column




Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Control Valve
-  Drop Pipe
-  Ancillary
-  Weir





End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Outfall
-  Undefined End
-  Inlet






Other Symbols

Symbols used on maps which do not fall under other general categories








-  Public/Private Pumping Station
-  Change of characteristic indicator (C.O.C.I.)
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Operational Site
-  Chamber
-  Tunnel
-  Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

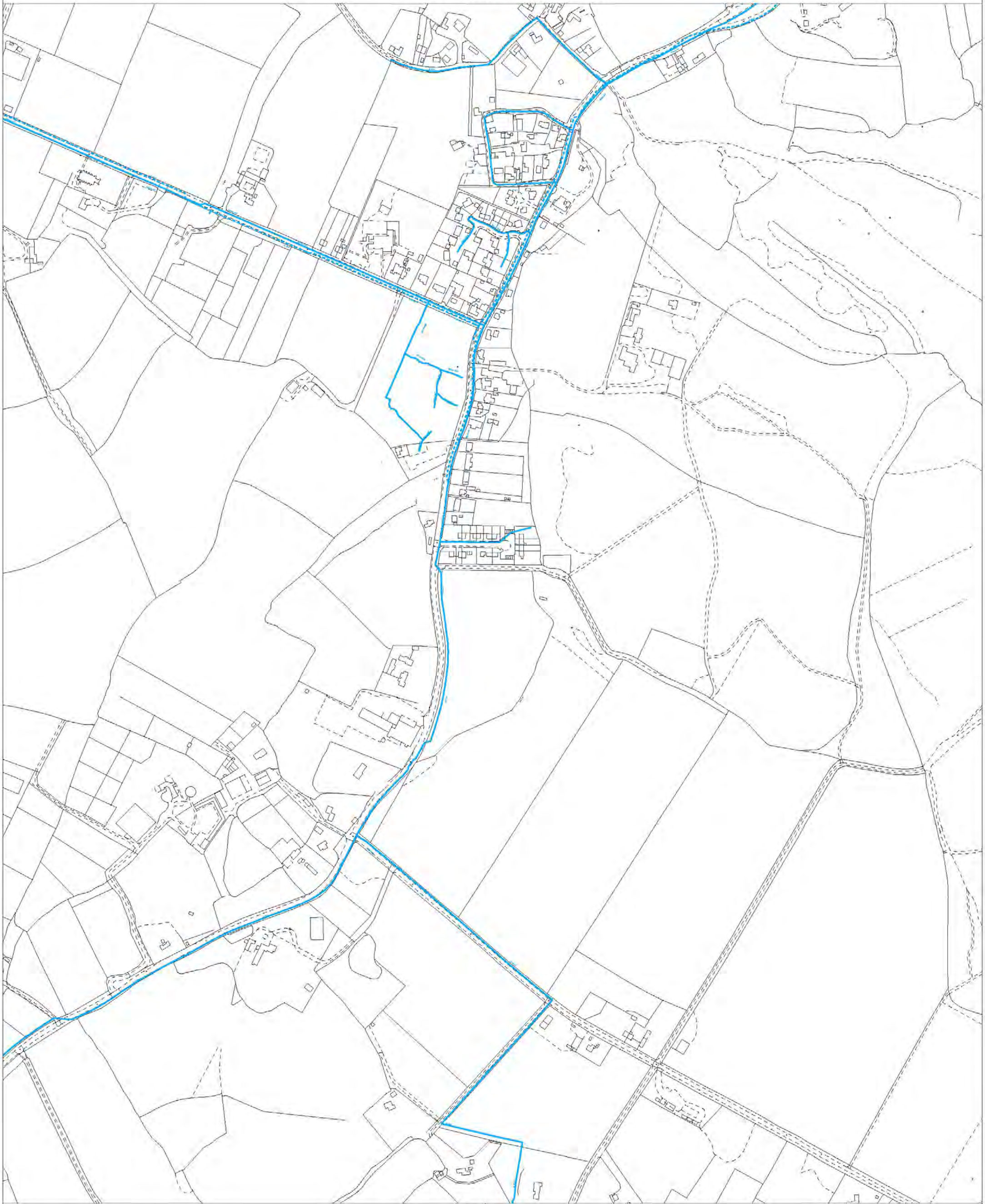
-  Foul Sewer
-  Surface Water Sewer
-  Combined Sewer
-  Gully
-  Culverted Watercourse
-  Proposed
-  Abandoned Sewer

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plans are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
- 5) 'na' or '0' on a manhole level indicates that data is unavailable.

- 6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0800 009 4540.

SOUTHERN WATER



The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site.

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O.S. REF: SU5561SE

Scale: 1:5000

Water Plot

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement



Printed By: PP

Date: 25-3-2021

2021_4371262

Requested By:

Pipe Line Colours

Water mains are coloured according to their supply (reservoir) zone

Water mains appear in the following colours:

	Orange
	Cyan
	Red
	Brown
	Green
	Blue
	Magenta
	Pink
	Yellow (Private & Non-SWS Only)

Pipe Line Styles

	Distribution Main
	Fire Main
	Communication Pipe
	Trunk Main
	Raw Water Main
	Non-Potable Water Main
	Proposed Main
	Decommissioned Main
	Private & Non-SWS

Materials

AK Alkathene	LEAD Lead
BAC Bonded Asbestos Cement *	PE Polyethyelene
BP Black Polythene	PEB Polyethyelene Barrier
C Copper	PF Pitch Fibre
CI Cast Iron	PSC Plastic/Steel Composite
CO Concrete	PVC (Unplast) Polyvinyl Chloride
CPS Concrete (Pre-Stressed)	RPM Reinforced Plastic Matrix
CSB Concrete Segments (Bolted)	SI Spun (grey) Iron
CSU Concrete Segments (Un-Bolted)	ST Steel
DI Ductile Iron	VC Vitrified Clay
DS Ductile Sleeved	UNK Unknown*
GI Galvanised Iron	
GRC Glass Reinforced Concrete	
GRE Glass Reinforced Epoxy	
GRP Glass Reinforced Plastic	
HDPE High Density Polyethylene	
HPE High Performance Polyethylene	
HPE-PL High Performance Polyethylene - "Protectaline"	
MDPE Medium Density Polyethylene	

*Warning

BAC Pipes are constructed of Bonded Asbestos Cement
UNK Pipes are may be constructed of Bonded Asbestos Cement

Symbols

Fittings (Valves, Meters etc.)

	Sluice Valve
	Sluice Valve (Clockwise closing)
	Closed Valve
	District Meter Area Valve (Closed)
	Butterfly Valve
	Motorised Valve
	Air Valve
	Reflux Valve
	Non-Return Valve
	Pressure Sustaining Valve
	Pressure Reducing Valve
	Fire Hydrant
	Washout Hydrant
	Washout Empty Valve
	Emptying Plug
	District Flow Meter
	Bulk Flow Meter
	Customer Meter
	Stop Valve
	Boundary MSM Box
	Insertion Flow Meter Point
	Swab Insertion Point
	Access Point
	Anode
	Leak Noise Correlator Survey Point
	Change Node
	Capped End
	Junction

Operational Sites

	Booster Station
	Service Reservoir
	Surface Reservoir
	Water Tower
	Water Supply Works
	Break Pressure Tank
	Contact Tank
	Bore Hole
	Abstraction Point
	Raw Water Transfer Station

Other symbols or text may be visible which are not shown here.
These are used for Southern Water operational guidance only.

For your guidance:

- Thames Water Property Searches Complaints Procedure:
 - Thames Water Property Searches offers a robust complaints procedure. Complaints can be made by telephone, in writing, by email (searches@thameswater.co.uk) or through our website (www.thameswater-propertysearches.co.uk)

As a minimum standard Thames Water Property Searches will:

- endeavour to resolve any contact or complaint at the time of receipt. If this isn't possible, we will advise of timescales;
- investigate and research the matter in detail to identify the issue raised (in some cases third party consultation will be required);
- provide a response to the customer within 10 working days of receipt of the complaint;
- provide compensation, if no response or acknowledgment that we are investigating the case is given within 10 working days of receipt of the complaint;
- keep you informed of the progress and, depending on the scale of investigation required, update with new timescales as necessary;
- provide an amended search, free of charge, if required;
- provide a refund if we find your complaint to be justified; take the necessary action within our power to put things right.

If you want us to liaise with a third party on your behalf, just let us know.

If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager, for resolution, who will respond again within 5 working days.

If you remain dissatisfied with our final response you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk

Question 1.1

For your guidance:

- The Water Industry Act 1991 defines Public Sewers as those which Thames Water have responsibility for. Other assets and rivers, watercourses, ponds, culverts or highway drains may be shown for information purposes only.
- The company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.
- Assets other than public sewers may be shown on the copy extract, for information.

Question 1.2

For your guidance:

- The “water mains” in this context are those, which are vested in and maintainable by the water company under statute.
- Assets other than public water mains may be shown on the plan, for information only.
- Water companies are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Question 2.1

For your guidance:

- Water companies are not responsible for any private drains that connect the property to the public sewerage system and do not hold details of these. The property owner will normally have sole responsibility for private drains serving the property. These may pass through land outside the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- If foul water does not drain to the public sewerage system, the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.
- An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.2

For your guidance:

- Sewerage Undertakers are not responsible for any private drains that connect the property to the public sewerage system, and do not hold details of these.
- The property owner will normally have sole responsibility for private drains serving the property. These private drains may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.
- In some cases, 'Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system.
- At the time of privatisation in 1989, Sewerage Undertakers were sold with poorly-kept records of sewerage infrastructure. The records did not always show which properties were connected for surface water drainage purposes. Accordingly, billing records have been used to provide an answer for this element of the drainage and water search.
- Due to the potential inadequacy of 'Sewerage Undertakers' infrastructure records with respect to surface water drainage, it is the customer's responsibility to inform the Sewerage Undertaker that they do not receive the surface water drainage service. If on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk.
- If surface water from the property does not drain to the public sewerage system, the property may have private facilities in the form of a soakaway or private connection to a watercourse.
- An extract from the public sewer map is enclosed. This will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

Question 2.3

For your guidance:

- If surface water from the property drains to a public sewer, then a surface water drainage charge is payable.
- Where a surface water drainage charge is currently included in the property's water and sewerage bill but, on inspection, the buyer finds that surface water from the property does not drain to a public sewer, then the property may be eligible for a rebate of the surface water drainage charge. If you wish to know who bills the sewerage services for this property then you will need to contact the current owner. For a list of all potential retailers of sewerage services for the property please visit www.open-water.org.uk.

Question 2.4

For your guidance:

- Thames Water has a statutory right of access to carry out work on its assets. Employees of Thames Water or its contractors may, therefore, need to enter the property to carry out work.
- Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drain within the boundary of the property are the responsibility of the householder.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public sewer running within the boundary of the property may restrict further development. The Company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.4.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The approximate boundary of the property has been determined by reference to the Ordnance Survey Record or the map supplied.
- The presence of a public pumping station within the boundary of the property may restrict further development. The company has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the company, or its contractors, needing to enter the property to carry out work.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.5

For your guidance:

- This is because there are no buildings from which to measure the distance to any public sewers.
- The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.5.1

For your guidance:

- Private pumping stations installed before 1st July 2011 will be transferred into the ownership of the sewerage undertaker.
- From the 1st October 2016 private pumping stations which serve more than one property have been transferred into public ownership but may not be recorded on the public sewer map.
- The presence of a public pumping station within 50 metres of the building(s) within the property can result in the local authority requiring a property to be connected to the public sewer.
- The measurement is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Question 2.6

For your guidance:

- Any sewers and/or lateral drains within the boundary of the property are not the subject of an adoption agreement and remain the responsibility of the householder. Adoptable sewers are normally those situated in the public highway.
- This enquiry is of interest to purchasers who will want to know whether or not the property will be linked to a public sewer.
- Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.
- Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991 and meeting the requirements of 'Sewers for Adoption' 6th Edition.

Question 2.7

For your guidance:

- From the 1st October 2011 most private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have been approved or consulted about any plans to erect a building or extension on the property over or in the vicinity of these.
- Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered.

Question 2.8

For your guidance:

- For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water Utilities Ltd on Tel: 0800 316 9800 or website www.thameswater.co.uk

Question 2.9

For your guidance:

- The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated.
- The sewerage undertaker’s records were inspected to determine the nearest sewage treatment works.
- It should be noted that there may be a private sewage treatment works closer than the one detailed above that has not been identified.
- As a responsible utility operator, Thames Water Utilities Ltd seeks to manage the impact of odour from operational sewage works on the surrounding area. This is done in accordance with the Code of Practice on Odour Nuisance from Sewage Treatment Works issued via the Department of Environment, Food and Rural Affairs (DEFRA). This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment for those living close to works. However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit www.thameswater.co.uk

Question 3.1

For your guidance:

- The Company does not keep details of private supplies. The situation should be checked with the current owner of the property.

Question 3.2

For your guidance:

- The boundary of the property has been determined by reference to the plan supplied. Where a plan was not supplied, the Ordnance Survey Record was used. If the Water undertaker mentioned in Question 4.1.2 is not Thames Water Utilities Ltd the boundary of the property has been determined by the Ordnance Survey.
- The presence of a public water main within the boundary of the property may restrict further development within it. Water companies have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the Company, or its contractors, needing to enter the property to carry out work.

Question 3.3

For your guidance:

- This enquiry is of interest to purchasers who will want to know whether or not the property will be linked to the mains water supply.

Question 3.4

For your guidance:

- “Low water pressure” means water pressure below the regulatory reference level, which is the minimum pressure when demand on the system is not abnormal.
- Water Companies are required to include in the Regulatory Register that is presented annually to the Director General of Water Services, properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level)
- The reference level of service is a flow of 9 litres/minute at a pressure of 10metres / head on the customer's side of the outside stop valve (osv). The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. The reference level applies to a single property. Where more than one property is served by a common service pipe, the flow assumed in the reference level must be appropriately increased to take account of the total number of properties served. For two properties, a flow of 18 litres/minute at a pressure of 10metres/head on the customers' side of the osv is appropriate. For three or more properties the appropriate flow should be calculated from the standard loadings provided in BS806-3 or the Institute of Plumbing handbook.
- **Allowable exclusions** The Company is required to include in the Regulatory Register properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply.
- **Abnormal demand:** This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Companies should exclude from the reported figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year companies may exclude, for each property, up to five days of low pressure caused by peak demand.
- **Planned maintenance:** Companies should not report low pressures caused by planned maintenance. It is not intended that companies identify the number of properties affected in each instance. However, companies must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance are actually caused by maintenance.
- **One-off incidents:** This exclusion covers a number of causes of low pressure; mains bursts; failures of company equipment (such as pressure reducing valves or booster pumps); firefighting; and action by a third party. However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.
- **Low-pressure incidents of short duration:** Properties affected by low pressure, which only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded from the reported figures.
- Please contact your water undertaker mentioned in Question 4.1.2 if you require further information on water pressure.

Question 3.5

For your guidance:

- Water hardness can be expressed in various indices for example the hardness settings for dishwashers are commonly expressed in Clark's degrees, but check with the manufacturer as there are also other units. The following table shows the normal ranges of hardness.

Hardness Category	Calcium (mg/l)	Calcium Carbonate (mg/l)	English Clarke degrees	French degrees	General/ German degrees
Soft	0 to 20	0 to 50	0 to 3.5	0 to 5	0 to 2.8
Moderately Soft	21 to 40	51 to 100	3.6 to 7	6 to 10	2.9 to 5.6
Slightly hard	41 to 60	101 to 150	8 to 10.5	11 to 15	5.7 to 8.4
Moderately hard	61 to 80	151 to 200	10.6 to 14	16 to 20	8.5 to 11.2
Hard	81 to 120	201 to 300	15 to 21	21 to 30	11.3 to 16.8
Very hard	Over 120	Over 300	Over 21	Over 30	Over 16.8

- Please contact your water undertaker mentioned in Question 4.1.2 if you require further information on water hardness.

Question 3.6

For your guidance:

- Where a meter does not serve the property and the customer wishes to consider this method of charging, they should contact the current owner if they wish to know who bills the water services for this property. For a list of all potential retailers of water services for the property please visit www.open-water.org.uk.

Question 4.4

For your guidance:

- The Water Industry Act 1991 Section 150, The Water Resale Order 2001 provides protection for people who buy their water or sewerage services from a person or company instead of directly from a water or sewerage company. Details are available from the Office of Water Services (OFWAT) website is www.ofwat.gov.uk.
- The Company may install a meter at the premises where a buyer makes a change of use of the property or where the buyer uses water for:
 - Watering the garden other than by hand (this includes the use of sprinklers).
 - Automatically replenishing a pond or swimming pool with a capacity greater than 10,000 litres.
 - A bath with a capacity in excess of 230 litres.
 - A reverse osmosis unit
- Where a meter does not serve the property and the customer wishes to consider this method of charging, they should contact the current owner if they wish to know who bills the sewerage and water services for this property. For a list of all potential retailers of sewerage and water services for the property please visit www.open-water.org.uk.

Question 4.5

For your guidance:

- If a Trade effluent consent applies to the premises which are the subject of this search, it is for the applicant to satisfy itself as to the suitability of the consent for its client's requirements. The occupier of any trade premises in the area of a sewerage undertaker may discharge any trade effluent proceeding from those premises into the undertaker's public sewers if he does so with the undertaker's consent. If, in the case of any trade premises, any trade effluent is discharged without such consent or other authorisation, the occupier of the premises shall be guilty of an offence.
- Please note any existing consent is dependent on the business being carried out at the property and will not transfer automatically upon change of ownership.
- For further information regarding Trade Effluent consents please contact: Trade Effluent Control, Crossness STW, Belvedere Road, Abbey Wood London SE2 9AQ.

CommercialDW Drainage and Water Enquiry Extra Terms and Conditions

Customer and Clients are asked to note these terms, which govern the basis on which this CommercialDW Drainage & Water Enquiry Extra is supplied

Definitions

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.

'Company' means a water service company or their data service provider producing the Report.

'Customer' means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.

'Order' means any request completed by the Customer requesting the Report.

'Property' means the address or location supplied by the Customer in the Order.

'Report' means the drainage and/or water report prepared by The Company in respect of the Property.

'Thames Water' means Thames Water Utilities Limited registered in England and Wales under number 2366661 whose registered office is at Clearwater Court, Vastern Road, Reading, Berks, RG1 8DB;

Agreement

1 Thames Water agrees to supply the Report to the Customer and the Client subject to these terms. The scope and limitations of the Report are described in paragraph 2 of these terms. Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing these terms to the attention of the Client. The Customer and Client agree that the placing of an Order for a Report indicates their acceptance of these terms.

The Report

2. Whilst Thames Water will use reasonable care and skill in producing the Report, it is provided to the Customer and the Client on the basis that they acknowledge and agree to the following:-

2.1 The information contained in the Report can change on a regular basis so Thames Water cannot be responsible to the Customer and the Client for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.

2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained.

2.3 The information contained in the Report is based upon the accuracy, completeness and legibility of the address and other information supplied by the Customer or Client.

2.4 The Report provides information as to the location and connection of existing services and should not be relied on for any other purpose. The Report may contain opinions or general advice to the Customer and the Client and Thames Water cannot ensure that any such opinion or general advice is accurate, complete or valid and accepts no liability therefore.

2.5 The position and depth of apparatus shown on any maps attached to the Report are approximate, and are furnished as a general guide only, and no warranty as to its correctness is given or implied. The exact positions and depths should be obtained by excavation trial holes and the maps must not be relied on in the event of excavation or other works made in the vicinity of apparatus shown on any maps.

Liability

3 Thames Water shall not be liable to the Client for any failure, defect or non-performance of its obligations arising from any failure of, or defect in any machine, processing system or transmission link or anything beyond Thames Water's reasonable control or the acts or omissions of any party for whom Thames Water are not responsible.

3.1 Where the Customer sells this report to a Client (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) Thames Water shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) be liable for any loss or damage whatsoever and the Customer shall indemnify Thames Water in respect of any claim by the Client.

3.2 Where a report is requested for an address falling within a geographical area where Thames Water and another Company separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by Thames Water or the Company as the case may be will remain with Thames Water or the Company as the case may be in respect of the accuracy of the information supplied. Where Thames Water is supplying information which has been provided to it by another Company for the purposes outlined in this agreement Thames Water will therefore not be liable in any way for the accuracy of that information and will supply that information as agent for the Company from which the information was obtained.

3.3 Except in respect of death or personal injury caused by negligence, or as expressly provided in these Terms:

3.3.1 The entire liability of Thames Water or the Company as the case may be in respect of all causes of action arising under or in connection with the Report (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) shall not exceed £5,000,000 (five million pounds); and

3.3.2 Thames Water shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) be liable for any loss of profit, loss of goodwill, loss of

reputation, loss of business or any indirect, special or consequential loss, damage or other claims, costs or expenses;

Copyright and Confidentiality

4. The Customer and the Client acknowledge that the Report is confidential and is intended for the personal use of the Client. The copyright and any other intellectual property rights in the Report shall remain the property of Thames Water or the Company as the case may be. No intellectual or other property rights are transferred or licensed to the Customer or the Client except to the extent expressly provided

4.1 The Customer or Client is entitled to make copies of the Report but is not permitted to copy any maps contained in, or attached to the Report

4.2 The maps contained in the Report are protected by Crown Copyright and must not be used for any purpose outside the context of the Report.

4.3 The Customer and Client agree (in respect of both the original and any copies made) to respect and not to alter any trademark, copyright notice or other property marking which appears on the Report.

Payment

5. Unless otherwise stated all prices are inclusive of VAT. The Customer shall pay for the price of the Report specified by Thames Water, without any set off, deduction or counterclaim.

5.1 Unless payment has been received in advance, Customers shall be invoiced for the agreed fee once their request has been processed. Any such invoice must be paid within 14 days. Where the Customer has an account with Thames Water, payment terms will be as agreed with Thames Water.

5.2 No payment shall be deemed to have been received until Thames Water has received cleared funds.

5.3 If the Customer fails to pay Thames Water any sum due Thames Water shall be entitled but not obliged to charge the Customer interest on the sum from the due date for payment at the annual rate of 2% above the base lending rate from time to time of Natwest Bank, accruing on a daily basis until payment is made. Thames Water reserves the right to claim interest under the Late Payment of Commercial Debts (Interest) Act 1998.

5.4 Thames Water reserves the right to increase fees on reasonable prior written notice at any time.

Cancellations or Alterations

6. Once an Order is placed, Thames Water shall not be under any obligation to accept any request to cancel that Order and payment for the Order shall still be due upon completion of the Report. In cases where an error has been made in the original Order (e.g. the Customer has supplied an incorrect address), the Customer will need to place a second Order, detailing the correct information, and shall be liable to pay a second charge in accordance with clause 5 above.

Delivery

7. On receiving your order the reports will be posted to you within 10 working days from receipt.

7.1 Delivery is subject to local post conditions and regulations. All items should arrive within 12 working days, but Thames Water cannot be held responsible should delays be caused by local post conditions, postal strikes or other causes beyond the control of Thames Water.

General

8. If any provision of these terms is or becomes invalid or unenforceable, it will be taken to be removed from the rest of these terms to the extent that it is invalid or unenforceable. No other provision of these terms shall be affected.

8.1 These terms shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.

8.2 Nothing in this notice shall in any way restrict the Customer or Clients statutory or any other rights of access to the information contained in the Report.

These Terms & Conditions are available in larger print for those with impaired vision.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of TWUL until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. TWUL does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at TWUL's discretion for increased administration costs.

A copy of TWUL's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

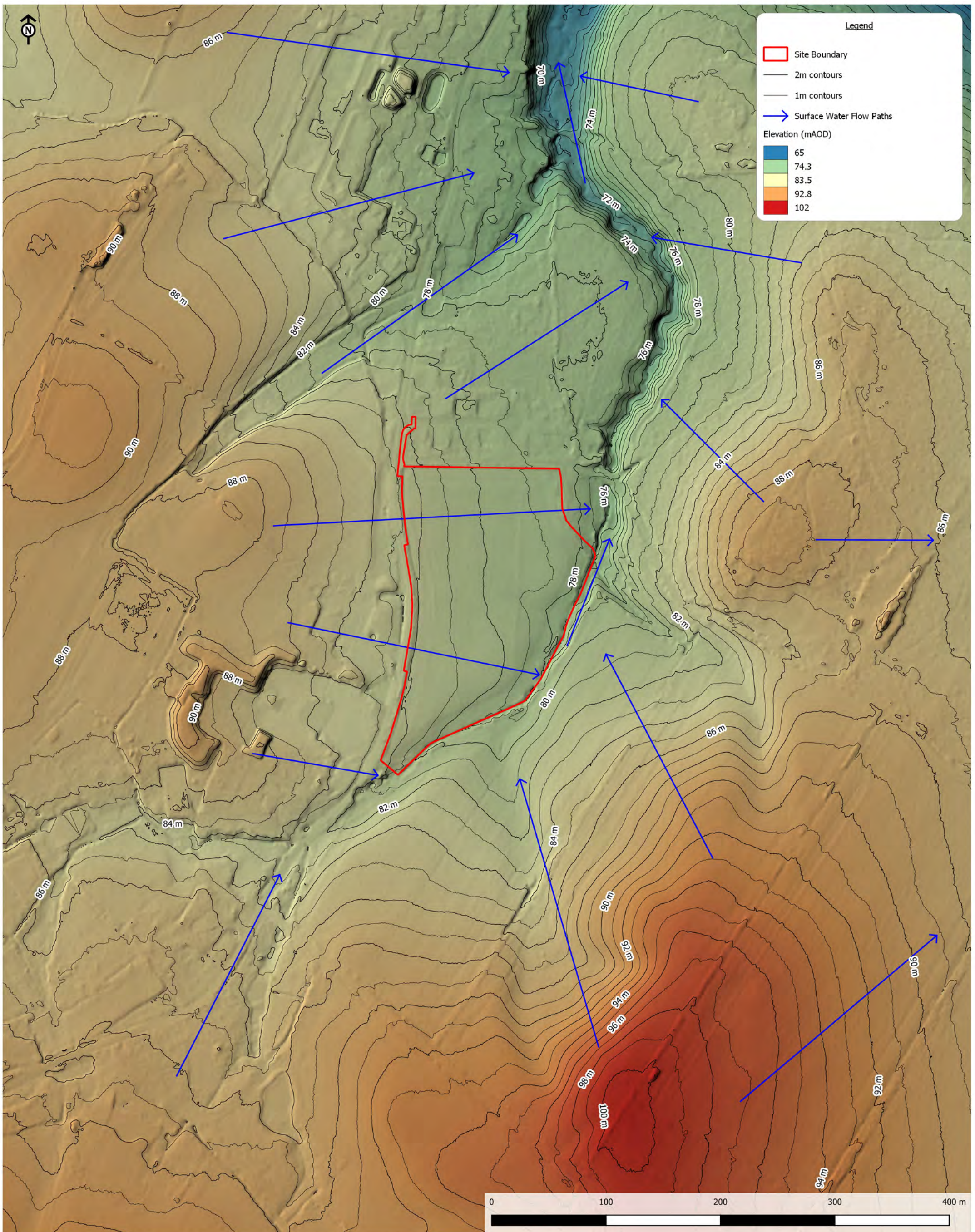
If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the goods or services covered by this invoice falls under the regulation of the Water Industry Act 1991, and you remain dissatisfied you can refer your complaint to CC Water on 0845 039 2837 (it will cost you the same as a local call) or write to them at 11 Belgrave Road, London SW1V 1RB.

Ways to pay your bill

By Post – Cheque only, made payable to 'Thames Water Utilities Ltd' writing your Thames Water account number on the back. Please fill in the payment slip below and send it with your cheque to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW	By BACS Payment direct to our bank on account number 90478703, sort code 60-00-01 may be made. A remittance advice must be sent to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW. Or fax to 01793 424599 or email: cashoperations@thameswater.co.uk	Telephone Banking By calling your bank and quoting your invoice number and the Thames Water's bank account number 90478703 and sort code 60-00-01	By Swift Transfer You may make your payment via SWIFT by quoting NWBKGB2L together with our bank account number 90478703, sort code 60-00-01 and invoice number
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Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.



Land South of Holt Cottages, Ashford Hill

Client: JPP Land Ltd / Rosemary Pelham and Timothy Pyper

Surface Water Flow Paths

Scale: 1:3000@A3
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 Job Number: 13692
 Drawn by - Checked by: RLF/RP - RC/AH
 Drg No - Status/Revision: 13692-CRH-XX-XX-FG-G-7010 - P3
 File location: N:\13500 - 13749\13692 R - Ashford Hill Residential Development\Project_Workspaces\FRA (pdf in Outputs)
 Date (Revision History): 06/08/2021 (P1, First Issue, 05/07/21, RLF; P2, Site Boundary, 02/08/21, RLF; P3, Site Boundary, 06/08/21, RP)

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 REDHILL 01737 784 500 □ BIRMINGHAM 01675 467 484
 BRISTOL 0117 916 1066 □ DUBAI 00 971 4453 4735
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Appendix F: Existing Flood Risk



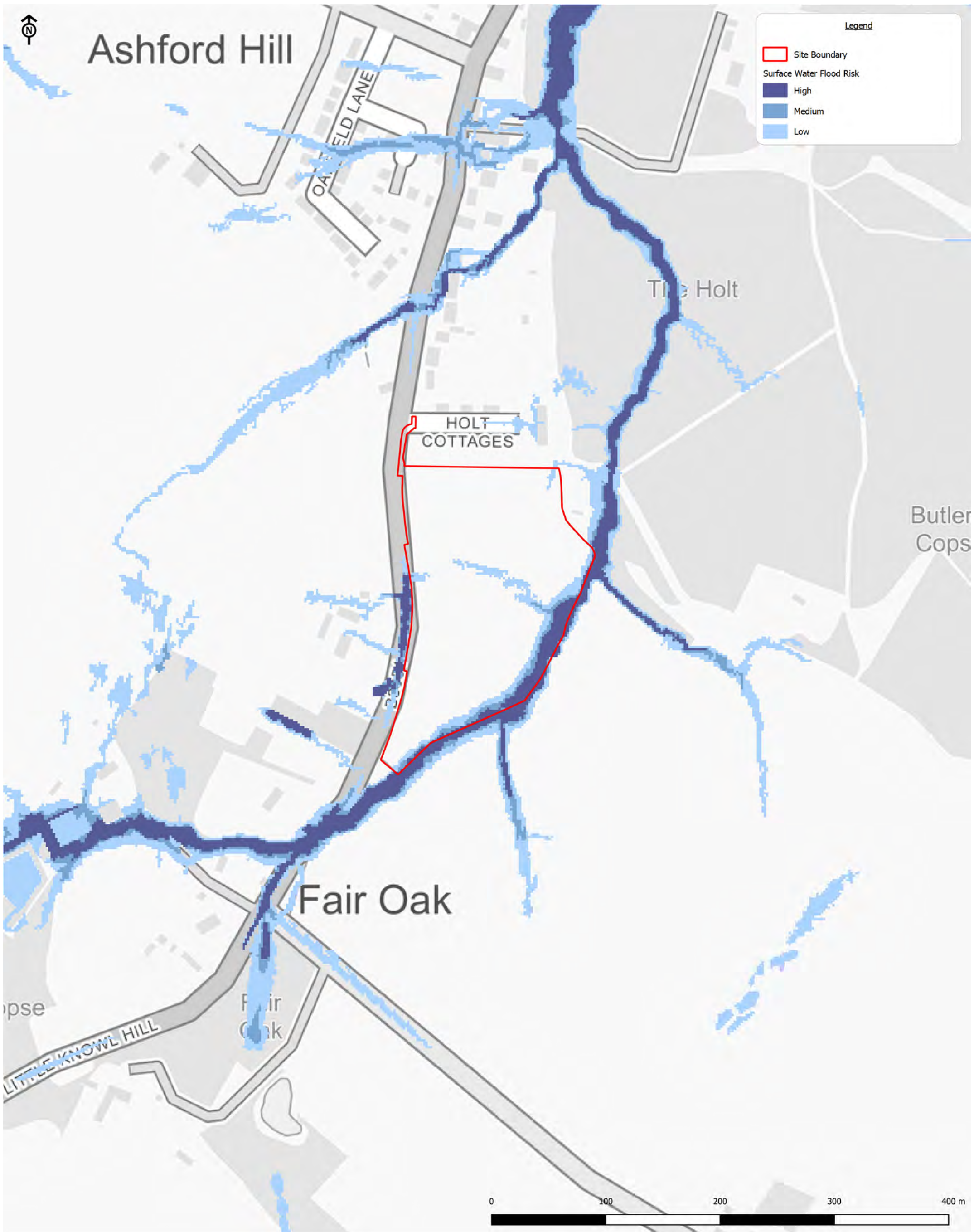
Land South of Holt Cottages, Ashford Hill

Client: JPP Land Ltd / Rosemary Pelham and Timothy Pyper

Flood Zones

Scale: 1:5000@A3
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 Date (Revision History): 06/08/2021 (P1, First Issue, 05/07/21, RLF; P2, Site Boundary, 02/08/21, RLF; P3, Site Boundary, 06/08/21, RP)

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Land South of Holt Cottages, Ashford Hill

Client: JPP Land Ltd / Rosemary Pelham and Timothy Pyper

Surface Water Flood Risk

Scale: 1:3000@A3
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 File location: N:\13500 - 13749\13692 R - Ashford Hill Residential Development\Project_Workspaces\FRA (pdf in Outputs)
 Date (Revision History): 06/08/2021 (P1, First Issue, 05/07/21, RLF; P2, Site Boundary, 02/08/21, RLF; P3, Site Boundary, 06/08/21, RP)

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Appendix G: Proposed Development Masterplan

J:\JOB FILES\D3065 LAND AT ASHFORD HILL - THATCHAM\04 GRAPHICS\MR - MASTERPLAN\B EXPORTED IMAGES



LEGEND

SITE BOUNDARY

ELEMENT	AMOUNT
TOTAL SITE AREA	3.19 HA
BUFFER TO WOODLAND (NATURAL OUTSIDE OF DEVELOPABLE AREA)	0.94 HA
OPEN SPACE - AMENITY OUTSIDE OF DEVELOPABLE AREA	0.21 HA
AREA REQUIRED FOR SUDS (INCLUDES MAINTENANCE STRIP)	0.32 HA
AREA FOR HIGHWAYS/FOOTPATH IMPROVEMENTS	0.04 HA
DEVELOPABLE AREA	1.69 HA
SPINE STREET AREA	0.17 HA
RESIDENTIAL AREA (INCLUDES OPEN SPACE)	1.34 HA
ASSUMED NET DENSITY	34 DPH
ASSUMED GROSS DENSITY	14.1 DPH
ASSUMED NO. OF DWELLINGS	45
POPULATION	108
OPEN SPACE REQUIREMENT	0.39 HA
TOTAL OPEN SPACE REQUIRED WITHIN RESIDENTIAL DEVELOPABLE AREA	0.18 HA
OPEN SPACE PROVISION	1.32 HA

	1 BED		2 BED		3 BED		4 BED+	
	REQ	PROV	REQ	PROV	REQ	PROV	REQ	PROV
MARKET NO.			7	7	12	12	8	8
MARKET %			-	26%	-	44%	30%	30%
AFFORDABLE NO.	6	6	8	8	3	3	1	1
AFFORDABLE %	36%	36%	43%	43%	16%	16%	5%	5%

- NOTE:
- POLICY REQUIREMENT FOR AFFORDABLE MIX = 40% OF TOTAL SITE PROVISION
 - ILLUSTRATIVE PLAN SHOWS 60% MARKET MIX, 40% AFFORDABLE MIX
 - OPEN MARKET MIX OF DWELLINGS IS FOCUSED ON UNSPECIFIED MIX PROVIDED BY LOCAL POLICY, WITH A FOCUS ON 2 AND 3 BED PROPERTIES
 - POLICY PROVISION INDICATES 4 BED+ PROVISION OF NO MORE THAN 30%
 - REQ = REQUIRED, PROV = PROVISION

REV.	DESCRIPTION	APP. DATE
A	Revision to housing mix and layout	21-06-23
B	Landscape design, housing and street changes	21-07-08
C	Amendments to masterplan/colours	21-07-12
D	Amendments to Access	21-08-05



PROJECT TITLE
LAND SOUTH OF HOLT COTTAGES,
ASHFORD HILL

DRAWING TITLE
ILLUSTRATIVE MASTERPLAN

ISSUED BY London T: 020 7620 1453

DATE JUN 2021 DRAWN AB

SCALE@A2 1:1000 CHECKED BS

STATUS FOR ISSUE APPROVED BS

DWG. NO. D3065-FAB-00-XX-MR-Y-105-P3

- Notes:
1. This drawing is the property of fabrik ltd. It must not be copied or reproduced without written consent.
 2. Only figured dimensions are to be taken from this drawing. All contractors must visit site and be responsible for taking and checking all dimensions related to the works shown on this drawing.

Appendix H: Proposed Drainage Strategy and Supporting Calculations

Notes:

Approximate Area:
 Houses = 2800m²
 Garages = 610m²
 Roads = 3850m²
 Parking = 1530m²

Total impermeable area = 8790m² = 0.879ha

Flow Rate:
 Assumed no infiltration is possible
 Qbar = 3.11 l/s/ha

Based on imp. area, flow restriction = 2.73 l/s

Storage Provision:
 Overall requirement = 1081m³/ha in 1 in 100 year return period storm + 40% climate change.

Therefore, based on imp. area, total storage requirement = 950m³ approx

To be provided within permeable paving, swales and detention basins

Permeable Paving

Sub base depth = 0.35m
 Void ratio = 30%

Total permeable pave area = 1820m² approx
 Volume = 191.1m³

Typical Swale:

Base = 1.0m
 Depth = 0.5m
 Side slopes = 1:3

Average linear storage = 0.88m³/m

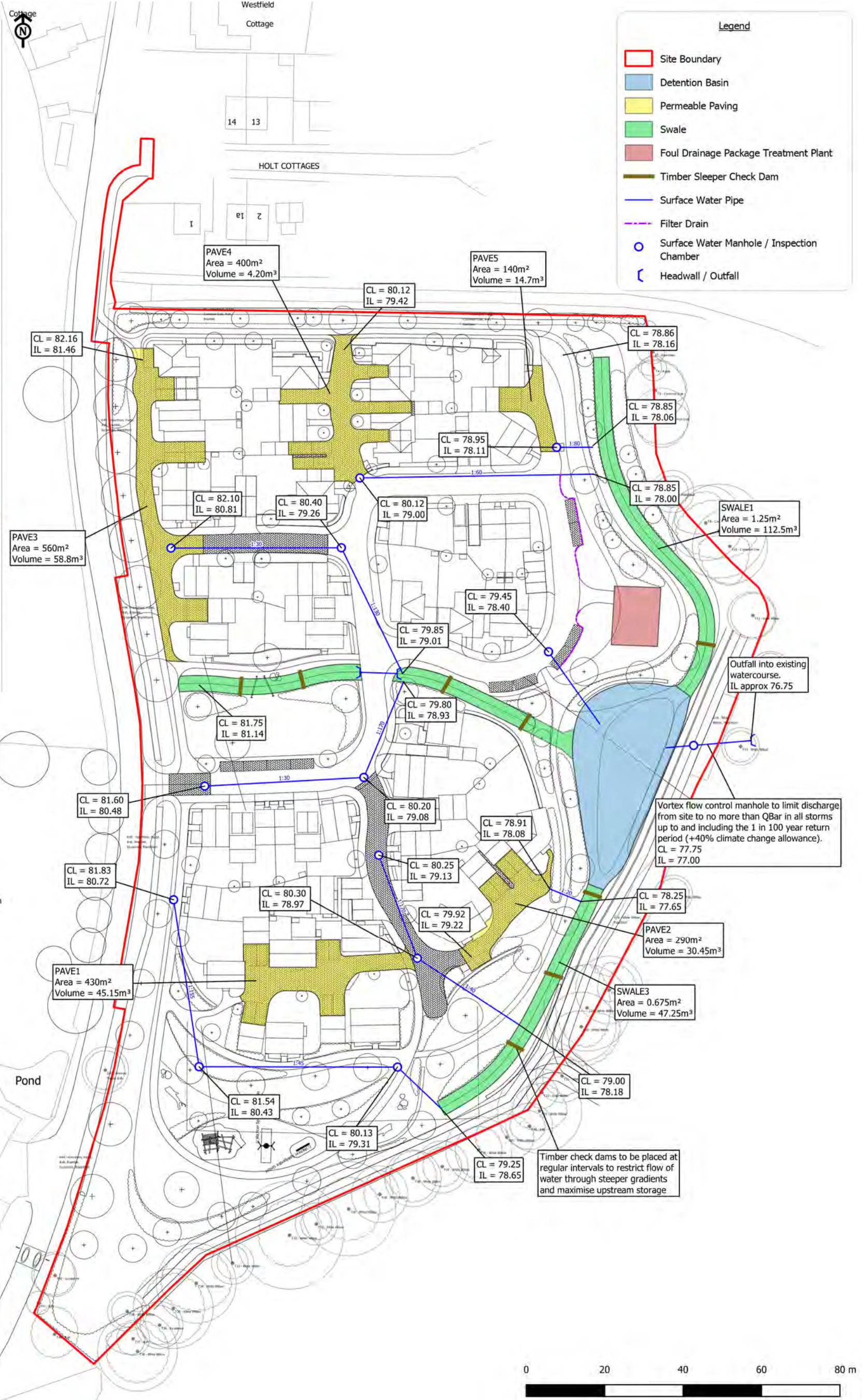
Approx length = 90m (SWALE1) + 90m (SWALE2) + 70m (SWALE3)
 Volume = 112.5m³ + 60.7m³ + 47.3m³
 Total = 220.50m³

Detention Basin:

Remaining volume = 540m³.

Therefore, 1080m² total basin area required at a maximum water depth of 0.5m with side slopes of no more than 1:3. Freeboard of 0.3m to be provided.

Basin invert level = 77.20 approx



Land South of Holt Cottages, Ashford Hill
 Client: JPP Land Ltd / Rosemary Pelham and Timothy Pyper
 Drainage Strategy

Scale: 1:1000@A3
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 Fabrik Architects - Landscape Design: D3065-FAB-00-XX-M2-L-0001 (Aug 2021)
 Job Number: 13692
 Drawn by - Checked by: RLF/RP - FC/AH
 Drg No - Status/Revision: 13692-CRH-XX-XX-FG-G-7012 - P3
 File location: N:\13500 - 13749\13692 R - Ashford Hill Residential Development\Project_Workspaces (pdf in Outputs)
 Date (Revision History): 06/08/2021 (P1, First Issue, 26/07/21, RLF; P2, Site Boundary, 02/08/21, RLF; P3, Proposed Development and Site Boundary, 06/08/2021)

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www.campbellreith.com

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Runoff estimation approach

Site characteristics

Total site area (ha):

Methodology

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	3	3
HOST class:	N/A	N/A
SPR/SPRHOST:	0.37	0.37

Hydrological characteristics

	Default	Edited
SAAR (mm):	749	749
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q _{BAR} (l/s):	3.11	3.11
1 in 1 year (l/s):	2.64	2.64
1 in 30 years (l/s):	7.15	7.15
1 in 100 year (l/s):	9.92	9.92
1 in 200 years (l/s):	11.63	11.63

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

Site name:

Site location:

Site Details

Latitude:

Longitude:

Reference:

Date:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site characteristics

Total site area (ha):

Significant public open space (ha):

Area positively drained (ha):

Impermeable area (ha):

Percentage of drained area that is impermeable (%):

Impervious area drained via infiltration (ha):

Return period for infiltration system design (year):

Impervious area drained to rainwater harvesting (ha):

Return period for rainwater harvesting system (year):

Compliance factor for rainwater harvesting system (%):

Net site area for storage volume design (ha):

Net impermeable area for storage volume design (ha):

Pervious area contribution to runoff (%):

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:

Urban creep allowance factor:

Volume control approach:

Interception rainfall depth (mm):

Minimum flow rate (l/s):

Methodology

esti:

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	3	3
SPR:	0.37	0.37

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	--	63
Rainfall 100 yrs 12 hrs:	--	91.63
FEH / FSR conversion factor:	1.19	1.19
SAAR (mm):	749	749
M5-60 Rainfall Depth (mm):	20	20
'r' Ratio M5-60/M5-2 day:	0.4	0.4
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 10 year:	1.62	1.62
Growth curve factor 30 year:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Q_{BAR} for total site area (l/s):	3.11	3.11
Q_{BAR} for net site area (l/s):	3.11	3.11

Site discharge rates

	Default	Edited
1 in 1 year (l/s):	2.6	2.6
1 in 30 years (l/s):	3.1	3.1
1 in 100 year (l/s):	3.1	3.1

Estimated storage volumes

	Default	Edited
Attenuation storage 1/100 years (m ³):	1081	1081
Long term storage 1/100 years (m ³):	0	0
Total storage 1/100 years (m ³):	1081	1081

This report was produced using the storage estimation tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

CALCULATION & DESIGN NOTES SHEET



Project Title:	Ashford Hill		
Calculations by:	R. Cossins	Date:	04/06/2021
Checked by:	A. Higgins	Date:	04/06/2021

Project Number	CR Office and Code	Volume / System	Level / Area	Document Type	Role	Number	Status	Revision
13692	Surrey (CRH)	XX	XX	CA	C	0001	S1	P1

Description **Foul Water Flow Rates**

Foul flows calculated in accordance with section B3.1 of Design and Construction Guidance (DCG):

B3 HYDRAULIC DESIGN

B3.1 Foul Sewers and Lateral Drains

1. The peak design flow rates for dwellings should, at the discretion of the designer, be either:

- a) calculated in accordance with BS EN 12056-2 System II (this method is recommended for this application in BS EN 16933-2); or
- b) 4000 litres per dwelling per day (0.05 litres per second per dwelling). Note: This is a design peak flow rate not a daily average water usage, and represents the peak flow rate from a number of appliances. Reducing daily water usage does not necessarily reduce the peak flow rate.

Proposed residential units: 50
 Proposed non-residential units: n/a

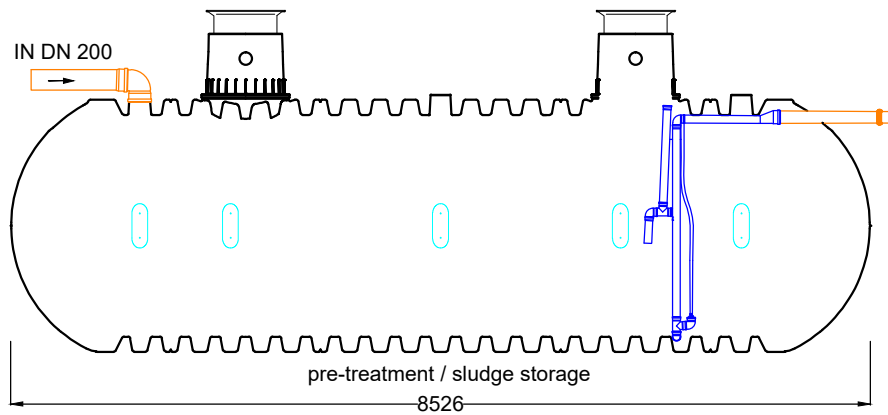
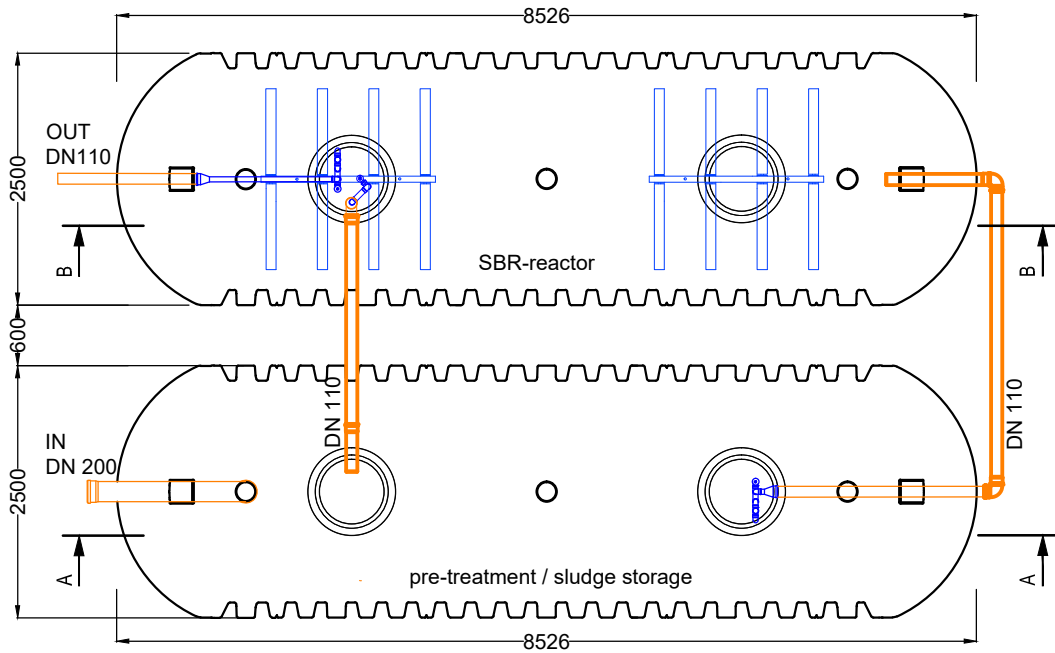
Assumed daily flow: 4000 l/dwelling/day

Total flow = 50 x 4000
 = 200000 l/day

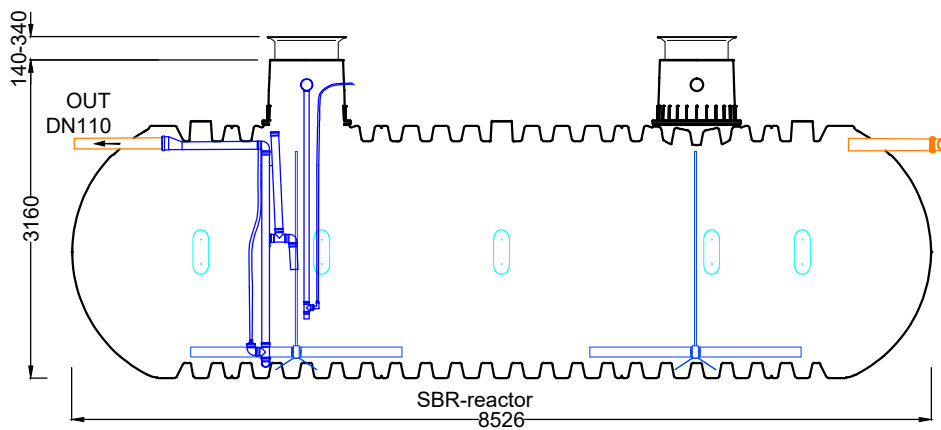
Peak flow = 2.31 l/s

*Should a pumped connection be required, a minimum flow rate of 5 l/s has been assumed. Pumping stations to be designed by specialist.

**Appendix I: Thames Water Pre-development Enquiry, EA
Correspondence and PTP Supply Info**




A-A



B-B



D			GRAF Professional 150 Einwohner 2x Carat XXL 32000 Liter		Artikel-Nr. product no. article no. articulo no.
GB	GRAF Professional 150 PE 2 x Carat XXL 32000 L	ES		FR	revision
gezeichnet drawn	ISC	Gewicht weight	-	Otto Graf GmbH Carl-Zeiss-Str. 2-6 DE-79331 Teningen mail@graf.info www.graf.info	
Datum date	2015.11.30	Toleranz tolerance	+/- 3%		
Maßstab scale	M 1:75	Einheiten units	mm [inch] gal. = US gal.		
					



Technical data sheet for GRAF Professional wastewater treatment plant

Graf UK Ltd

Regen House, Beaumont Road, Banbury

Oxfordshire OX16 1RH

Tel. +44 (0)1608 661500

Email: info@grafuk.co.uk

Plant size

150 PE

Maximum flow

Qd 22,50 m³/d

Maximum organic load

Bd 9,00 kg/d

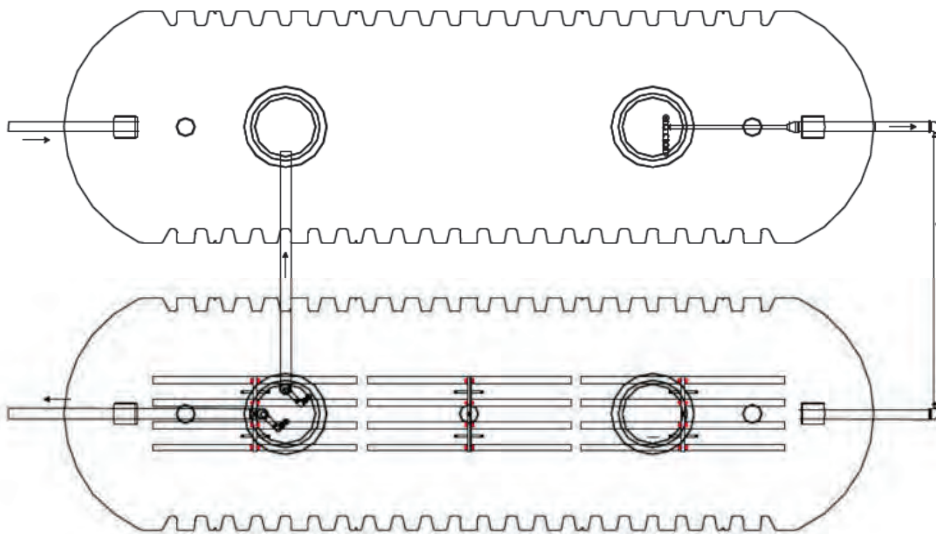
Design according to ATV-A122

Effluent values:

	BOD ₅	COD	SS	NH ₄ N	Ntot	Ptot	Coliforms
Standard <	20 mg/l		30 mg/l	20 mg/l			
Target values <	20 mg/l		30 mg/l	5 mg/l			

Total tank capacity: 62,4 m³

Air compressor	Type: Rotary vane	KDT 3.80
	Installed motor power	2,20 kW
	Power consumption at 0,3 bar	2,40 kW
	Motor design	0,5 bar 50 Hz 3~ 380 V
Calculated maximum daily operating time		12,2 h/d



Symbolic representation

Stage	Number	Container, material	Diameter Width [m]	Length [m]	Maximum water depth [m]	Maximum volume [m ³]
SS + PT + B	1	Carat XXL 32.000L, PE	2,50	8,53	2,20	31,2
SBR	1	Carat XXL 32.000L, PE	2,50	8,53	2,20	31,2

Hoses	V1: 1x 25mm	V2: 3x 25mm	V3: 1x 25mm	V4: 1x 25mm
-------	-------------	-------------	-------------	-------------

Calculation for GRAF Professional wastewater treatment plant according to ATV-A122

Basic data / project data

Customer	Graf UK Ltd	Date	24.02.2020
Project		Editor	cbo
Type of waste water:	domestic		
Particularities			

Base of calculation

	BOD ₅	COD	SS	NH ₄ N	N _{tot}	P _{tot}	Coliforms
Stadard	< 20 mg/l		< 30 mg/l	< 20 mg/l			
Target	< 20 mg/l		< 30 mg/l	< 5 mg/l			

Population equivalent						150	PE
Wastewater			at Q _{PE}		150 l / (PE*d)	22,5	m ³ /d
Infiltration water					0 %	0,0	m ³ /d
Total daily inflow				Q _d		22,5	m ³ /d
Daily peak factor						10	h/d
Hourly volume of wastewater						2,3	m ³ /h
Waste load BOD ₅				B _d	60 g/(PE x d)	9,00	kg/d
Waste load BOD ₅ After primary treatment				B _d	40 g/(PE x d)	6,00	kg/d
Treatment cycles per day						4	

1. Stage: sludge storage, pre-treatment and buffer

Type of container		Carat XXL 32.000L	
Number of containers / proportion of chambers		1	
Width		2,50	m
Length		8,53	m
Water depth		2,20	m
Sludge storage (SS)			
Specific sludge storage volume		250	l / (PE*a)
Removal interval		6,0	months
Required volume	150 PE x 250 l / (PE*a) x 6 / 12 months =	18,75	m ³
Required water depth		1,37	m
Primary treatment (PT)			
Retention period	(31,21 m ³ - 18,75 m ³ - 7,56 m ³) / 2,3 m ³ /h =	2,18	h
Required volume		3,38	m ³
Required water depth		0,19	m
Overall (SS + PT)			
Required water depth		1,56	m
Selected water depth		1,65	m
Buffer (B)			
Percentage of daily load		33%	
Required volume	33% x 22,5 m ³ /d =	7,50	m ³
Required water depth		0,55	m
Selected water depth		0,55	m
Selected volume	34% Total daily inflow =	7,56	m ³
Overall (SS + PT + B)			
Required volume	18,8 m ³ + 3,4 m ³ + 7,5 m ³ =	29,63	m ³
Existing total volume		31,21	m ³
Required water depth	1,37 m + 0,19 m + 0,55 m =	2,11	m

2. Stage: biological treatment (SBR)

Type of container		Carat XXL 32.000L	
Number of containers / proportion of chambers		1	
Width		2,50	m
Length		8,53	m
Water depth		Wd max = 2,20	m
Total area		21,32	m ²
Required volume	6 kg/d / 0,2 kg/(d*m ³) =	30,00	m ³
Required water depth		2,08	m
Volume load BOD ₅	Br	6 kg/d / 31,21 m ³ =	0,19 kg / (m ³ x d)
BOD Sludge loading	B _{TS}	≤	0,05 kg/(kg x d)
Sludge index	ISV		100,00 ml/g
Total solids	TS _{BB}	≤	4,00 kg/m ³
Oxygen concentration	C _o	≥	2,00 mg/l
Selected water depth Before loading phase		Wd max - 33% x 22,5 m ³ /d =	1,65 m
Water depth After loading phase		Wd min + 25% x 22,5 m ³ /d =	2,02 m
Existing total volume		31,21	m ³

017610
Commercial Bioficient 34 to 80
Wastewater Treatment Systems
Installation & Maintenance Guidelines

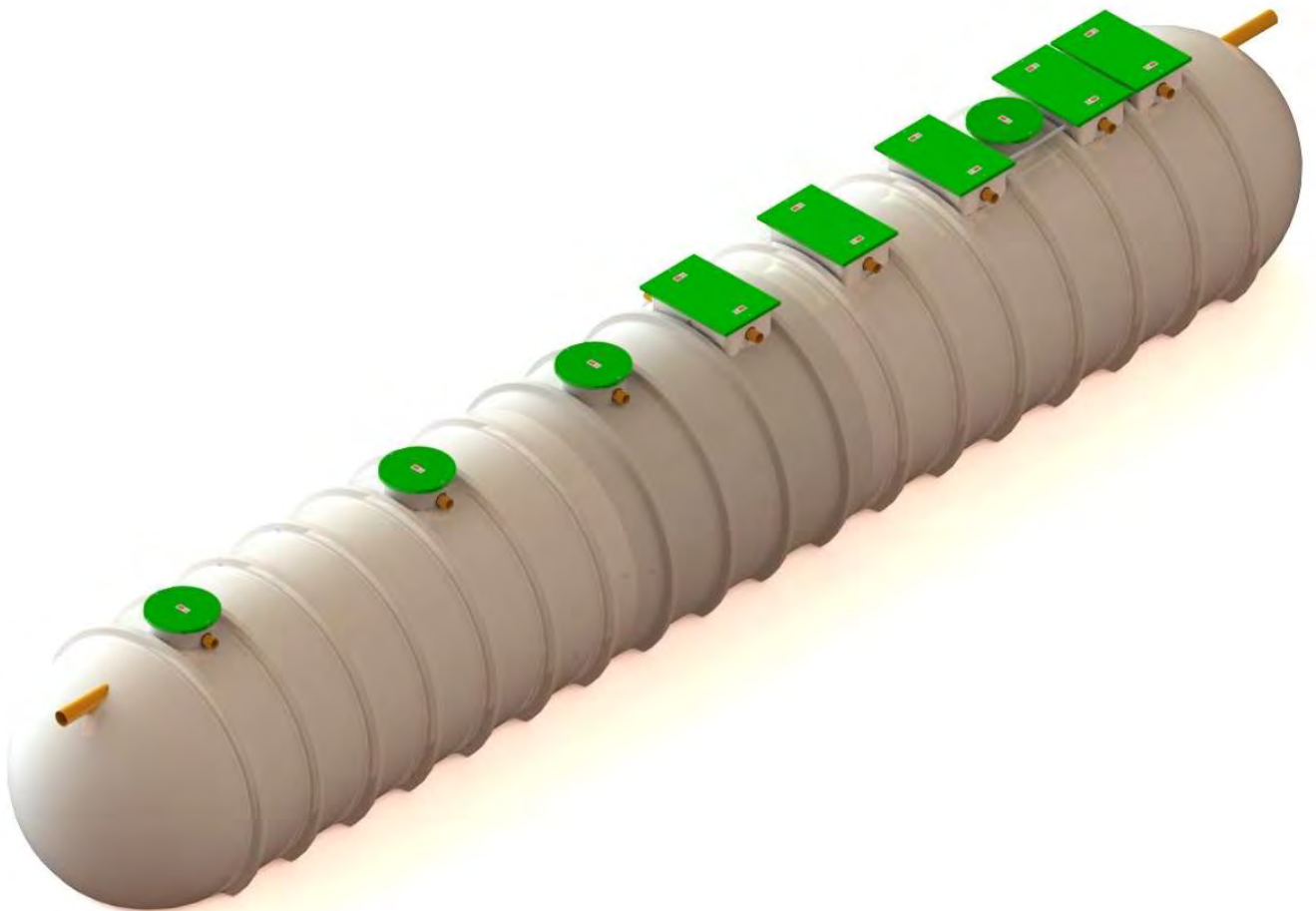


Kingspan Environmental Service Contact Numbers:

GB: 0844 846 0500

NI: 028 3025 4077

IRL: 048 3025 4077



Issue:	Description:	Date:
07	CC1456	February 2019

CONTENTS

1. HEALTH & SAFETY	3
2. INTRODUCTION	4
3. HANDLING AND STORAGE	5
4. UNIT INSTALLATION	6
5. SYSTEM OVERVIEW	9
6. SITE DELIVERY CHECKLIST	10
7. SITE PLANNING	11
Concrete specification	13
8. INSTALLATION GENERAL	13
9. TECHNICAL INFORMATION	15
10. THE TREATMENT PROCESS	16
General	16
Standard effluent quality	16
Specified effluent qualities	17
Units with chemical dosing systems	17
Do's and Don'ts	18
11. OPERATION OF THE UNIT	19
General	19
Optional Pump Stations	19
Treatment Unit	19
Running Checks	20
12. MAINTENANCE	21
General	21
Units with Chemical dosing	21
Desludging	21
Maintenance Contracts	21
Servicing	22
13. WARRANTY	23
14. COMMISIONING GUIDELINES	24
Pre-installation checks	24
installation checks	24
Deep inverts	25
Chemical dosing checks	26
Electrical control panel checks	26
Going live	27
Optimising performance	28
15. FREQUENTLY ASKED QUESTIONS	29
16. CONTROL PANEL FAULT MESSAGES	31
17. BIOFICIENT NOTICE	33

1. Health & Safety

These warnings are provided in the interest of safety.

You must read them carefully before installing or using the equipment.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can be acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following these guidelines.

We recommend the use of a dust mask and gloves when cutting GRP components.

Electrical work should be carried out by only by a qualified electrician.

Sewage and sewage effluent, contaminated surface water can contain micro-organisms and substances harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Covers should be kept locked. Do not walk on the covers. When covers are removed, precautions must be taken against personnel falling into the unit.

Alternate access covers should be selected with reference to the location of the unit and traffic loads to be accommodated. These are not part of the units supply.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions,

including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses. Ensure that the working area is adequately lit.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

Observe all hazard labels and take appropriate action to avoid exposure to the risks indicated. The units contain electrical items, pumps, and air lifts.

The power supply to the equipment must be isolated at the control panel(s) before lifting the covers. Where a specific maintenance procedure requires the equipment to be running with the covers off, all care must be taken to avoid contact with moving parts and electrical components or conductors.

Once power has been isolated, the control panel must be kept locked shut to avoid accidental re-connection whilst work or inspection is being carried out.

The correct ongoing maintenance is essential for the proper operation of the equipment.

The removal of sludge and liquid from the unit must be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor should refer to the guidelines in this document.

2. Introduction

Thank you for choosing our Bioficient, High Effluent Quality waste water treatment system. This manual will help you to keep it operating efficiently over a long service life. Please read this manual thoroughly and before installation.

This manual should be referred to by:

- a) The installer.
- b) The electrician.
- c) The maintenance engineers.
- d) The desludge contractor.
- e) The owner/user.

These Guidelines represent Best Practice for the installation of Bioficient wastewater treatment systems. Many years of specialist experience has led to the successful installation of thousands of systems. It must be noted, however, that these Guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are **appropriate for the specific ground conditions and in-service loads of each installation**. Any information or advice given by employees or agents of the company in connection with the design of the installation must be verified by a qualified specialist (e.g. Civil engineering consultant).

Each Bioficient system has been individually selected to achieve the specified final effluent quality. The equipment size / system design is based on your declared required effluent quality, application and the estimated daily volume and loads for various parameters. Your quotation will have specified the incoming parameters and the final effluent quality to be obtained. You will be supplied with a control panel which includes the appropriate timed recycle settings and operations to achieve the quality specified.

Treatment takes place within a single horizontal tank which includes primary and final settlement areas as well as treatment zones. Within the system, the partially treated effluent is recycled.

When treating domestic effluents, the treatment process is designed to achieve an effluent quality with a daily average of:

20mg/l BOD / 30mg/l SS / 5mg/l NH₄ N

- Some system designs may be offered to achieve lower ammonia levels.
- Some system designs may offer to achieve a daily average specified Total Nitrogen consent.

20mg/l BOD / 30mg/l SS / 5mg/l NH₄ N / 15 TN

- Some system designs include a chemical dosing system to achieve alternate daily average effluent qualities such as defined phosphate levels.

Non-domestic sewage applications with specified effluent qualities are specified individually.

Standard system designs require sludge removal at intervals of approx. 90 days. Units with chemical dosing may have a decreased interval.

In the UK, Wastewater equipment selection and application guidance is provided by the Environment Agency, Pollution Prevention Guidelines PPG 4. In Ireland, guidance is provided by the EPA manuals.

You will require permission to install a wastewater treatment system and permission /consent to discharge the effluent which will probably include specified effluent qualities and a maximum volume. Consult your local authority as the installation will probably require Planning and Building Control approval. In the UK, you will need to be aware of publication DETR 3/99 (Welsh office 10/99) "Planning requirement in respect to use of non-mains sewerage incorporating septic tanks in new development" and the drainage and waste disposal building regulations H2 (2000). In Ireland, guidance is provided in circular letter SP/03 for the protection of groundwater. These documents require detailed site assessments.

Should you require information regarding the design of a drainage field or alternate system designs and sizing please contact us. Large systems treating large daily volumes require large land areas. In the UK, BS: 6297; 2007 provides drainage field designs. In Ireland, the single house EPA manual provides design guidance. Percolation test methods to identify soil suitability are slightly different in UK and Ireland, the percolation test results should be documented and retained. A building inspector may wish to examine the site before, during or after tank installation and may require sight of percolation test results.

Wastewater treatment systems are covered within the UK by H2 Building regulations 2000. Systems should have sufficient capacity to enable the breakdown of solid matter in the wastewater from the buildings, be sited and constructed so as to prevent overloading of the receiving water. They must not be prejudicial to health or be a nuisance, adversely affect any water sources or resources or pollute controlled waters. They must not be sited in an area where there is a risk of flooding. Systems must be constructed so as to have adequate ventilation and so as to prevent the leakage of the contents. They must have adequate means of access for maintenance and emptying.

Buildings which utilise Biological treatment systems should have a notice affixed within the building. This notice should advise the estimated emptying frequency and the need to use a licensed waste disposal contractor. Details of maintenance requirements are required. The owner is legally responsible for ensuring that the system does not cause pollution, a health hazard or a nuisance.

3. Handling and Storage

- Unit dimensions, connections, and weights etc. are provided on a separate drawing.
- Care must be taken to ensure that units are not damaged during delivery and handling on site. Tanks are manufactured in glass fibre reinforced polyester (GRP) which makes the tanks light in weight and easy to transport and install. The tanks can be damaged by sharp objects and point loads. The unit includes loose plastic media within three of the compartments. You must avoid rolling the unit. If there is any damage found at delivery, it should be reported to us within 48 hours.
- The design requirements of our products will frequently mean that the centre of gravity of the unit is “offset”. Care must therefore be taken to ensure that the unit is stable when lifting. If the covers have been removed, rainwater may collect inside units, adding weight and increasing instability. Check units before lifting and pump out any excess water.
- When lifting the unit, use webbing slings of a suitable specification. **DO NOT USE CHAINS.** Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.
- A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting units, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.
- Whenever units are stored or moved on site, ensure that the storage location is free of rock, debris and any sharp objects, which may damage the unit. The units must be placed on ground, which is flat and level to evenly support the base of the unit evenly.

SLINGING POSITIONS

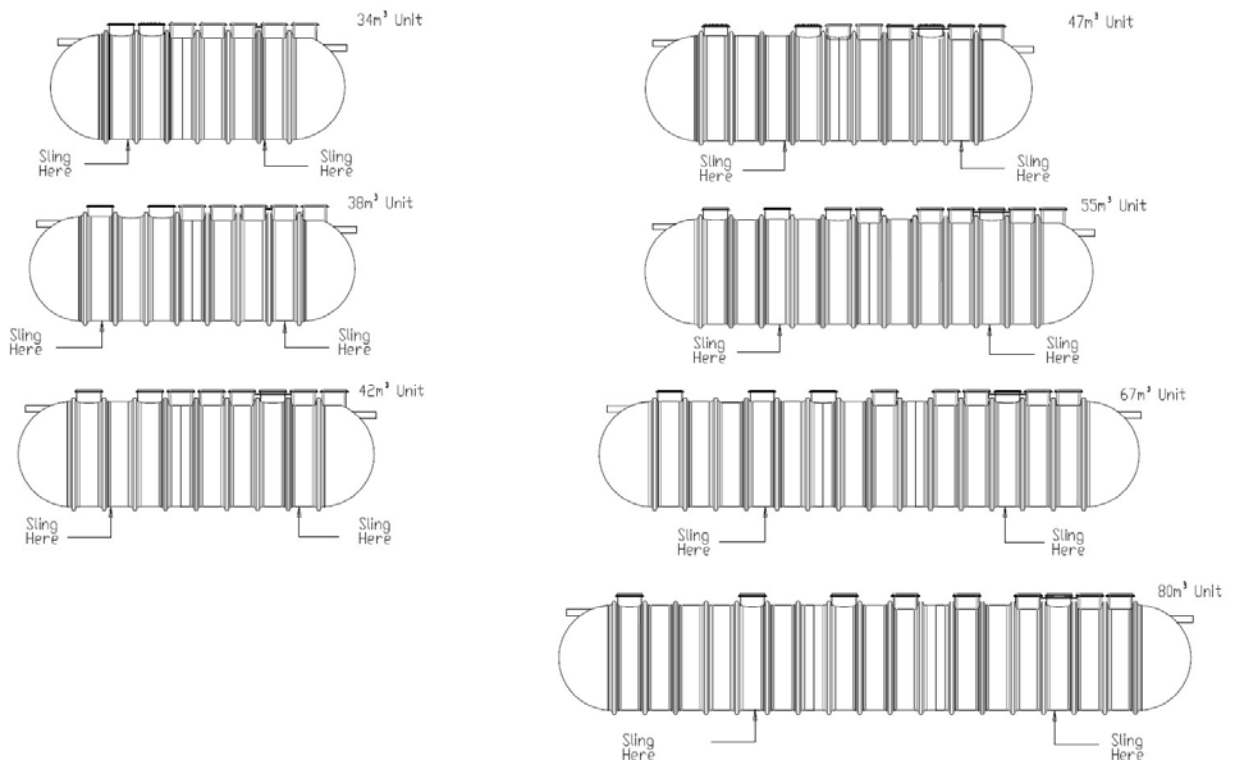


Figure 1; slinging positions (0.5m invert units shown)

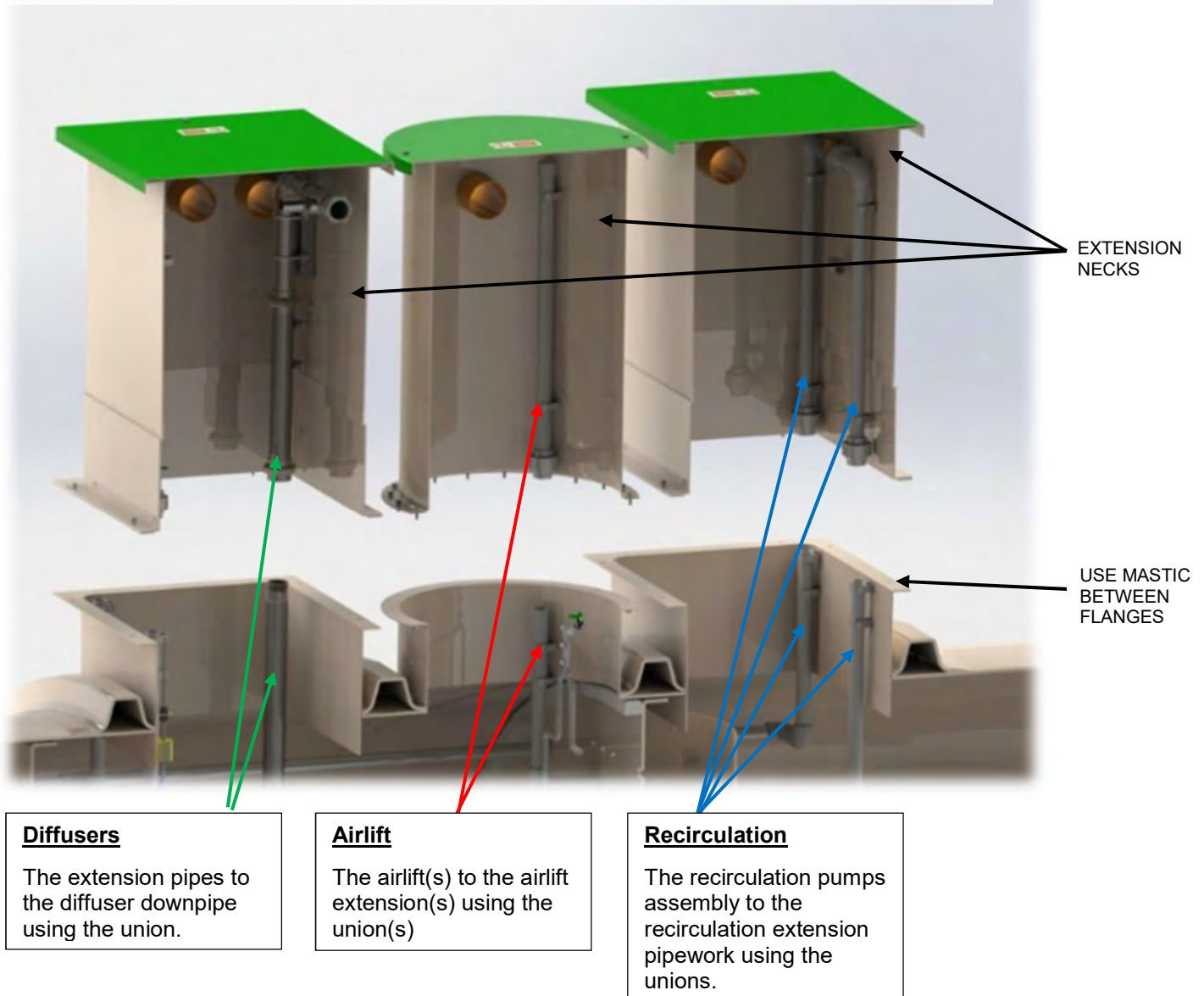
4. Unit Installation

1. Do not install in trafficked areas unless a suitable top slab has been designed and constructed. The top slab should bear on a suitable foundation to prevent superimposed loads being transmitted to the unit and access turrets. Loads applied must bear on the top slab, not the access turrets.
2. See the section on "Deep Invert Units" for fitting of extension necks and manifolds.
3. Ground conditions and water table level should be assessed. If the water table will be above the base of the unit at any time of the year, adequate concrete backfill must be provided to avoid flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill. It should be borne in mind that the inlet drain trench will act as a land drain, directing surface water to the backfill around the unit.
4. Excavate a hole of sufficient length and width to accommodate the tank plus a minimum 225mm concrete surround. The depth should allow for the burial depth of the unit plus a concrete base slab of 300mm. The maximum depth to the base of the excavation must be no more than 4.7m including the base slab.
5. Construct a suitable concrete base slab appropriate to site conditions. Ensure that the slab is flat and level.
6. When the concrete base slab has set enough to support the installed load, lower the unit onto the slab using suitable webbing slings and lifting equipment. The selection of lifting equipment is the responsibility of the installer considering unit weight, length, height and distance of lift. The unit includes baffles, pumps, diffusers and other components so please note that the unit weight will not be evenly balanced.
7. Pour no more than 300mm depth of clean water into each compartment. This should be achieved simultaneously but avoid a shock load. A recommended way of doing this is to add clean water into the second biological treatment zone (which has media within it) until the level in the first primary zone (first turret from inlet) is 300mm. At the same time, fill the last turret, the final settlement zone.
8. **DO NOT OVERFILL**; the unit is not designed to hold water whilst unsupported. Place concrete backfill to approximately 300mm depth under and to the sides of the tank ensuring good compaction to remove voids. Concrete backfill must be manually compacted; WE DO NOT recommend the use of vibrating lances. ALLOW INITIAL CONCRETE SET TO OCCUR BEFORE PROCEEDING. Ensure concrete fills the voids underneath tank and ribs.
9. Continue adding concrete backfill, simultaneously keeping the internal water level no more than 300mm above the backfill level at all times, until the backfill is just below the underside of the outlet drain, giving sufficient room to connect the inlet and outlet pipework.
10. Connect the inlet and outlet drains to the site pipe work when safe access to the backfill can be gained.
11. Connect the ventilation pipes and run the pipe work to above ground level when safe access to the backfill can be gained.
12. Connect the cable conduits when safe access to the backfill can be gained.
13. Connect the three hoses to the internal diffuser assemblies via the pre-installed ducts in the necks of the tank, connect to the internal 2-inch hose tail at the top of the air diffuser assemblies, secure in place with relevant jubilee clips.
14. Run the lengths of hose through the ducting to the blower housing, cut hose to required length and connect the free ends to the outlet connections on the Blower securing in place with relevant jubilee clips.
15. Run the pre-fitted control panel flying lead (15m) with 'quick connector' from the internal terminal box (JB001 situated in neck of Biozone 2) through the cable conduits to the main control panel and connect opposite end of quick connector.
16. Continue backfilling with concrete over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access turrets.
17. For deeper invert units (above 800mm invert) we recommend that you temporarily strut extension turrets during this procedure to avoid distortion or collapse as the necks are non-structural.
18. Continue back-filling in 300mm stages, ensuring minimum 225mm concrete thickness around the access turrets.
19. Leave until the concrete is fully cured. The unit should be left filled with clean water up to the invert level of the outlet pipe. Check that there is a discharge.
20. Replace all manhole covers.

Deep Invert Units

The standard units include fitted access turrets, however, for units with deeper inverts i.e. 1500 mm inlet inverts and above, additional access turret sections need to be site fitted.

BEFORE FITTING THE EXTENSION TURRETS, YOU MUST FIT:



Diffusers

The extension pipes to the diffuser downpipe using the union.

Airlift

The airlift(s) to the airlift extension(s) using the union(s)

Recirculation

The recirculation pumps assembly to the recirculation extension pipework using the unions.

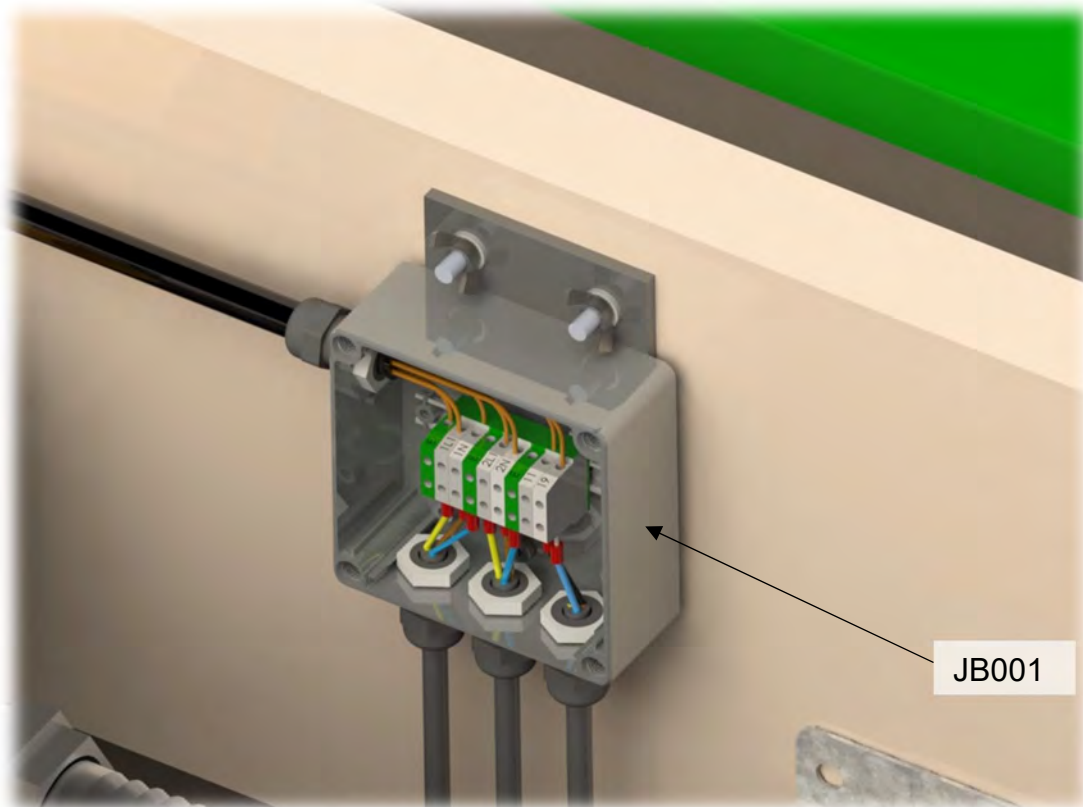
NOTE: Make sure that the access handle is fixed to the Effluent Filter in the FST using self-tapping screws. Refer to “Section 12. Maintenance” for illustration.

The pump cables should also be brought to the uppermost turret as installation progresses.

When the installation includes a separate structural concrete raft, it is necessary to order the extension kit to the full invert depth. The full invert depth is from finished ground level, Failure to take account of the finished ground level will mean that the internal valves and junction boxes will not be accessible for routine maintenance and servicing. This may require “confined space” entry which will significantly increase the cost of maintenance and servicing.

NB: For units with inverts greater than 800mm the wiring loom junction boxes will NOT be supplied fixed to the neck, once the extension turrets have been fitted the junction boxes should be fixed to the upper most extension pieces close to the top for ease of access.

The additional turrets are flanged. Use the mastic supplied and bolt through the flanges, from top to bottom using washers below the bolt head and above the nut. Check that the flanges are fully sealed and water tight before completing the concrete backfill around each turret.



Electrical connection

Electrical work should only be carried out by a qualified electrician working to the latest electrical regulations.

The Bioficient treatment unit contains the following electrical components inside the plant, all of which are prewired to a common electrical terminal (JB001) located within one of the middle turrets:

- High Level Float.
- Recirculation Pump 1.
- Recirculation Pump 2.

The main supply blower should be placed within a suitable kiosk or brick built housing (kiosks are available to purchase as an extra item, they are NOT included in standard supply).

The blower should be fixed down to the concrete base via fixing positions supplied. NB: it is recommended that the blower is mounted on anti-vibration mounts. If the blower is housed in a kiosk, separate ventilation/cooling facilities may be required to prevent the blower overheating.

The control panel should be either mounted to the side of the constructed blower housing or mounted within a suitable kiosk (kiosks are available to purchase as an extra item, they are NOT included in standard supply).

Connecting Blower: Run cable between the blower terminal box and the Control Panel connecting the cable to the blower terminals within the control panel (see wiring diagram supplied with unit).

Connecting Internal Loom: Run the cable with quick connector (male end) from JB001 through the ducting to the Control panel kiosk. Connect the male quick connector to the female quick connector located on the base of the control panel.

Connect the control panel to the mains power supply. The wiring is complete. **Please insure you refer to the wiring diagrams provided in the control panel.**

5. System Overview.

Pictorial representation below indicates basic requirements for a standard system, please note not all of the items required are supplied from us as standard.

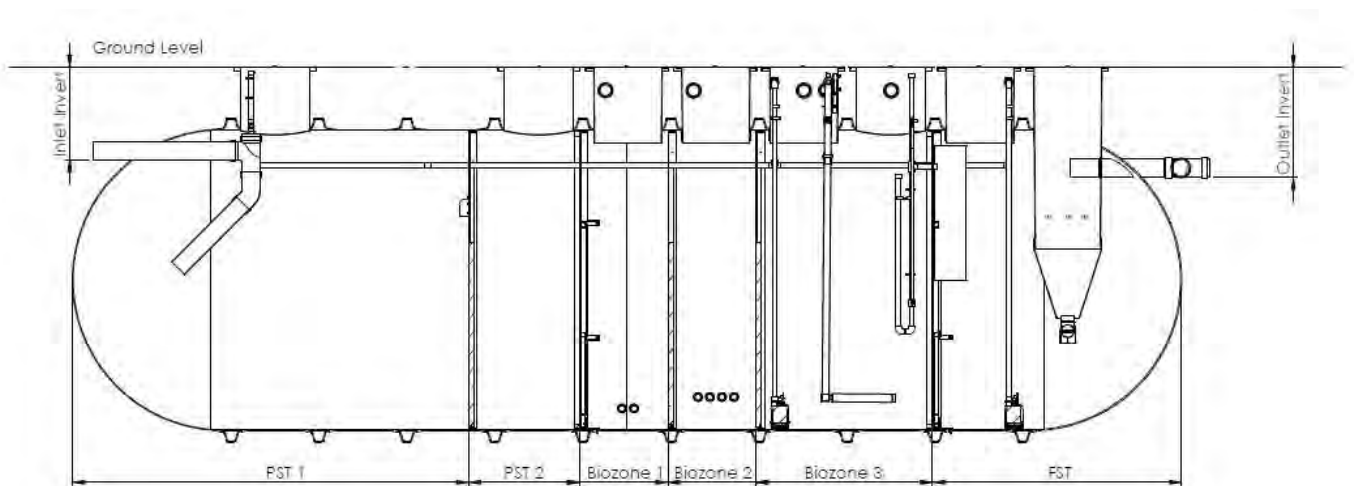
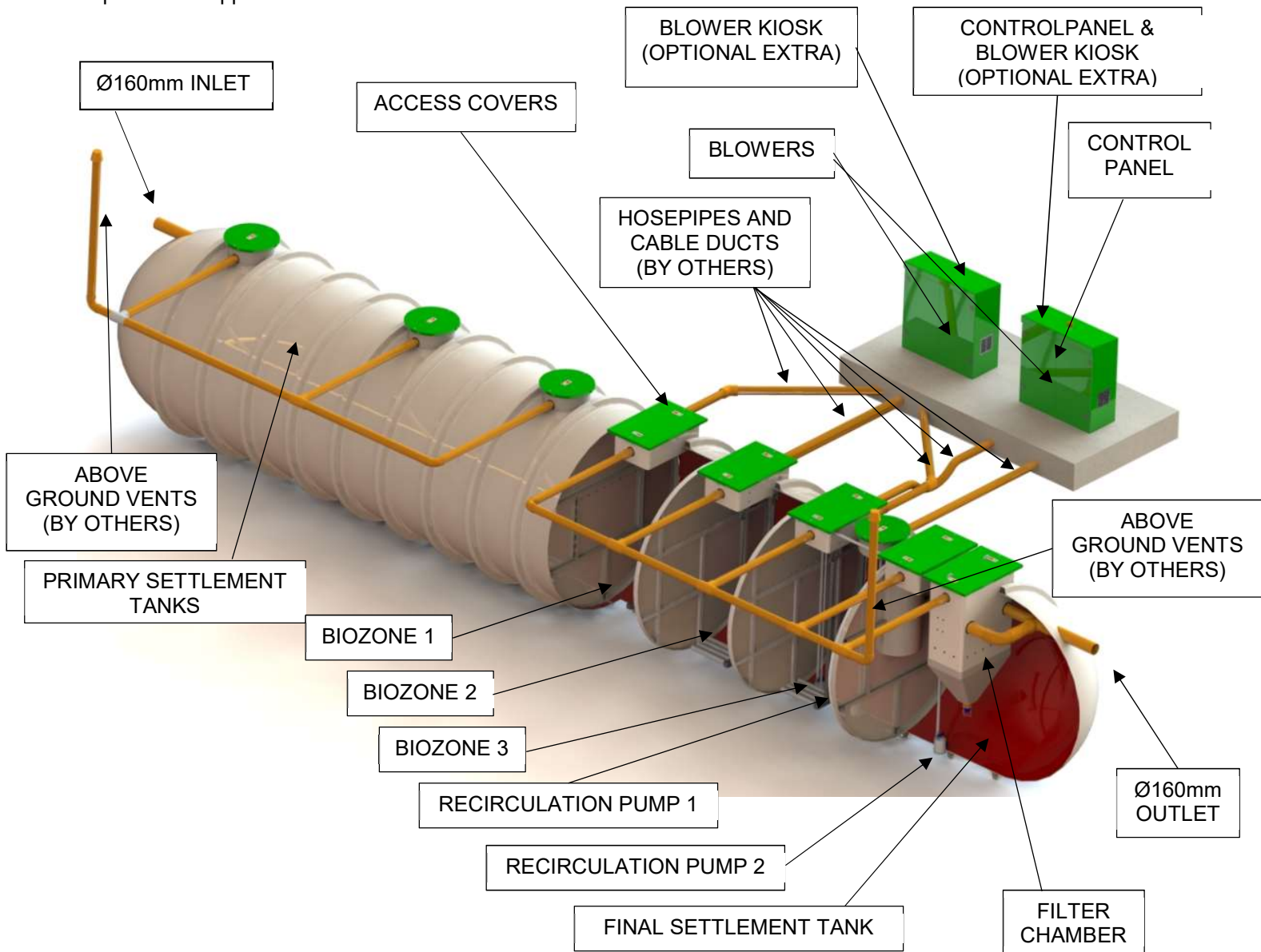

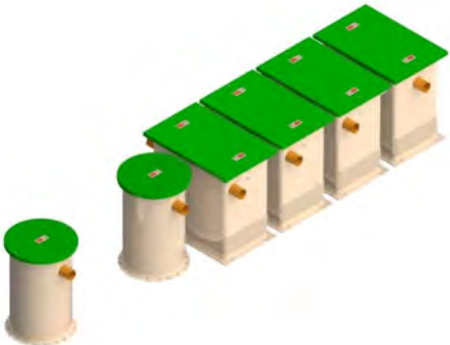



Figure 4; Typical side elevation of installed plant. 0.8m Invert shown

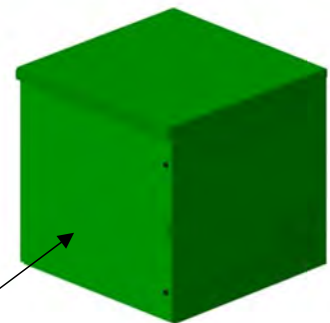
6. Site Delivery Checklist

The delivery checklist will have 2 or 3 module codes that will need to be checked against items actually delivered. Only 1.5m & 2.0m invert systems will have 3 module codes. Each module will be defined as described in the table below. [

<p><u>Ø2.8 GRP Chamber:</u></p> <ol style="list-style-type: none"> 1. Below ground tank assembly 2. Access covers 3. Internal wiring loom 4. Internally fitted recycle pumps 5. NB: For tanks with invert depth greater than 0.8m access covers will be included in neck extension kit. 	<p>CASE ASSEMBLY</p>	
<p><u>Extension Necks & Fittings:</u></p> <ol style="list-style-type: none"> 1. Extension Neck Kits (only required for inverts 1.5m and 2.0m). 2. Access covers 3. Mastic Kits (consisting of: 2m mastic per neck, 24qty M8 bolts, 24qty M8 nuts and 48qty M8 washers per extension neck) 	<p>NECK ASSEMBLY</p>	
<p><u>Blowers, Controls & Connecting Pipe:</u></p> <ol style="list-style-type: none"> 1. 3 x Main supply blower (For Diffusers) 2. Main supply blower (For Airlift(s)) 3. Control panel 4. High temperature hose (3 x 10m). Each hose from blower manifold connects to diffusers mounted inside the tank via pre drilled holes in neck). 5. PPFDS Hose (5m to connect the blower manifold to the control panel). 6. Clear braided hose (15m to connect the blower to the airlift mounted inside the tank via pre drilled holes in neck). 	<p>ELECTRICAL ASSEMBLY</p>	

Additional items available on request NOT standard supply (please contact our sales department for more information):

1. Kiosk to house the blowers
2. Kiosk to house the control panel
3. Final effluent pump stations
4. Sample chambers
5. Chemical storage chamber for chemical dosing units



BLOWER & CONTROL PANEL KIOSKS AVAILABLE AS OPTIONAL EXTRA

7. Site Planning

The following points should be considered before installation of the equipment:

The discharge must have the consent of the relevant environmental regulator. Details of the consent should be advised to us in advance of placing an order. There will be a requirement to provide a sample chamber and there may be a requirement to provide facilities for flow measurement. (See notes below)

The installation should have planning and building control approval (See Introduction)

Position the unit at the maximum distance from habitation. For single house systems, distances in excess of 7m are usually the minimum acceptable to the planners, but this varies depending on buildings, boundaries, etc. and your local authority. Large systems, such as an Bioficient unit should be installed at greater distances. The installation must be sited so as not to be prejudicial to health, nor to contaminate water supplies.

See BS EN 752-4. Drain & sewer systems outside Buildings.

Consider placing inspection points in the drain line before and after units.

The regulator will require a sample chamber to be installed at the outlet of the treatment systems. The regulators will advise their specific requirements. They usually advise that access to the sampling point should be via a path and constructed from a firm material and on a level ground where possible. Sample chambers should be easily accessible and provide the means to take a running sample, a sample container must be able to be positioned under a protruding pipe lip which is located at a height of 200mm above the water level. (We can provide sample chambers however, some regulators may specify specific designs and other requirements). Samples, with agreement may also be taken at the inlet point of a downstream effluent pump station.

The treatment unit should preferably be installed at a level which will allow connection to the incoming drain and a free discharge at the system outlet. The system should not be installed deeper than necessary.

Units are available with inlet inverts of 0.5m, 0.8m, 1.5m and 2.0m. Selection of the correct inlet invert is key, it must be suitable for the drainage and ground levels on site, the invert CAN NOT be altered once the plant is installed. In any circumstance, the maximum allowable inlet invert is 2000mm.

Select a suitable location for the unit. This will normally be at the lowest ground level on the site so that the facilities can be drained by gravity, please consult architect.

Check that no other structure - or special access - is required at the selected position.

Provision can be made, if necessary, to place the unit in a roadway, provided that the backfill, cover slab and access cover are designed in accordance with the load requirements. Special provision to accommodate maintenance access needs to be incorporated into the design. Please contact Kingspan Sales for advice.

Check that no underground cable, pipe or service duct lies beneath the selected position.

Consider if there is a need for a pumping station upstream of the treatment unit. The treatment unit is available with a number of standard invert options. The invert must be specified at the time of order. The process design may have specified a pump station to assist in flow attenuation or to minimise the excavation required. If the site contractor has specified their own pump station, this must be advised to us at the design stage, so that we can ensure that it will not adversely impact on the process.

Systems must be ventilated with both a "local to the unit vent" and with appropriate high level vent(s) located on the building(s) served, considering prevailing wind direction. The head of the drainage system should be connected to a stack pipe, open at high level, so as to draw foul air from the system and be sited with consideration to prevailing wind direction. Tile vents & air admittance valves within the buildings should not be used as the sole high level drainage ventilation facility. All inspection points within the drain system should be sealed so as to enable ventilation at high level. If tanks or pump stations are fitted before the treatment unit, then be aware of the possibility that the high level vent may only vent these units. The Bioficient unit requires independent ventilation. Check for any local regulations.

Uncontaminated run off such as roof and surface water must be excluded from the unit. Separate drains must be provided for surface water which must NOT enter the unit.

Ground conditions and water table level should be assessed. If the water table will be above the base of the unit at any time of the year, adequate concrete backfill must be provided to avoid the unit's flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill, and an appropriate installation method devised to avoid this.

If the discharge is to a drainage field, a porosity test must be carried out as part of the assessment of suitability for sub-soil drainage. UK - See BS 6297:2007. Ireland - See EPA Manual.

There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance. There must be access to the unit for sludge gulpers. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable

017610 Bioficient WWTP Installation & Maintenance Guideline

structural protection is provided when the unit is installed.

Provide separate suitable electrical supplies for the Bioficient system and any ancillary pump station. These should be RCD isolated and protected.

Proximity to a mains water hosepipe connection point is recommended, for maintenance purposes. Such a supply should be connected in accordance with water bylaws and regulations. **Never leave a hose connected and immersed in sewage.**

For discharge consents within the Environment Agencies control, we understand that for discharges above 50m³ per day, all new consents will stipulate the requirement for flow measurement. They may require flow measurement locations and devices for discharges 5-50m³ per day. You should contact the regulator for individual consent conditions and advice as to their requirements. See EA document EASD/230/1/3/27, water quality consenting standard flow measurement for discharges.

Installation should only be carried out by suitably qualified and experienced contractors in accordance with current Health and Safety Regulations. Electrical work should only be carried out by a qualified electrician, working to the latest edition of IEE.

Units are supplied with non-pedestrian duty access covers and frames.

8. Installation – General

The drawing supplied shows a general layout for a typical unit. Check the dimensions of your specific unit.

Check tank carefully before attempting to install, under no circumstances should you install a damaged unit. Check all other items are available, as identified by delivery list.

Inform us immediately, on delivery if there is any damage or shortages.

Additional items are required, (not supplied by us)

- External to the unit pipework. PVCu Inlet/Outlet, ventilation and cable/ ducting.
- Ventilation pipework
- Sample chamber
- Ventilated housing for blower either a brick built enclosure or suitable kiosk. (kiosk range available NOT part of standard supply, please contact sales department).
- Alternative special loading access covers. (Standard access covers are supplied)

When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework should be designed to minimise the risk of damage from

differential movement of the unit(s) and/or surrounding material.

For units with burial depths greater than 800mm from invert level to the top of the unit, specific site conditions should be taken into consideration and the backfill designed to bear any loads which may be applied during and after installation to prevent the tank being subjected to these loads.

The excavation must be deep enough to provide bedding and cover depth as determined by the type of surface pavement and loading. Asphalt and concrete base pads should extend a minimum of 300mm horizontally beyond the unit in all directions.

In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the side walls of the excavation with suitable trench sheets and bracing systems to maintain a vertical wall from the bottom to the top of the excavation. DO NOT completely remove the shoring system until the backfilling is complete, but before the concrete fully hardens.

In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation should be dewatered using suitable pumping equipment and this should continue until the installation is complete.

During installation care must be taken to ensure that the body of any unit is uniformly supported so that point loads through the unit are avoided.

Concrete Specification

The concrete Specification below is a *general* specification. It is not a site specific installation design.

GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)	
TYPE OF MIX	(DC) DESIGN
PERMITTED TYPE OF CEMENT	BS 12 (OPC): BS 12 (RHPC): BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE	20 mm
GRADES: C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20
SLUMP CLASS	270 - 280 Kg/M ³ 220 - 230 Kg/M ³
RATE OF SAMPLING	S1 (25mm)
	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

Typical site layout

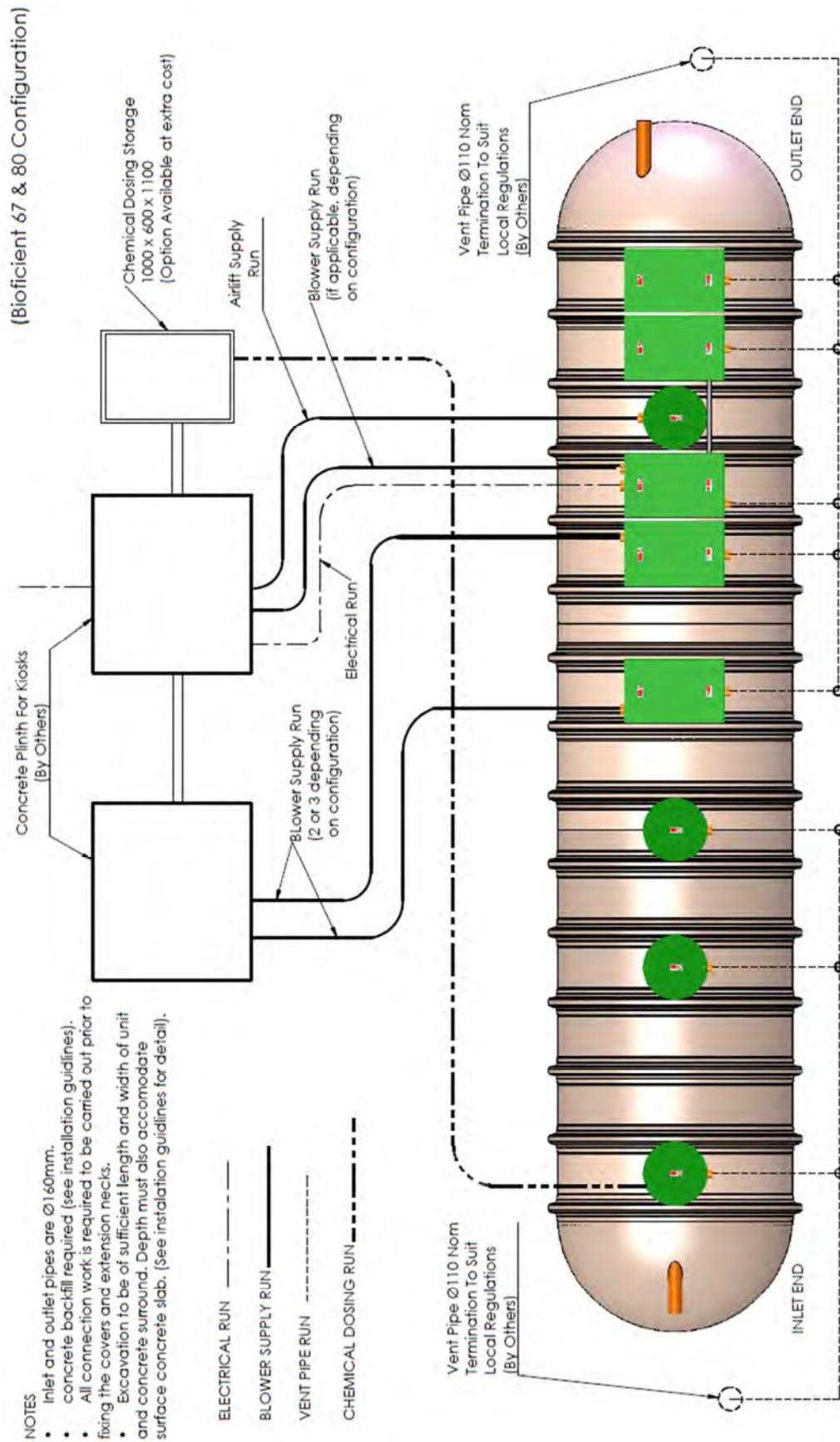


Figure 5; typical layout (shown with optional chemical dosing)

9. Technical Information

Bioficient Model		34	38	42	47	55	67	80
Max flow	m ³ / day	15	20	25	30	40	50	60
Peak flow rate for ½ hr in any 2 hour period	m ³ /hr	1.8	2.5	3.1	3.75	5	6.25	7.5
Main Blower 1 power / Full load current	Kw / A	0.18 / 1.6	0.23 / 2.1	0.23 / 2.1	0.36 / 3.2	0.45 / 3.4	1.1 / 6.62	1.5 / 10.1
Main Blower 2 power / Full load current	Kw / A	0.18 / 1.6	0.23 / 2.1	0.36 / 3.2	0.36 / 3.2	0.45 / 3.4	1.5 / 10.1	1.5 / 10.1
Main Blower 3 power / Full load current	Kw / A	0.23 / 2.1	0.23 / 2.1	0.36 / 3.2	0.36 / 3.2	0.45 / 3.4	1.5 / 10.1	1.5 / 10.1
Power supply phase		230 V Single	230 V Single	230 V Single	230 V Single	230 V Single	230 V Single	230 V Single
Recirculation Pump 1 power (on timer operation) / Power supply phase / Full load current	Kw / A	0.35 / 230 V single / 1.4						
Chemical dosing pump* power. Power supply phase/Full load current	w / Ma	5 / 230 V single / 300						
Not Supplied on ALL units								
Recirculation Pump 2 power (on timer operation) / Power supply phase / Full load current	Kw / A	0.35 / 230 V single / 1.4						

Technical Specification

Model	34	38	42	47	55	67	80
Maximum flow (m ³ /day)	15	20	25	30	40	50	60
Retention time (hrs)	46	39	35	32	28	28	27
A Overall Length (m)	7.4	8.1	8.9	9.7	11.2	13.5	15.8
B Overall Width (m)	2.8						
C Height (m)	2.96						
500mm Inlet / 650mm Outlet Invert*	2.96						
800mm Inlet / 950mm Outlet	3.26						
1500mm Inlet / 1650mm Outlet Invert*	3.96						
2000mm Inlet / 2150mm Outlet Invert*	4.46						
D Diameter (m)	2.6						
Volume (m ³)	34	38	42	47	55	67	80
Weight approx (kg)	3000	3200	3400	3800	4200	4700	5400
Inlet / Outlet Diameter (mm)	160						

Notes:

- * Extension necks can be added to turrets to achieve deeper inverts. Alternative pipe sizes may be ordered.
- For deep installations over our standard 2m Invert, we recommend an independent civil engineer advice be sourced.
- Weights are dry weights and installers must ensure there is no water in the tanks before lifting. All weights are approximate.
- Kingspan Environmental reserve the right to alter the above dimensions without prior notice.

10. The Treatment Process

General

The biological treatment process of your unit is self-regulating and it requires no specialised operational knowledge, but it is important that you are aware of the following points.

Your system uses colonies of live natural micro-organisms (biomass), to break down the pollutants in the sewage. Many chemicals used in households and commercial establishments can inhibit or kill these micro-organisms; particularly if used in excessive amounts.

Generally speaking all common household cleaning fluids are acceptable, **provided they are used in accordance with the makers' instructions and stipulated concentrations.** The golden rule is "If in doubt - leave it out". Commercial cleansing products are much stronger and some can adversely affect the biology." Please see the list of Do's and Don'ts.

Standard Effluent quality

This system process is designed to achieve a high quality effluent from a domestic sewage feed.

When loaded at its maximum rated capacity (domestic sewage BOD and ammonia), the plant design provides for a 90 days desludge interval, the Bioficient 34 & 38 provide for 120 days sludge storage.

Operation

The biological process requires the addition of power and air. Blowers, pumps, air lifts and diffusers are used to control the process; movement /recycling of liquids and solids and provide oxygen for the biological process. Within the unit there are aerobic zones, controlling aerobic biological treatment, nitrification and de-nitrification. The process energy efficiency is optimised as a result of utilising biological de-nitrification and high efficiency air diffusers.

The air supply is provided from a blower mounted remotely from the plant adjacent to the electrical control panel. Duty / Standby units or Duty / Assist configurations are available options. Single phase and 3 phase blowers can be used, please contact Kingspan Sales.

The unit is divided into a number of compartments. At the front of the unit is a large two stage compartment, the purpose of which is to provide a settlement zone for the primary solids. The settled liquid, free from gross solids, transfers through a baffle from the first to the second section of the primary compartment.

From the second primary compartment, the settled effluent passes into an aerated carbonaceous treatment biozone. This compartment contains diffusers and media. The carbonaceous biozone is followed by a large aerated nitrification biozone also with diffusers and media. Within these zones bacteria grow both on the surface of media and suspended within the liquor. The system is able to adapt quickly to a change in sewage loading and the bacterial biomasses will develop to cope with the normal daily load variations.

The system can be adjusted to perform with reduced loads (i.e. down to 50% of the specified maximum daily load) When it has been identified /agreed that this facility is required, the design modifications will have been completed pre delivery. The modifications can be made post installation to accommodate this requirement. (Site inspection charges will apply) This makes the Bioficient particularly useful for applications which expect to have periods of inactivity, such as schools, or when the loads are of a seasonal nature.

The final compartment acts as the final settlement tank (FST) where the fine solids settle. As a final filtration in the treatment plant an effluent filter is fixed to the outlet pipework. The filter is placed inside a GRP chamber with specific inlet locations to optimize the quality of the effluent entering the filter (i.e. avoid surface scum getting in contact with the filter). Effluent discharges by gravity, overflowing from the system into a sample chamber. (Optional Extra).

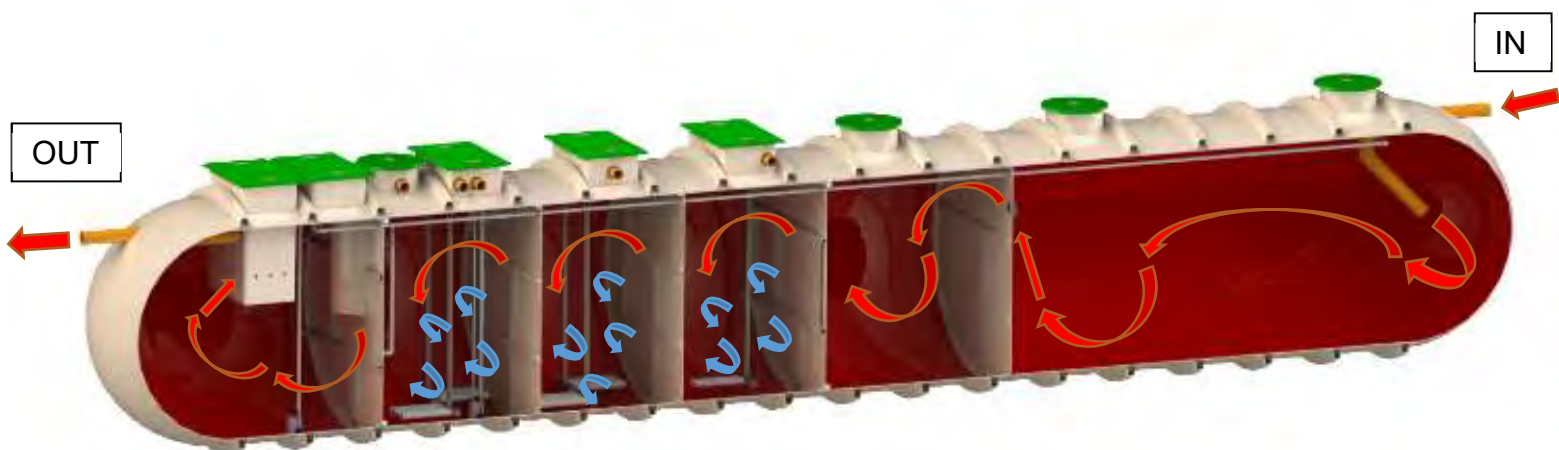


Figure 6-process flow

017610 Bioficient WWTP Installation & Maintenance Guideline

Within each compartment, the volume and liquid levels are controlled using a mixture of air lift transfers and pumped recycling. There is minimal hydraulic loss across the unit, (150mm fall). The plant design incorporates flow management to smooth out the volume and load variations and create the optimum conditions for bacterial growth.

In a gravity feed situation, in the event of a power failure, the sewage will flow into the plant, be primary settled and pass through the various zones before overflowing into the final settlement tank and out of the discharge pipe.

The system requires regular desludging from the primary and final compartments only. There is no need or requirement to empty either of the biozones. The biozones stay in operation during the period following servicing whilst the water level is restored. As a result of this, the final effluent quality remains consistently good.

Users should be made aware that their sewage enters a biological wastewater treatment system so that they can dispose of their waste considerately. Not everything is suitable for disposal into the system, for example where the unit serves premises with a catering function, special arrangements should be made to prevent the oils, fats and grease from entering the unit. Disinfectants, weed killers, medicines, brewers cleansing chemicals etc. can all adversely affect the biological process. Please request User leaflets which provides detailed information for individual householders.

Domestic and other properties feeding into the system should display a label within the building identifying use of a treatment system. See introduction notes. We can supply copies of the labels for use at individual properties.

Specified effluent qualities

Other parameters such as a Total Nitrogen or phosphate may have been specified. (See your individual quotation for effluent qualities) in which cases, additional processes may be employed.

The design will be tailored for each application to suit the expected daily incoming volume, the advised influent level and the required effluent quality. This information is provided separately or within the electrical panel settings.

Units with Chemical Dosing systems (if fitted)

Please note – The dosing chemical must be supplied by others, and is not included as part of the treatment plant order.

The reduction of phosphate is sometimes required by the environmental regulator in order to protect the local environment. The addition of limiting nutrients such as phosphate can cause eutrophication in the receiving water.

Units provided to meet effluent qualities with low phosphate discharge are provided with a chemical

dosing system. The equipment provided includes a chemical dosing pump, and a timer/control is incorporated into the system panel to allow for the regular addition of chemical. The chemical used may be specified by the regulator. Our systems may be used with liquid ferric chloride, feral, or similar, or poly aluminium chloride such as Kemira XL60. For more stringent effluent quality further treatment may be required with separate dosing pumps and tanks.

You should select an appropriate location/storage facility for the chemical selected for use.

*Design of the chemical storage facility needs to take into account the type and estimated volume of chemical used, the purchase frequency and supply unit, i.e. 25litre drum or IBC container. The design should also consider safety access and the storage requirements for the chemical chosen. Please ensure that you have the most up to date versions of the COSHH and health and safety data sheets of the selected chemical from the chemical supplier and that you observe all health and safety precautions. * The location should be made secure and be locked.

The volume of chemical dosed can be adjusted, as can the interval between the doses. The chemical dosing point is located in the first neck into the primary settlement zone to enable good mixing of the chemical with the incoming liquid. The chemical pump is usually mounted with the storage area designated for the chemical drums. This must not be too far away from the PST and the chemical line must be protected. The chemical is intermittently pumped into the dosing point positioned in the primary settlement zone. The chemical mixes with the dissolved phosphate and coagulates together to form settleable particles.

Use of a chemical significantly increases the sludge production from a unit and decreases the desludging interval.

Addition of the chemical is fundamental to the process and it is important to check the chemical usage and ensure continued availability replacing supplies before they are exhausted. Should the chemical run out, or there is no power, there will be no phosphate removal.

Customer Information- Detergents and chemical products used by consumers within the properties using the treatment plant should be selected with care so as to **reduce the amount of added phosphates** going into the treatment plant. It is possible to reduce the amount of phosphates entering the unit by up to 50%. The less phosphate entering the plant, the lower the chemical dose required.

Your unit will be provided with timers pre-set, however, you must contact us with influent phosphate readings and the chemical proposed for use, so that the unit timers can be set up to optimise dose rates and effluent quality. An extra inspection visit is required after a month's operation.

Do's and Don'ts

Domestic products

Washing machine and dishwasher detergents, washing up liquids:

These are generally all right to use in the normal concentrations and usage found in domestic housing applications but when chemical dosing, they should be chosen with care to avoid un-necessary addition of phosphate. All commercial applications should be individually assessed before installation for their laundry load. Please contact us for advice if any changes are contemplated e.g. addition of extra laundry facilities.

Floor cleaners, disinfectants and bleaches:

These are safe to use in accordance with the makers recommendations and in the minimum necessary quantity and concentration. Do not pour neat disinfectant or bleach down sinks or outside gullies. If these are smelly it usually indicates a build-up of decaying material, fat or a plumbing problem and should be dealt with accordingly.

Nappy disinfectants and bottle sterilising fluids. e.g. Milton:

When disposing of the used fluid, ensure that it is well diluted with water. The easiest way of doing this is usually to flush it away down the toilet.

Waste disposal units:

These should not be used. Their use has not been considered when designing the process. They do not inhibit the biomass, but, depending on their use, they can present the treatment plant with considerable extra load and solids. This can result in the treatment process becoming unbalanced, leading to problems. It is much better to compost vegetable peelings etc - it's cheaper and environmentally friendly.

Home beer and wine making.

This presents a similar problem to waste disposal units. The unit has to work as hard to treat one pint of beer tipped down the drain as it does to treat all the normal waste produced by one person in 24 hours. See also the notes above regarding sterilising fluids.

THE FOLLOWING MUST NOT BE DISCHARGED INTO THE DRAINS (This is not an exhaustive list!):

- Cooking oil and fat.
- Chemical Toilet Waste
- Motor oil, grease, anti-freeze, brake fluid etc.
- Weed-killers, insecticides, fungicides and other gardening chemicals.
- Paint, thinners, white spirit, turpentine, creosote etc.
- Medicines -Take unused medicines to a pharmacist for safe disposal.
- Photographic developing fluids and chemicals.
- Strong commercial cleansing chemicals, e.g., products for cleaning beer lines, drain products.
- Nappies, nappy liners, sanitary items, fabric wipes, rags, soft toys, tennis balls etc. Although such items are not directly damaging to the biomass they can cause problems, not the least of which is simple blockage of the drains. Even so-called disposable nappies and sanitary towels often do not degrade fully in the treatment plant and can lead to malfunction, so it is best to dispose of them by other means.

11. Operation

Treatment Unit

General

Every care is taken to ensure that all mechanical components are correctly fitted and adjusted prior to leaving the factory. However, subsequent handling during transportation and installation may result in the movement of components and an alteration of valve settings causing a need to re-adjust prior to starting the unit. If, on inspection, you consider that any components require adjustment, please contact us. We consider that it is essential that these units are properly commissioned by us before use.

After installation, the unit should have been left full of clean water. Power should be connected to the control panel, pumps, unit and any ancillary equipment.

Power should be left OFF, pending our inspection . Please contact us to arrange Pre-service Inspection Agreement

Should you choose to start up the system without using our services, the following notes are provided for assistance however, in providing these, we have assumed that your contractor has correctly installed, connected and tested all the equipment correctly.

Optional Pump Station

Check that the pumps have been installed and wired to the Pump Control Panel.

Check that the Pump Control Panel timer is set correctly. Our pump stations are usually supplied with a separate control panel, but in some instances, we may supply a single control panel to operate the treatment system and pump station)

Check the setting of the floats in the pump chamber.

Ensure that the float(s) can operate freely without risk of entanglement.

Influent pumps should be set to pump little and often in order to spread the load entering the treatment unit. Direct pumping into the unit should be avoided by using an external upstream discharge point. (Please consult us for further parameters)

1. Check that the unit is full of water to the outlet level.
2. Check that the manual diffuser valves and the forward feed air lift valves are fully open.
3. Adjust the forward feed airlifts to the required average normal daily flow by measuring the flow rate at the sampling point.
4. Switching the main panel on will start the blower and will initiate the timed operation of the internal pumps and any connected ancillary items, (e.g. chemical dosing pump).
5. Check that the air coming from the diffusers is moving the media.
6. Check that the high level alarm is active if the water level is high enough to flow through the overflow into the FST. Adjust the float height accordingly.
7. Allow sewage to enter the unit, this will gradually displace the clean water used during installation.

The colonisation by micro-organisms will commence naturally and a full operating biomass will establish itself within the biozones in 4-8 weeks, depending on individual site circumstances.

During start up the plant may generate some foam as the bacteria build up. This will subside as performance improves

Forward feed air lifts; maximum settings in table below.

Where two air lifts are provided, it is the combined flow rate.

Bioficient Model	34	38	42	47	55	67	80
Flow lpm	22.8	30.6	38.2	45.8	61.1	76.4	91.7

Running Checks

The following periodic checks should be carried out monthly. Your attention is specifically drawn to the Health and Safety section of this manual.

Sounds- Learn what is normal and abnormal from a sound point of view, i.e. normal blower noises and bubbling.

Looks- Visually check the general condition of the plant. Report any aspects of concern to your maintenance engineer. Know what the bubble pattern should be.

Levels- The front section is usually lower than the final tank, but this level fluctuates.

Biomass Development- Look within the biozones. There should be even turbulence with bubbles all over. The liquor may appear light grey to dark brown. The second biozone may appear a little browner.

Mechanics - Visually check that the all the forward feed air lifts are operating. (Clear any debris from pipes if there is a lack of flow).

Timing Check that the pumps operate at their prescribed times and durations. Each time the power is turned on the pumps will initiate the run cycle.

Alarms Check the alarms operate. Switch off the blower but not the power to the control panel. If the alarms do not operate properly, contact your maintenance engineer.

Chemical dosing Check the level of chemical in the chemical drum and the operation of the pump at the specified dosing time and interval. The dosing does not operate at low primary tank levels.

12. Maintenance

General

The system operates with air blowers, pumps and airlifts.

Blowers will require checking regularly and will require filter cleaning and replacement.

Air lifts must be checked to ensure that they are performing correctly, delivering the correct volume and have not become blocked.

Pumps are operated using timers. Periodically pumps will need to be removed and their orifices checked for blockages.

It is recommended that the effluent filter (connected to the outlet pipework) is cleaned at every service visit.

Units with chemical dosing

Replacement of the chemical containers is required before the chemical runs out.

The chemical dosing lines should be checked each time the chemical container is replaced.

The dosing action should be checked when the container is replaced.

Excess solids are created by using the chemical. Units with chemical dosing systems will require desludging more often than standard units without the addition of chemical.

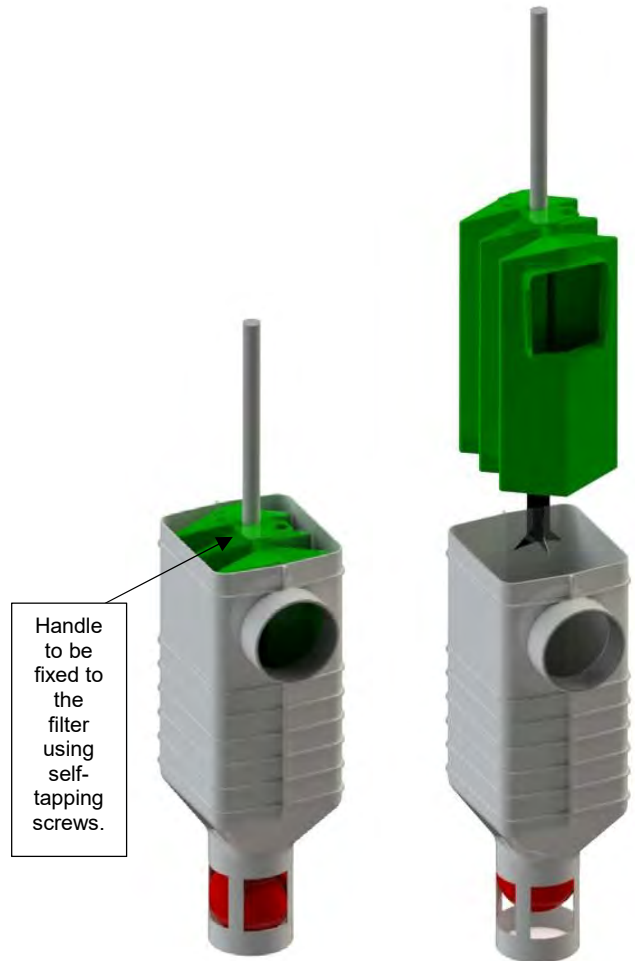
Desludging

The system requires emptying periodically. When operating at the normal daily load, emptying should take place at 90 day intervals. Bioficient 34 and 38 provide for 120 days sludge storage.

The frequency of sludge removal is expected to increase if the unit is chemically dosed. The volumes to be removed from each unit are given in the table below. Units which are over utilised may require more frequent emptying. Units which are not emptied will accumulate excess solids within the compartments. Final solids will be released and contribute to poor effluent qualities, run the risk of blocking any associated drainage field and contribute to pollution.

Different allowances/calculations should be made for non domestic inputs such as pubs and other commercial premises. Please contact us for an assessment.

DO NOT EXTEND THE EMPTYING FREQUENCY



Maintenance - Effluent Filter

1. Pull the filter cartridge out of the filter housing by pulling the handle (the ball will float up and seal of the inlet of the filter housing while the filter is being cleaned).
2. Hose off filter over the Final Settlement Sone/Final compartment. Make sure all solids fall back into the treatment plant.
3. Insert the filter cartridge back into the housing making sure the filter is properly aligned and completely inserted.

Maintenance Contracts

We recommend and can provide regular planned maintenance visits to inspect the operation and performance of the units. Please contact us for details

Desludging Procedure

The two-stage primary zone should be de-sludge to remove the floating scum and approximately 60% of the volume. The FST requires the floating surface sludge to remove along with 50% of its volume. See table below for volumes.

1. Isolate power at the main control panel.
2. Remove access covers from the first, second,(in some cases third) and last access points.
3. Remove the floating surface scum from the final settlement tank. (last access point).
4. Place desludging nozzle into the base of the tank and withdraw the volume indicated, taking the settled sludge rather than the supernatant liquor. Note. Please avoid the location of the pump connected by fixed pipework from the base of the compartment.
5. Remove the floating surface scum from the first and then second compartments of the primary settlement zone (first and second access points)
6. Place desludging nozzle into the base of first compartment tank and withdraw 80% of the advised volume, taking the settled sludge rather than the supernatant liquor. Take any settled sludge from the base of the second compartment up to total volume indicated.
7. **DO NOT REMOVE LIQUOR FROM ANY OF THE OTHER COMPARTMENTS. (THESE MUST NOT BE EMPTIED AS TO DO SO REMOVES BOTH THE BIOMASS AND THE MEDIA)**
8. Replace all the access covers and secure.
9. Switch on power at the main control panel.
10. Allow sewage to enter the first compartment as normal, only if supplied by a pump station. Note. Level switches on the recycle pumps will prevent their operation until a satisfactory liquid level has been reached.

Bioficient Model	34	38	42	47	55	67	80
FST plus scum layer							
litres	4,700	4,100	6,400	5,700	5,300	8,700	8,000
gallons	1,035	900	1,400	1,250	1,160	1,910	1,750
PST plus scum layer							
litres	8,900	11,700	11,700	14,700	17,400	23,000	28,300
gallons	1,950	2,570	2,570	3,230	3,820	5,050	6,220
Total Volume to be removed per visit							
litres	13,600	15,800	18,100	20,400	22,700	31,700	36,400
gallons	2,985	3,470	3,970	4,480	4,980	6,960	7,970

Note

- A log should be kept recording the frequency of emptying.
- The waste should be removed under the terms of The Waste Management Code of Practice. The Code imposes a duty of care on the waste producer to ensure that the Cleansing contractor is registered with the Environment Regulator and that the final disposal of the waste is to a licensed facility.

Servicing

Our site engineers are available to carry out Pre-service Inspection Agreement, service and maintenance visits. We recommend regular maintenance contracts for these units. We offer a service to supervise tank emptying. Contact details are provided on the cover sheet.

13. Warranty

Taken from 'Kingspan's Terms & Conditions of Sale'

The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use within a period of twelve months from the date of delivery.

This warranty is conditional upon:

- (a) the Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.
- (b) the Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.
- (c) the goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.

The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.

The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.

For any further advice, please contact us.

A Warranty Form is included in this package, to register your unit for Warranty. Please complete ALL sections of the Form, and return it at your earliest convenience.

Our service provider: Kingspan Environmental
Services: 0844 846 0500

14. Commissioning Guidelines

1. PRE-INSTALLATION CHECKS

On arrival check the following:

- Is the installation pack, electrical and mechanical drawings, instructions and Owners pack on site and readable?
- Do the above information packs refer to the installed treatment plant?
- Is the tank correctly installed and backfilled to permit safe access?
- Are the electrical connections to the panel complete?
- Is the mains power wired in to the panel isolator?
- Is there suitable access to switch on the mains power at the customer's supply?
- Are the air connections between the blower and the treatment plant terminated correctly?
- Are the cable/air hose ducts sealed at one end to prevent foul air being drawn from the treatment plant to the air blower or the electrical control panel?
- Are the ventilation ducts installed and run to suitable external vent positions?
- Is the sample chamber installed, or other means of obtaining a final effluent sample to set up forward flow rates?

2. INSTALLATION CHECKS

Remove the covers from the Treatment plant and check the following:

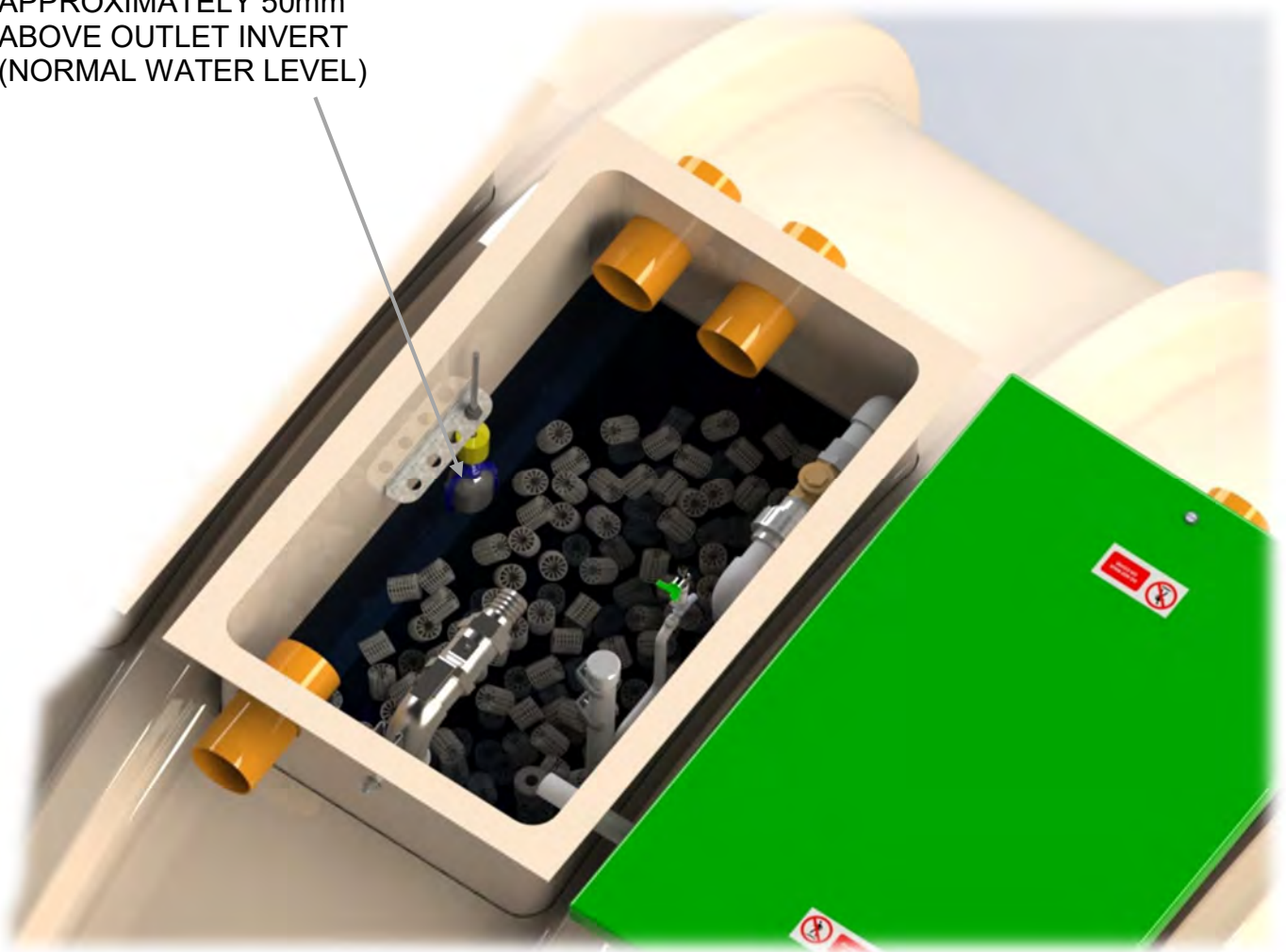
- Are the plant internals correctly located, they may have moved in transit?
- Is there any obvious debris which has entered the tank during installation which requires removal?
- Does the tank, access necks and extensions show any signs of distortion as a result of ground pressure?
- Are the air hoses correctly terminated with hose tails and the worm drive clips tightened such that the hoses are not able to be turned on the hose tails? Are the hoses neatly tied back?
- Are the air valves on the air manifolds to the diffusers all open?
- Is the forward feed air lift air tap closed? There are twin forward feed air lifts on larger plant!
- Is the air tap accessible, it may be necessary to tie it up in a suitable position to enable adjustment without stretching into the tank,
- Is the water level in the tank within approximately 300mm of the outlet invert? If NOT, arrange for more water in order to enable the treatment plant to be turned on and commissioned.
- Are the internal pumps (final settlement tank and final biozone) wired up to the internal junction boxes? On 1.5m and 2m inverts these pumps must be fitted with the extension pipework, then the extension shafts are fitted, and finally the pumps are wired in to the junction boxes.
- Is the high level alarm float switch at a high level in the tank? (To avoid early alarm whilst the tank is at a normal operating level). On 1.5m and 2m inverts the high level alarm needs to be fitted and wired into the junction box after the extension shafts have been fitted.
- Is sewage flowing into the tank?

3. DEEP INVERTS

Deep invert installations with extension necks check these items (otherwise move to step 4)

- The air diffuser extensions and the pump discharge pipework extensions should be built up before fitting the extension necks.
- Ensure that the diffusers are lined up “front to back” otherwise they will rest on the curved tank wall and may not fit on the manifold.
- Only position diffusers when there is sufficient water in the tank to cause the media to float.
- The internal wiring on deep invert plants should be completed on site with the junction boxes mounted high in the necks to enable reasonable access.
- The internal pumps require wiring in to the junction boxes.
- The high level alarm needs wiring in to the junction box, normally open in the down position, cores brown and black.

ENSURE BOTTOM OF HIGH
LEVEL ALARM FLOAT RESTS
APPROXIMATELY 50mm
ABOVE OUTLET INVERT
(NORMAL WATER LEVEL)



4. CHEMICAL DOSING CHECKS

Items to check for chemical dosing for phosphorus control, if fitted (if not fitted, move to step 6)

- The chemical to be used is potentially dangerous.
- The supplier will provide a Material Safety Data Sheet (MSDS) for the product. A copy of this must be kept with the other drawings provided with the plant (ideally kept adjacent to the electrical control panel) and also a copy should be given to the person in control of the premises.
- The dosing system should be wired in to the junction box with the pump box mounted in the Chemical store. The delivery hose should be run to the dosing position which is in the first neck in the First primary settlement zone.
- The chemical store must be able to be locked to prevent any unauthorised access, especially where children might be present.
- The level of the chemical in the chemical store needs to be below the dosing point to prevent siphoning, resulting in over dosing.
- Test the chemical dosing settings with water to ensure correct performance.
- Wearing appropriate personal protection equipment, open the chemical dosing container and insert the suction hose. Cutting the hose on the angle and tying the end to a stainless steel nut or bolt will keep the end of the suction pipe at the bottom of the container and prevent the hose from “sealing” onto the base of the container.

5. THE ELECTRICAL CONTROL PANEL CHECKS

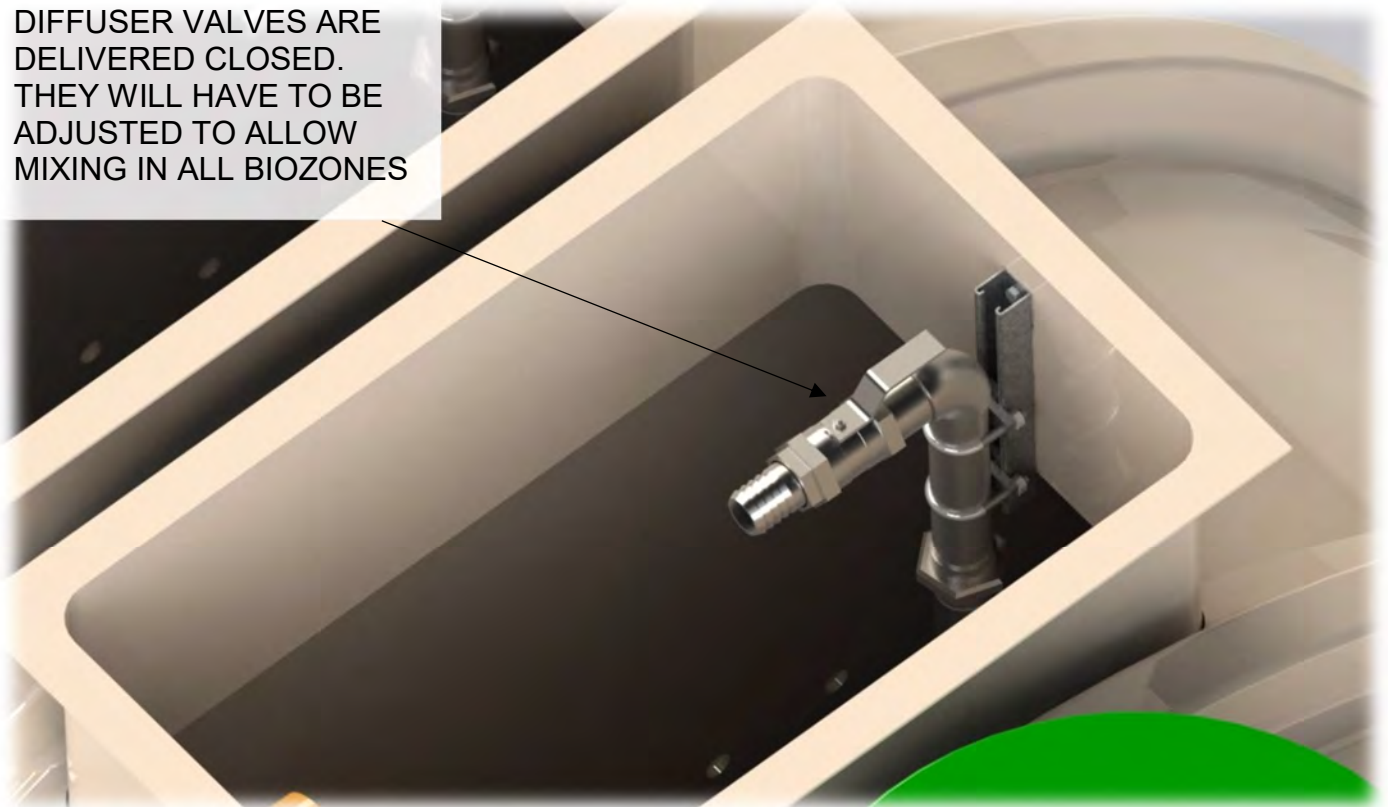
All checks should be made by a suitably qualified competent person

- Is the panel mounted in a suitable location which is protected from the environment? Is access to the panel restricted to prevent unauthorised operation?
- Are the cables correctly and safely terminated?
- Is the earthing protection suitable for the installation, has it been checked?
- Are the wiring diagrams available inside the panel?
- Are the motor overloads set to the run position; they are delivered in the tripped position?
- Has the PPFDS impulse tube been run to the panel, when supplied?
- Is the remote alarm beacon wired in, when supplied?
- Replace any wiring diagrams
- Refit the cover to the panel enclosure.

6. GOING LIVE

- Is there any reason that the power should not be turned on? (Is there sufficient water in the plant?)
- If safe to do so, turn on the mains electricity supply at the customer's end.
- Turn on the mains isolator on the control panel.
 - The motors will start immediately unless there is a delay timer.
 - The panel display will illuminate, is it showing any alarms? Refer to the Guidelines for the Alarm display explanations.
- Check the first manhole on the plant (Primary tank first stage), is the recirculation pump discharging?
- Check the 3rd, 4th and in some cases the 5th manhole (the biozones), is the liquid and media being agitated and having the appearance of a vigorous boiling? Is the mixing similar in all biozones?
- When the plant is reasonably full, set the forward flow air lifts to give an average forward flow equal to the expected daily flow of sewage. Flow measurement is taken at the sample chamber or other suitable point where a container can collect the flow over a short period of time measured with a watch with a second sweep or a stop watch.
- On some plants it is possible to remove the forward feed air lifts and to turn them around so they discharge back into the biozone. This enables the forward flow rate to be set in the event that access to a suitable sampling point is not available. Once the forward flow rate has been set, the forward feed air lifts should be remounted in their normal operating position without moving the green air taps.
- The green air taps will be almost shut in most cases, if the air taps are left fully open they will starve the biozones of air, reducing or even stopping any mixing, resulting in no biological treatment.
- Check the blower operating temperature and ensure adequate cooling is available. Increase the cooling ventilation if required, natural or forced ventilation as necessary. Ventilation selection may need to take account of local noise restrictions.
- If all satisfactory, replace the manhole covers and screw down as appropriate.
- Replace all documentation and hand the Owner's Pack to the installer/customer
- Close the Kiosk/room where the electrical panel is situated.

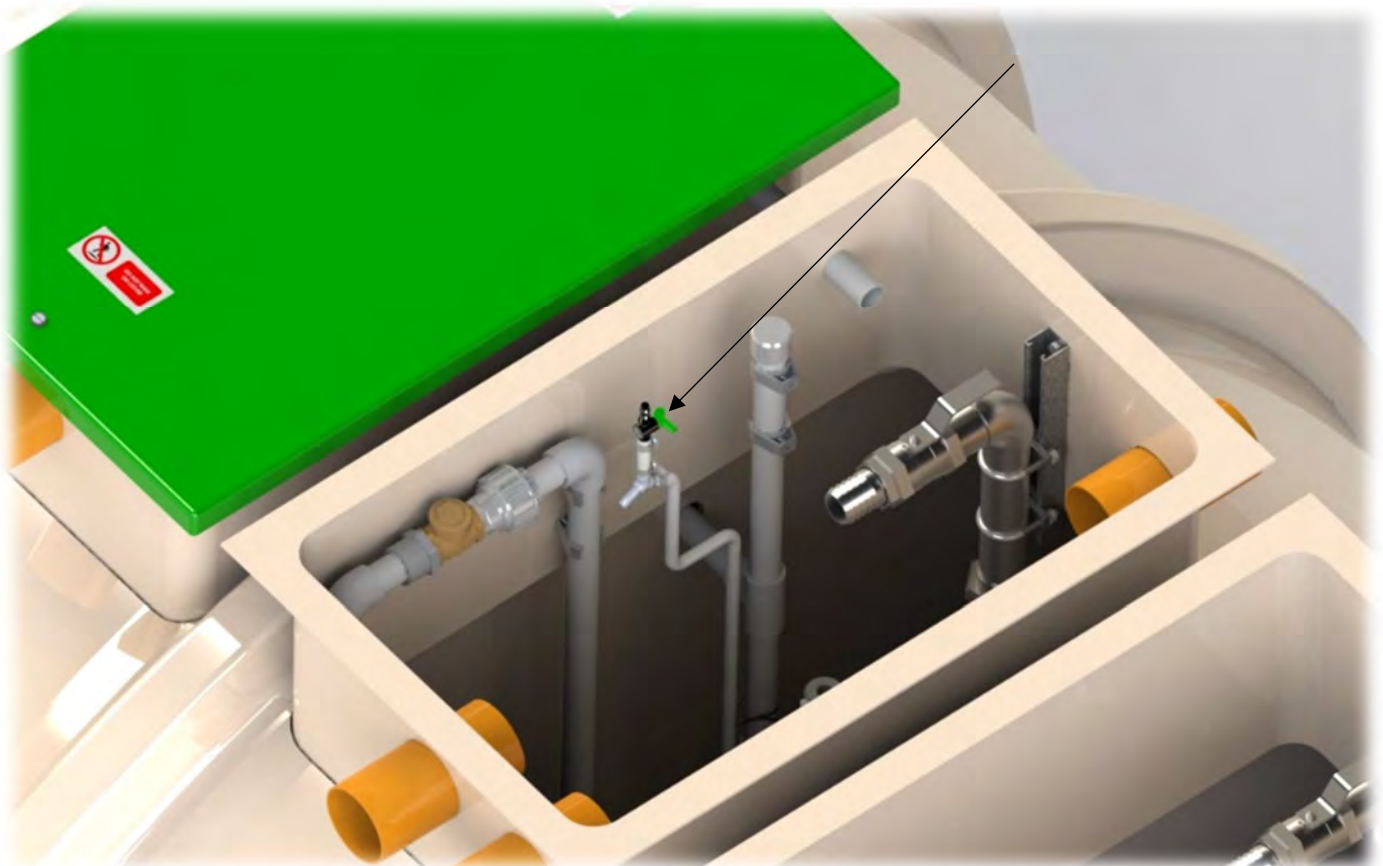
DIFFUSER VALVES ARE DELIVERED CLOSED. THEY WILL HAVE TO BE ADJUSTED TO ALLOW MIXING IN ALL BIOZONES



7. OPTIMISING PERFORMANCE

- Once the plant has seeded itself biologically there will be a visible growth on the media circulating around the biozones. This can be light or dark brown if the plant is operating normally.
- During biological start up there may be quite a lot of foam in the biozones. This usually subsides quite quickly as the population of bacteria on the media increases.
- The internal recirculation can be adjusted to modify the treatment operation, this changes the amount of nitrate returned as well as the dilution rate on the incoming sewage. In the absence of any analytical data we do not recommend making any changes to plant settings other than the forward flow air lifts.
- In general, the “slower” the plant the better the performance.
- Air blowers should not be restricted, either by operating with dirty inlet air filters or by closing the valves on the diffusers in the biozones.
- After a period of normal operation, the plant will require de-sludging/tankering. The Guidelines give the procedure and suggested interval for de-sludging. However, if the load on the plant is significantly different then the interval may be adjusted to suit. The procedure should always be the same.
- If the load is seasonal, then the de-sludging can also be adjusted to a seasonal cycle.
- If the biozones appearance changes from a dark to a more milky liquid, it is usually a sign that the plant is ready for de-sludging. It can also be a sign of excessive fat in the sewage, or a high proportion of detergent (laundry), or even an overload due to a change from the nature of the source and/or magnitude of the incoming sewage!

FORWARD FEED CONTROL VALVES (GREEN) ARE SUPPLIED CLOSED. THEY MUST BE ADJUSTED DURING PLANT COMMISSIONING TO ACHIEVE THE CORRECT FORWARD FLOW RATE. THIS CAN BE MEASURED AT THE OUTLET SAMPLE CHAMBER.



15. FAQ's.

20 Frequently asked questions; if you do not find your answer please contact our technical team.

<p>1. General</p>	<ul style="list-style-type: none"> • Maintenance and service checks should be carried out by suitably trained personnel. • Electrical equipment should only be worked on by suitably skilled personnel.
<p>2. Can I get into the tank to fix something?</p>	<ul style="list-style-type: none"> • On no account should anybody enter the tank.
<p>3. Is it safe to work on the plant?</p>	<ul style="list-style-type: none"> • If suitable safety precautions are observed. • Always wear rubber/latex gloves. • Safely isolate the electricity supply to the plant • Always wash thoroughly after contact with the plant. • Do not eat/drink or smoke without washing hands first. • Any splashes into the eye should be rinsed with saline water SEEK MEDICAL ADVICE. • If any liquid in the plant is swallowed, do not induce vomiting, drink plenty of water, seek medical attention.
<p>4. Something has fallen into the tank.</p>	<ul style="list-style-type: none"> • Do not attempt to enter the tank. • If the item floats, use a fishing net or similar tool to remove. • If it sinks and it is magnetic, tie a strong magnet to a rope and attempt to remove it. • In the majority of cases small items are not a problem, but check the diffusers for damage particularly if vigorous "boiling" is evident
<p>5. There is foam oozing out of the vent/access covers.</p>	<ul style="list-style-type: none"> • This is normal on start up of this type of biological process. • It will subside in a few days depending on the connected load on the plant. • Water spray will knock it down or small doses of silicon based anti foam may be used.
<p>6. There is a dry crust on the surface of the primary tank.</p>	<ul style="list-style-type: none"> • This is quite normal and will not cause any problems. • When the tank is "de-sludged", this crust will be removed.
<p>7. There is a dark brown wet sludge on the surface of the final settlement zone.</p>	<ul style="list-style-type: none"> • This is a good indication that the process is operating, but may also indicate a problem with the sludge return pump. • Isolate the power to the plant, remove the pump and check operation.
<p>8. A noise like a vigorous boiling water is coming from one of the access points.</p>	<ul style="list-style-type: none"> • The diffuser may have come off.
<p>9. The plant is smelling like raw sewage, slightly sickly sweet.</p>	<ul style="list-style-type: none"> • Check that the air blower is operating, check the inlet air filter on the blower, if blocked fit a clean one. • Check the liquid level in the plant, is there a blockage downstream causing the liquid to back up? (Particularly Soak-aways and drainage mounds). • Check for indications of toxic chemicals such as disinfection, drain cleaning products or caustic based cleaners etc.

017610 Bioficient WWTP Installation & Maintenance Guideline

<p>10. There is a white growth in the water course where the plant discharge is.</p>	<ul style="list-style-type: none"> • A sign of poor treatment. The biological process is overloaded, the blower is under performing, Toxic chemicals, disinfectants, cleaners etc
<p>11. The water discharging from the plant has a rainbow sheen on it.</p>	<ul style="list-style-type: none"> • Petroleum products, oil or diesel have been discharge into the plant. Locate source and eliminate. • The plant will recover from small discharges but a large discharge may require a special tanker, contact your local licensed waste disposal company.
<p>12. The blower discharge pipe is very hot.</p>	<ul style="list-style-type: none"> • If the blower is too hot, check the air filter, if there is a large resistance to removing the cover, the filter is blocked, replace. • Check that the valves on the aeration drop pipes are open. • Check the water level in the tank: high level the blower works harder so temperature high. • The blower will normally be 25°C to 30°C higher than the outside air temperature. • Are the ventilation louvers in kiosk clear, run with the kiosk door open for 10-15 minutes, does the blower cool down? If yes, increase the ventilation into the kiosk. • Are there any signs of the blower pipe work being damaged or crushed?
<p>13. The final effluent is cloudy.</p>	<ul style="list-style-type: none"> • This usually occurs when the plant de-sludge is overdue. • Check service records and arrange de-sludge. • Other causes are “process” related and normal checks should be made on the blower, toxic chemicals and un-authorised discharges.
<p>14. The final effluent is coloured.</p>	<ul style="list-style-type: none"> • This can be: unauthorised discharges, or ground water entering the plant
<p>15. Total nitrogen in the final effluent is high (H range plants only)</p>	<ul style="list-style-type: none"> • Isolate the power to the plant; remove the recycle pump and check. • Contact your service provider for advice.
<p>16. Total phosphorous in the final effluent is high. (H range with Chemical dosing only)</p>	<ul style="list-style-type: none"> • Check the chemical levels. • Check the chemical dosing pump is delivering (Wear necessary PPE). • Check the pipe work for damage/blockage. • Check chemical dosing increments (do they need increasing?).
<p>17. What position should the ball valves in the diffuser pipes be?</p>	<ul style="list-style-type: none"> • Valve position is determined by airflow so all plants may vary. • Position valves so media is agitated but not moving violently.
<p>18. Will the air diffusers need cleaning.</p>	<ul style="list-style-type: none"> • Not in normal operation. • Flow of air will unblock diffusers.
<p>19. My warning beacon is flashing.</p>	<ul style="list-style-type: none"> • Check control panel for fault (see next page).

16. Control Panel Fault Messages

The control panel will operate a fault message in the following situations:

<p style="text-align: center;">SYSTEM ON NO FAULTS</p>	<p>When the system is on and there are no faults then this message appears to show that the system is running without any problems.</p>
<p style="text-align: center;">MULTIPLE ALARMS</p>	<p>This message will appear when there is more than one fault with the system.</p>
<p style="text-align: center;">RECIRCULATION PUMP FAULT</p>	<p>This message will appear when there is a fault with the recirculation pump 1 located in Biozone 3.</p>
<p style="text-align: center;">DESLUDGE PUMP FAULT</p>	<p>This message will appear when there is a fault with the recirculation pump 2 located in the FST.</p>
<p style="text-align: center;">BLOWER No.1 PRESSURE FAIL</p>	<p>This message will appear when there is a loss of pressure in the large blower for the diffusers. This indicates that the blower is not operating, or that there is a pipe rupture. You should investigate these situations, rectify, the alarm will clear.</p>
<p style="text-align: center;">BLOWER No.2 PRESSURE FAIL</p>	<p>This message will appear when there is a loss of pressure in the large blower for the diffusers. This indicates that the blower is not operating, or that there is a pipe rupture. You should investigate these situations, rectify, the alarm will clear.</p>

<p style="text-align: center;">BLOWER No.3 PRESSURE FAIL</p>	<p>This message will appear when there is a loss of pressure in the large blower for the diffusers. This indicates that the blower is not operating, or that there is a pipe rupture. You should investigate these situations, rectify, the alarm will clear.</p>
<p style="text-align: center;">BLOWER No.4 PRESSURE FAIL</p>	<p>This message will appear when there is a loss of pressure in the small blower for the airlift. This indicates that the blower is not operating, or that there is a pipe rupture. You should investigate these situations, rectify, the alarm will clear.</p>
<p style="text-align: center;">HIGH LEVEL ALARM</p>	<p>This message will appear when the water level has got higher than the working level which in turn triggers the high level float in the Biozone 2. You should investigate the cause, by checking within the compartment, rectify the problem (probable cause, air lift non-operational). Once the cause has been rectified and the level has dropped the alarm will clear.</p>
<p style="text-align: center;">BLOWER MOTOR No.1 FAULT</p>	<p>This message will appear when there is a fault with the large blower for the diffusers and it's stopped working.</p>
<p style="text-align: center;">BLOWER MOTOR No.2 FAULT</p>	<p>This message will appear when there is a fault with the large blower for the diffusers and it's stopped working.</p>
<p style="text-align: center;">BLOWER MOTOR No.3 FAULT</p>	<p>This message will appear when there is a fault with the large blower for the diffusers and it's stopped working.</p>
<p style="text-align: center;">BLOWER MOTOR No.4 FAULT</p>	<p>This message will appear when there is a fault with the small blower for the airlift and it's stopped working.</p>

17. Notice to affix within the building



Bioficient

The foul drainage from this property discharges into a package treatment works.

Maintenance is required, the frequency of which depends upon the model installed, its use and application. Please consult your Operation & Maintenance Manual.

- * When operating at the normal daily load, emptying should take place at 90 day intervals.
- * The frequency of sludge removal is expected to increase if the unit is chemically dosed and require more frequent maintenance (see individual operating manuals)

Maintenance and Desludging should be carried out by the owner in accordance with the Manufactures instructions.

THE OWNER OF THE PROPERTY IS LEGALLY RESPONSIBLE FOR ENSURING THAT THE SYSTEM DOES NOT CAUSE POLLUTION, A HEALTH HAZARD OR A NUISANCE.

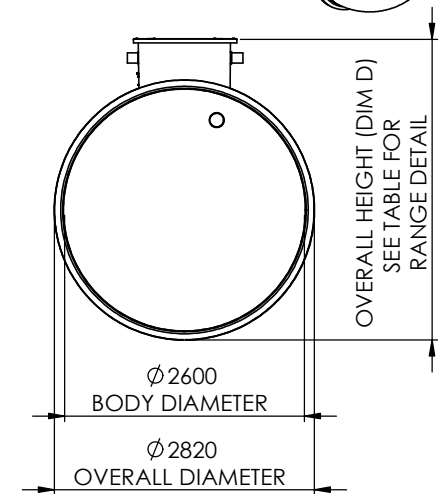
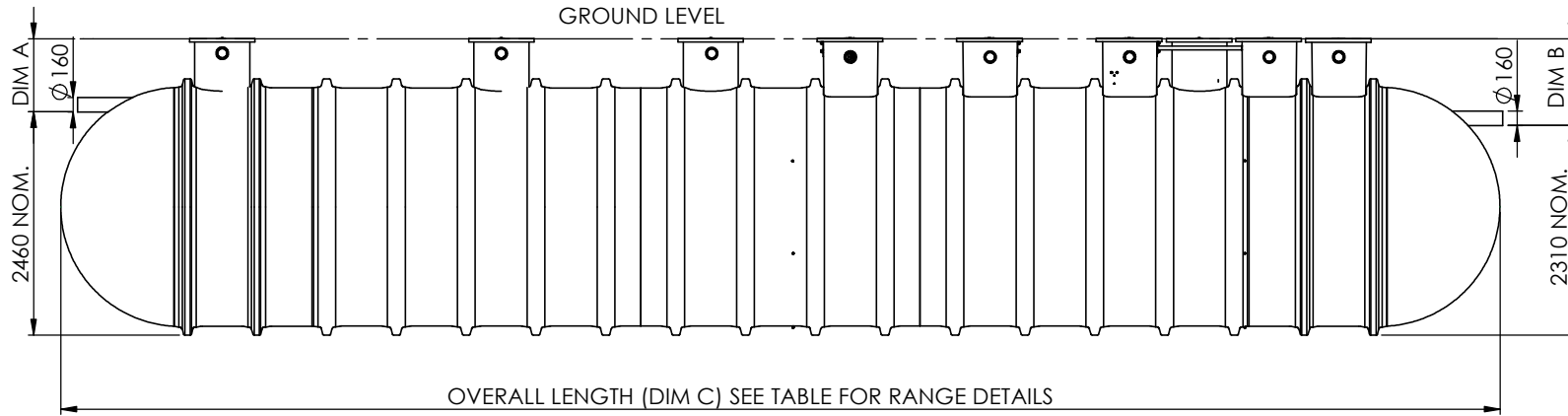
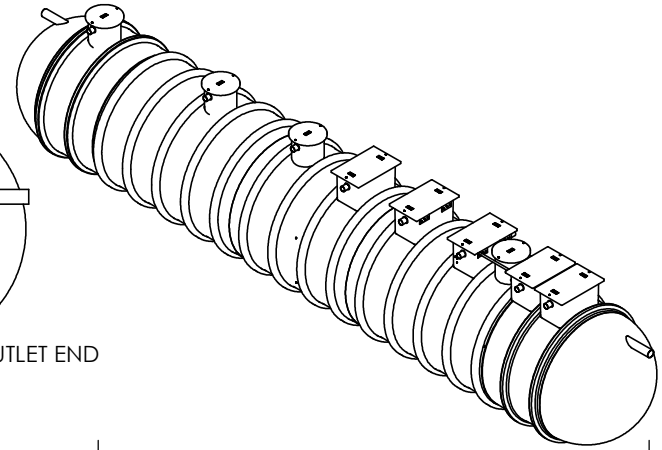
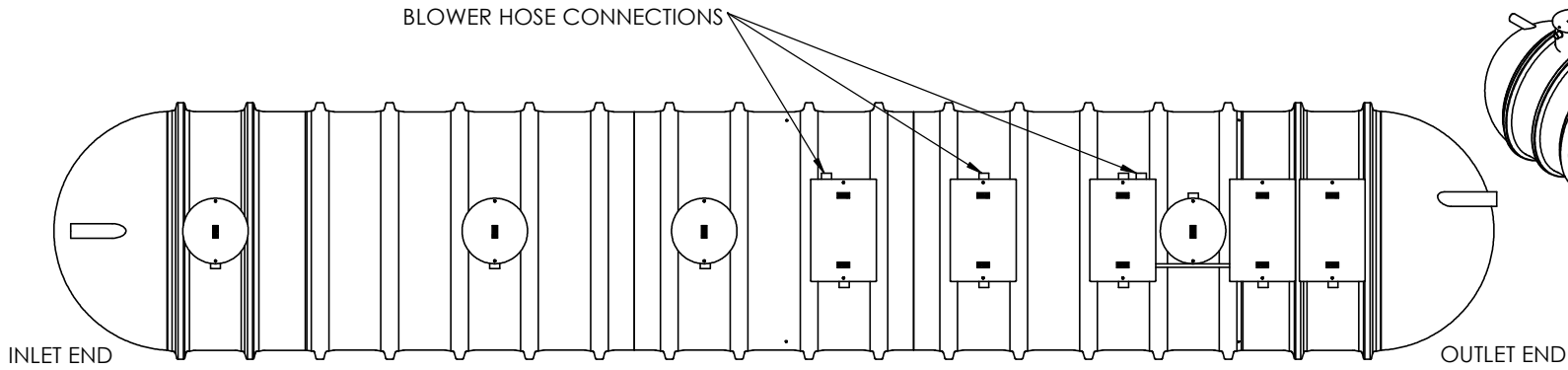
We recommend that a separate log is kept of all maintenance and service visits, the log should detail the date and any action taken, e.g. Regular maintenance service, breakdown visit, desludge volume removed, parts replaced.

This notice should be fixed by the owner within the building alerting current and future owners to the maintenance requirement.

(Building regulation H2 (1.57))

Please contact Service on +44 (0) 844 846 0500 to arrange a maintenance service or to request replacement operating instructions. It would be helpful if you provide your equipment serial number.

BLOWER HOSE CONNECTIONS



BIOFICIENT Ø2.6 TANK RANGE		
INLET INVERT (DIM A)	OUTLET INVERT (DIM B)	OVERALL HEIGHT (DIM D)
0500	650	2960
0800	950	3260
1500	1650	3960
2000	2150	4460

	BIOFICIENT Ø2.6 TANK RANGE						
	BIOFICIENT MODEL						
NO. OF TURRETS	34	38	42	47	55	67	80
INLET & OUTLET DIAMETER	160	160	160	160	160	160	160
UNIT LENGTH (DIM C)	7376	8150	8917	9684	11222	13528	15833
UNIT WEIGHT (APPROX)	3000Kg	3200Kg	3400Kg	3800Kg	4200Kg	4700Kg	5400Kg

NOTES:

- Units are available with the inlet inverts shown in the table. Selection of the correct inlet invert is key, it must be suitable for the drainage and ground levels on site, the invert CANNOT be altered once the plant is installed. In any circumstance, the maximum allowable inlet invert is 2000mm.
- It is important to read and understand the installation and operation guidelines before attempting to install this unit.
- Each unit is supplied with Non-pedestrian duty covers and frames to suit.
- Vent pipe connections are supplied, but vent runs and stack are by others.

Please Check with Kingspan Environmental For The Latest Issue Of This Drawing

Issue	Date	Drawn by	Approved by	Description
04	08/04/21	D. Musvaburi		ECN 1567 - TABLE UPDATED, VOLUME REMOVED
03	04/04/17	W.DYER		CC1374
02	06/02/17	W.DYER		CC1353-PEDESTRIAN DUTY COVER STATEMENT REMOVED

LN Number:	
Finish :	
Weight : 3959.10 Kg	
Modelled By : Name	

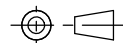
Tolerance (unless stated) :	
Thickness : n/a	
Surface Area : m²	
Material : Various	

Drawing : DS1285P

Bioficient Treatment Plant - Ø2.6 Case Diameter

All Dimensions In mm

Scale: Do Not Scale



Third Angle Projection

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NOTES

- Inlet and outlet pipes are Ø160mm.
- concrete backfill required (see installation guidelines).
- All connection work is required to be carried out prior to fixing the covers and extension necks.
- Excavation to be of sufficient length and width of unit and concrete surround. Depth must also accommodate surface concrete slab. (See installation guidelines for detail).

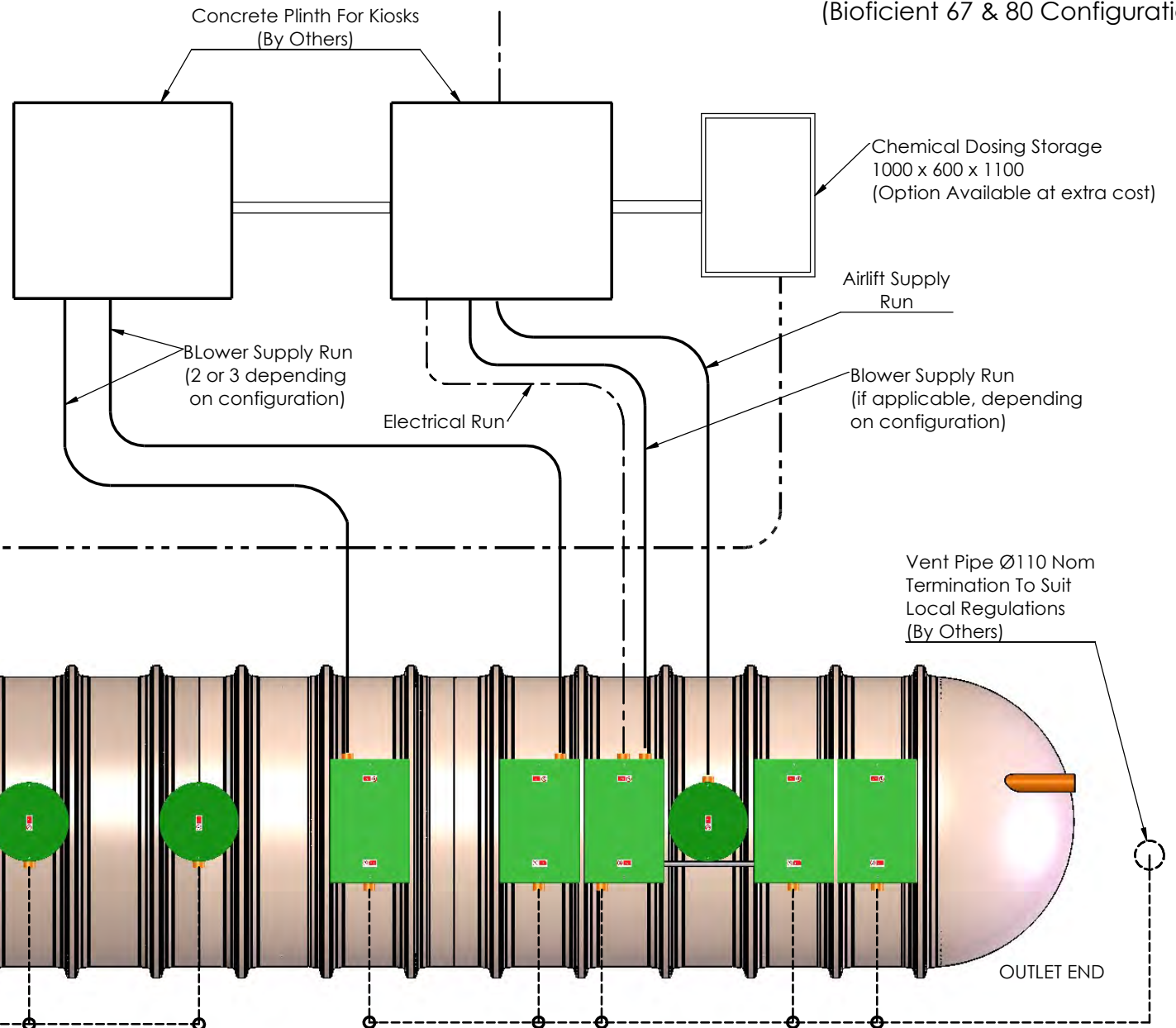
(Bioficient 67 & 80 Configuration)

ELECTRICAL RUN - - - - -

BLOWER SUPPLY RUN _____

VENT PIPE RUN - - - - -

CHEMICAL DOSING RUN - - - - -



FOR INFORMATION ONLY

Please Check with Kingspan Environmental For The Latest Issue Of This Drawing

Issue	Date	Drawn by	Approved by	Description
04	20/04/18	WMD		CC1429
03	09/11/17	W.DYER		CC1408
02	04/04/17	W.DYER		CC1374

Material : Various
Finish :
Weight : 3375.39 Kg
Modelled By : Name

Tolerance (unless stated) :
Thickness : n/a
Surface Area : m²

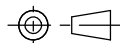
Drawing : DS1287P

Page 1 of 1

BIOFICIENT VENT AND BLOWER PIPE LAYOUT

All Dimensions In mm

Scale: Do Not Scale



Third Angle Projection

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Rachel Cossins

Campbell Reith
Raven House
Linkfield Lane
Redhill
Surrey
RH1 1SS



15th June 2021

Pre-planning enquiry: Capacity concerns

Site Address: Land Adjacent to Little Knowl Hill, Ashford Hill, Thatcham, Basingstoke & Deane, RG19 8BH

Dear Rachel

Thank you for providing information on the proposals to construct 50 houses on the area of previously Greenfield land at the above location.

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewer capacity within the existing Thames Water sewer network.

Foul Water

We've assessed your **foul water** proposals and concluded from our initial review, that our sewerage network may not have sufficient capacity to meet your requirements if the diameter of the receiving sewer is less than 150mm dia.

In order to ensure we make the appropriate upgrades – or 'off-site reinforcement' – to serve your development if that is the case, we'll need to carry out modelling work and, if required, design a solution and build the necessary improvements. This work is done at our cost.

Once we've begun modelling, we may need to contact you to discuss changing the connection point for capacity reasons. Please note that we'll pay the cost of covering any extra distance if the connection needs to be made at a point further away than the nearest practicable point of at least the same diameter.

How long could modelling and reinforcement take?

Typical timescales for a development of your size are:

Modelling: 8 months
Design: 6 months
Construction: 6 months
Total: 20 months

If the time you're likely to take from planning and construction through to first occupancy is longer than this, we'll be able to carry out the necessary upgrades in time for your development. If it's shorter, please contact me on the number below to discuss the timing of our activities.

What do you need to tell us before we start modelling?

We're responsible for funding any modelling and reinforcement work. We need, though, to spend our customers' money wisely, so we'll only carry out modelling once we're confident that your development will proceed.

In order to have this confidence, we'll need to know that you **own the land and have either outline or full planning permission. The proposed build programme will also be useful.** Please provide this information to us as soon as you have it.

If you'd like us to start modelling work before you own the land and have outline or full planning permission, we can do this if you agree to underwrite the cost of modelling and design. That means we'll fund the work – but you agree to pay the cost if you don't achieve first occupancy within five years.

A copy of our underwriting agreement is available upon request.

If the modelling shows we need to carry out reinforcement work, then before we start construction we'll need you to supply us with notification that you've confirmed your F10 – Notification of construction project - submission to the Health and Safety Executive.

Surface Water

Please note that discharging surface water to the public sewer network should only be considered after all other methods of disposal have been investigated and proven to not be viable. In accordance with the Building Act 2000 Clause H3.3, positive connection to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. The disposal hierarchy being: 1st Soakaways; 2nd Watercourses; 3rd Sewers.

As you have confirmed that all surface water run-off will discharge directly to watercourses adjacent to the site, this does not involve a connection to the public sewer network and hence we would have no objections to these proposals.

Please note that the Local Planning authority may comment on surface water discharge under the planning process.

Please Note

All connection requests are subject to a full Section 106 (Water Industry Act 1991) application before the Company can confirm approval to the connection itself. Please also note that capacity in the public sewerage system cannot be reserved. Please make sure you submit your connection application giving us at least 21 days' notice of the date you wish to make your new connection/s.

The discharge of non-domestic effluent is not permitted until a valid trade effluent consent has been issued by Thames Water. If anything other than domestic sewage is discharged into the public sewers without the above agreement an offence is committed and the applicant will be liable to the penalties contained in Section 109(1) (WIA 1991).

Applicants should contact Trade Effluent prior to seeking a connection approval, to discuss trade effluent consent and conditions of discharge. A Trade Effluent reference number should be obtained and included in the relevant box of the attached application form. The address for Trade Effluent is - Thames Water Utilities Limited, Waste Water Quality, Crossness Sewage Treatment Works, Belvedere Road, Abbeywood, London. SE2 9AQ. Alternatively you can telephone them on 020 8507 4321.

The views expressed by Thames Water in this letter are in response to this pre development enquiry at this time and do not represent our final views on any future planning applications made in relation to this site.

Please note that you must keep us informed of any changes to your design – for example, an increase in the number or density of homes.

Yours sincerely,

Jonathan Shildrick BSc
Development Engineer
Developer Services

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