



Drainage Strategy

656, Reading road, Winnersh , Wokingham RG41 5HG

Reference: 681 -Rev - V1

Date: Aug-25

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- D Drainage System General Arrangement**

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Drainage Strategy

656, Reading road, Winnersh , Wokingham RG41 5HG

Reference: 681 -Rev - V1

Report Limitations

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Purpose of this report

- 1.1 The purpose of this statement is to accompany the technical drawings and details showing the proposed Surface Water drainage system as part of the planning application for this development.

Scope

- 1.2 This Sustainable Drainage Strategy (SDS) outlines the key drainage principles and requirements for the proposed development at 656, Reading road, Winnersh , Wokingham RG41 5HG. It provides a summary of the sustainable drainage system (SuDS) design, based on the specific site conditions and relevant guidelines, including Building Regulations Approved Document Part H and CIRIA C753: The SuDS Manual 2015. As the project progresses and new information becomes available, this strategy will be updated to reflect ongoing changes and the development of the detailed design.

Site Characteristics

- 2.1 The site background is clearly identified through answers to the questions in table 1 below.

Table 1: Site Characteristics . See appendix B for support documentation

TOPIC	QUESTION	ANSWER
Protected species or habitat	Is the site near to designated sites and priority habitats?	No
Flood Plain	Is the site located in the flood plain?	Yes
Soils and Geology	Soil permeability? - See appendix B for results	No
Space constraints	Space for SuDS components?	Yes
Topography	Sited on a flat site?	Yes
	Sited on a steep slope (5-15%)	No
	Sited on a very steep slope (>15%)	No
Groundwater	Is the site at groundwater flood risk?	Yes
Contaminated land	Are there contaminated soils on site?	Unknown
Source Protection Zone	Is the site within a SPZ 3?	No
Runoff characteristics	Is the development in a high risk flooding area?	No

Existing and Proposed Site

- 2.2 The distribution of catchment areas for existing and proposed site is as per table 2 below. See appendix A for details

Table 2 : Existing and Proposed catchment areas in hectares

Description	Existing Site	Proposed Site
Impermeable Areas	0.043	0.022
Permeable Areas	Connected to Drainage	0.000
	Self Draining Areas	0.016
Areas Draining Away from drainage System	0.008	0.013
Total Development Area	0.051	0.051

- 2.3 It has been assumed that the positively drained areas will have different runoff coefficients depending on the type of surface as follow:

Impermeable Surface	1.0
Permeable Surfaces	0.5
Grass Areas	0.3

Evaluation of Discharge Point

3.1 The SuDS design takes into account Building Regulations Section H3 and the National Planning Practice Guidance. The aim is to discharge surface water run-off as high up the drainage hierarchy, as reasonably practicable:

1. into the ground (infiltration);
2. to a surface water body;
3. to a surface water sewer, highway drain, or another drainage system;
4. to a combined sewer.

3.2 The discharge point has been evaluated following the NPPG and Building regulations. The findings are in table 3 below.

Table 3: Drainage Hierarchy evaluation

Superficial geology classification	The British Geological Society records show that the superficial deposits are Alluvium - Clay, Silt, Sand And Gravel.
Bedrock geology classification	The British Geological Society records of the site show that it is located within the London Clay Formation - Clay, Silt and Sand.
Landis Top Soil Infiltration	The SOILSCAPE's records of the site show that it is located within an area of naturally wet soils.
Groundwater	The British Geological Survey's flood risk susceptibility maps show that the development has potential for groundwater flooding above ground level. Groundwater levels would tend to vary seasonally and are influenced by ground and meteorological conditions and proximity to water features.
Is infiltration feasible?	Infiltration is not possible on this site due to findings on groundwater and soils
Is a discharge to a watercourse feasible?	There is an existing watercourse near the site. It is possible to connect to the watercourse, and it is proposed to discharge into this watercourse.
Is a discharge to a surface water sewer feasible?	There is no surface water sewer in the proximity to the site.
Is a discharge to a combined sewer feasible?	There is a combined water sewer in the proximity to the site. It is not possible to connect to the combined water sewer.

Existing and Proposed Peak Run-off Calculations

- 4.1 The current site is a Brownfield. The peak runoff rate for the existing site was calculated as per table 4 and discharge rates as per table 5.

Table 4: Peak run-off rate calculation method for existing site

Method Used	Calculation Method
	Report 124 Flood Estimation for Small Catchments method has been used to estimate the site peak flow rates
X	This is a brownfield site, runoff rates are calculated in accordance with best practice simulation modelling and using the modified rational method
	This is a brownfield site where the pre-development drainage isn't known. The runoff rates are calculated using the Greenfield model with soil type 5

- 4.2 The runoff flow produced by the development will be controlled as per table 5.

Table 5: Runoff discharge rate control

Control Used	Description of runoff discharge
	Water will be discharged into the ground via a SuDS as described in table 6 below
	The peak discharge rate has been reduced to Greenfield Qbar flow
X	The peak discharge rate has been taken as 0.7 l/s as it is not possible to reduce it to the Greenfield Qbar rate
	The peak discharge rate has been reduced to Brownfield pre-development 1 in 1 flow
	The peak discharge rate has been reduced by 60% from the existing Brownfield pre-development 1 in 2 flow rate

Run-off flows

- 4.3 The size of the SuDS has been calculated for all events up to the 1 in 100 including an allowance for climate change of 40%. As per tables above, it is proposed to discharge at a rate of 0.7 l/s. See table 6 for values and appendix C for calculations.

Table 6: Peak discharge rates for SuDS

Return Period Event	Discharge Rate (l/s)			Infiltration Rate (m/hr)
	Existing Greenfield	Existing Brownfield	Proposed	
Qbar	0.10	N/A	N/A	0.0000
1 in 1	0.10	0.90	0.7	0.0000
1 in 2	0.10	1.20	0.7	0.0000
1 in 30	0.20	2.20	0.7	0.0000
1 in 30 + CC	N/A	N/A	0.7	0.0000
1 in 100	0.30	2.80	0.7	0.0000
1 in 100 + CC	N/A	N/A	0.7	0.0000

Proposed Sustainable Drainage System

5.1 The following sustainable drainage systems have been used for this site. The drainage design uses these drainage system through out the site. See table 7 for details.

Table 7: Evaluation of SuDS and Proposed Drainage System

<i>Most Sustainable</i>	SuDS Technique	Feasible	Proposed	Flood Reduction	Pollution Reduction	Landscape & Wildlife Benefit
	Living Roofs					
	Green Roof	No	No	×	×	×
	Green Blue Roof	No	No	×	×	×
	Basins and Ponds			×	×	×
	Rainwater Gardens	No	No	×	×	×
	Rainwater Planters	No	No	×	×	×
	Constructed Wetlands	No	No	×	×	×
	Balancing Pond	No	No	×	×	×
	Detention Basins	No	No	×	×	×
	Retention Ponds	No	No	×	×	×
	Filters and Swales					
	Filter Strips	No	No	×	×	×
	Swales	No	No	×	×	×
	Infiltration Devices					
	Soakaways Crates	No	No	×	×	×
	Deep Boreholes	No	No	×	×	×
	Infiltration Trenches	No	No	×	×	×
	Infiltration Basin	No	No	×	×	×
	Permeable Surfaces			×	×	
	Permeable Surfaces	Yes	Yes	×	×	
	Filter Drains	No	No	×	×	
	Tanked System					
	Storage Crates	Yes	Yes	×		
	Oversized Tanks	No	No	×		
	Oversized Pipes	No	No	×		
	Blue Roof	No	No	×		
	Water Harvesting	No	No	×		
<i>Least Sustainable</i>						

- 5.2 The location and details of the SuDS can be seen drainage layouts in appendix D. Calculations are in appendix C.
- 5.3 The drainage calculations demonstrate:
 - No flooding occurs for the 1 in 30 storm events.
 - Any flooding for the 1 in 100 year + 40% climate change event can be safely contained on site
- 5.4 The proposed drainage strategy presents one possible solution to demonstrate that the development can be sustainably drained, to comply with the requirements of the NPPF. Other solutions may be feasible and may prove to be better suited to the site. These will become apparent during the detailed design stage. The strategy above should not therefore be interpreted as the definitive scheme solution.

Management of Exceedance Flows

- 5.5 The drainage network has been designed to attenuate surface runoff for all events up to and including the 1% AEP + CC(1 in 100 years). However consideration has been given to what may happen when the design capacity of the surface water drainage network is exceeded. Surface water will flow to the lowest points within the site. The flood risk to the buildings would therefore remain low. See appendix D.

Maintenance and Management plan responsibility

- 6.1 The SuDS will be maintained by The Owner the property

Maintenance and Management plan for proposed SuDS

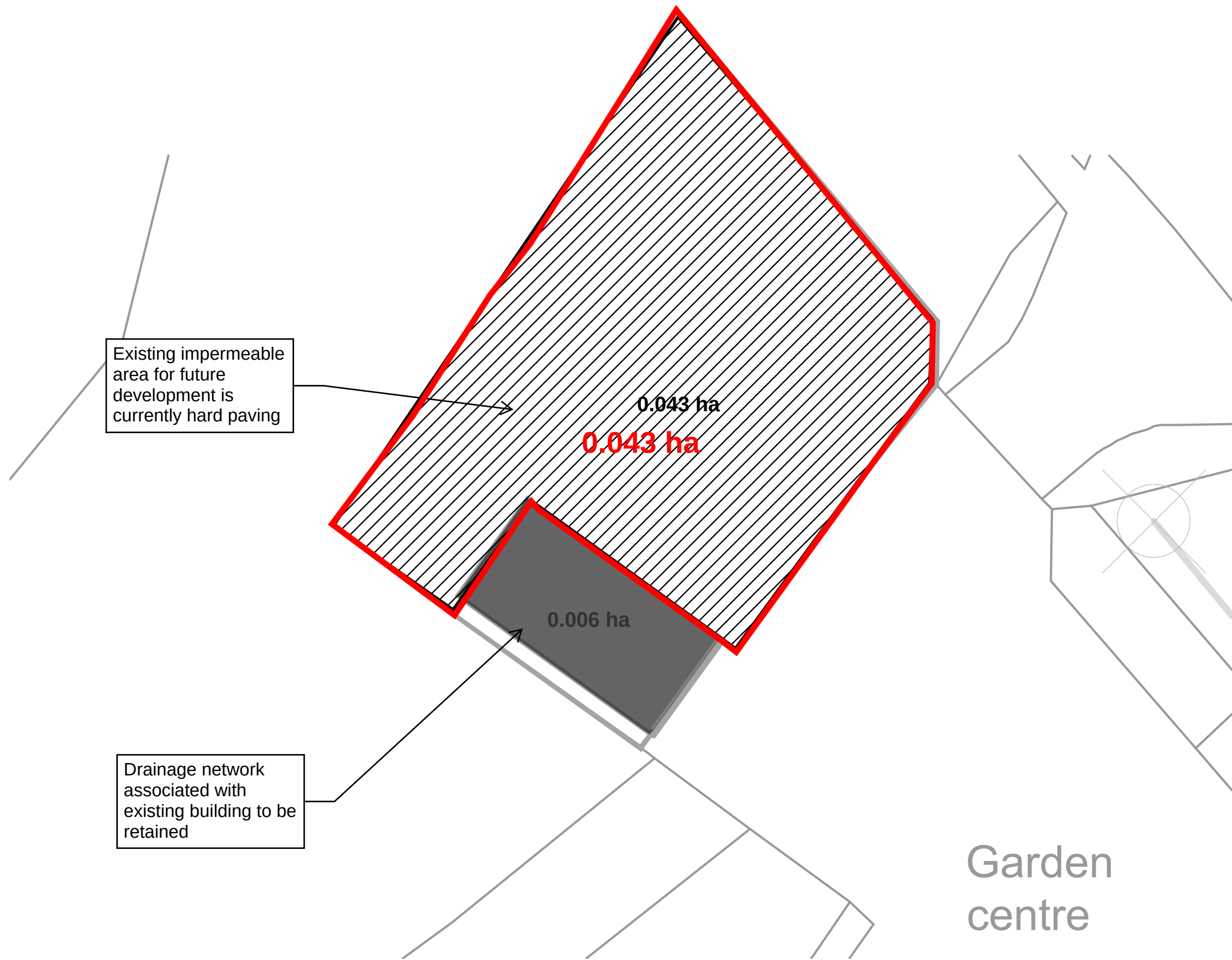
- 6.2 The maintenance and Management Plan Guidance from the SuDS Manual, CIRIA C753 (CIRIA, 2015) is to be followed for the effective maintenance of the proposed SuDS techniques outlined above. The maintenance for SuDS structures are as follow:

INLETS, OUTLETS, CONTROLS AND INSPECTION CHAMBERS	
Regular Maintenance	Frequency
Inlets, outlets and surface control structures	
Inspect surface structures removing obstructions and silt as necessary. Check there is no physical damage.	Monthly
Strim vegetation 1m min. surround to structures and keep hard aprons free from silt and debris	Monthly
Inspection chambers and below ground control chambers	
Remove cover and inspect ensuring water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt.	Annually
Undertake inspection after leaf fall in autumn	
Occasional Maintenance	
Check topsoil levels are 20mm above edges of baskets and chambers to avoid mower damage	As necessary
Remedial work	Frequency
Unpack stone in basket features and unblock or repair and repack stone as design detail as necessary.	As required
Repair physical damage if necessary.	As required

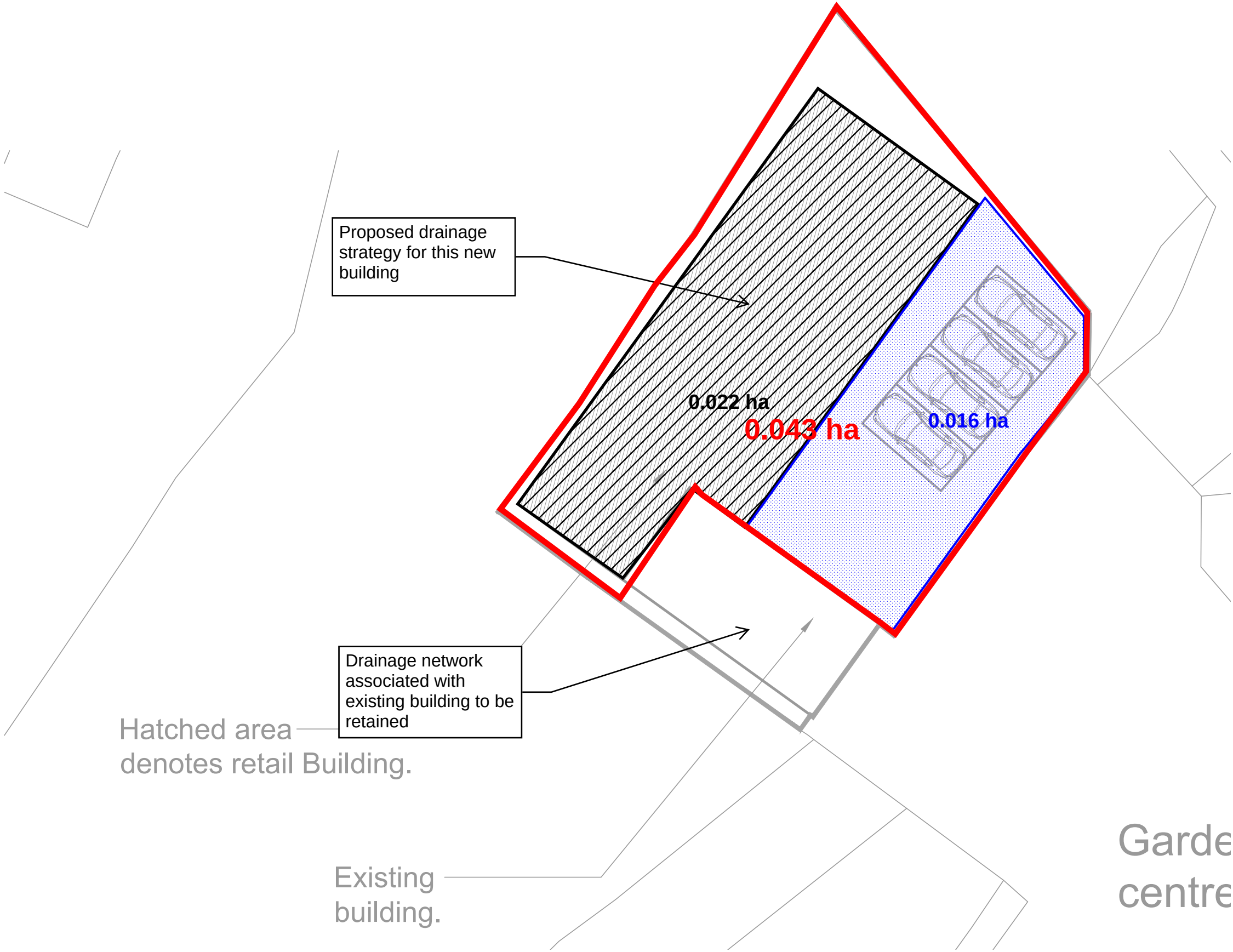
Operation and maintenance requirements for attenuation storage tanks		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Operation and maintenance requirements for pervious pavements		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

Appendix A



EXISTING SITE
1:200

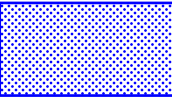
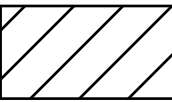


PROPOSED SITE
1:200

Do not scale from this drawing. Refer to figured dimensions only. RIDA Reports Ltd registered in England and Wales No. 10590566. This drawing is copyright of RIDA Reports Ltd.

Drawing Scale Bar		Drawing Scale Bar	
Drawing scale	Line length	Drawing scale	Line length
1:5	= 0.25 metres	1:200	= 10.0 metres
1:10	= 0.5 metres	1:250	= 12.5 metres
1:20	= 1.0 metres	1:500	= 25.0 metres
1:25	= 1.25 metres	1:1000	= 50.0 metres
1:50	= 2.5 metres	1:1250	= 62.5 metres
1:100	= 5.0 metres	1:2500	= 125 metres
Measure length of line above for checking of scale			

GENERAL NOTES

KEY	
	PERMEABLE AREAS
	IMPERMEABLE AREAS
	STUDY AREA

Rev	Details	Date	By	Chd

Drawing Status:
PRELIMINARY



Client:

Project:
656, Reading road, Winnersh , Wokingham RG41 5HG

Drawing:
Existing and Proposed Areas
Permeable and Impermeable

Print Size:	Project No:	Drawing No:	Revision:
A1	0681	002	P1

Appendix B

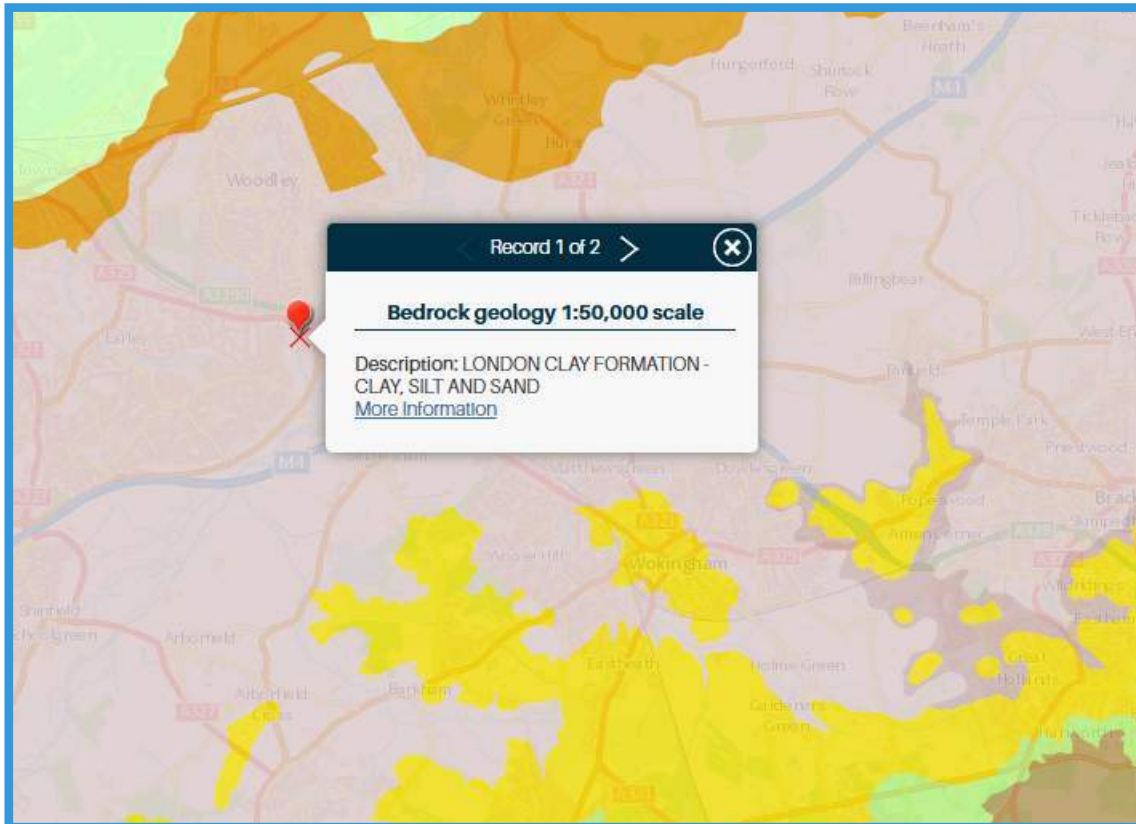
SITE GEOLOGY

**GEOINDEX
ONSHORE**



GEOLOGY - BEDROCK

London Clay Formation - Clay, Silt and Sand

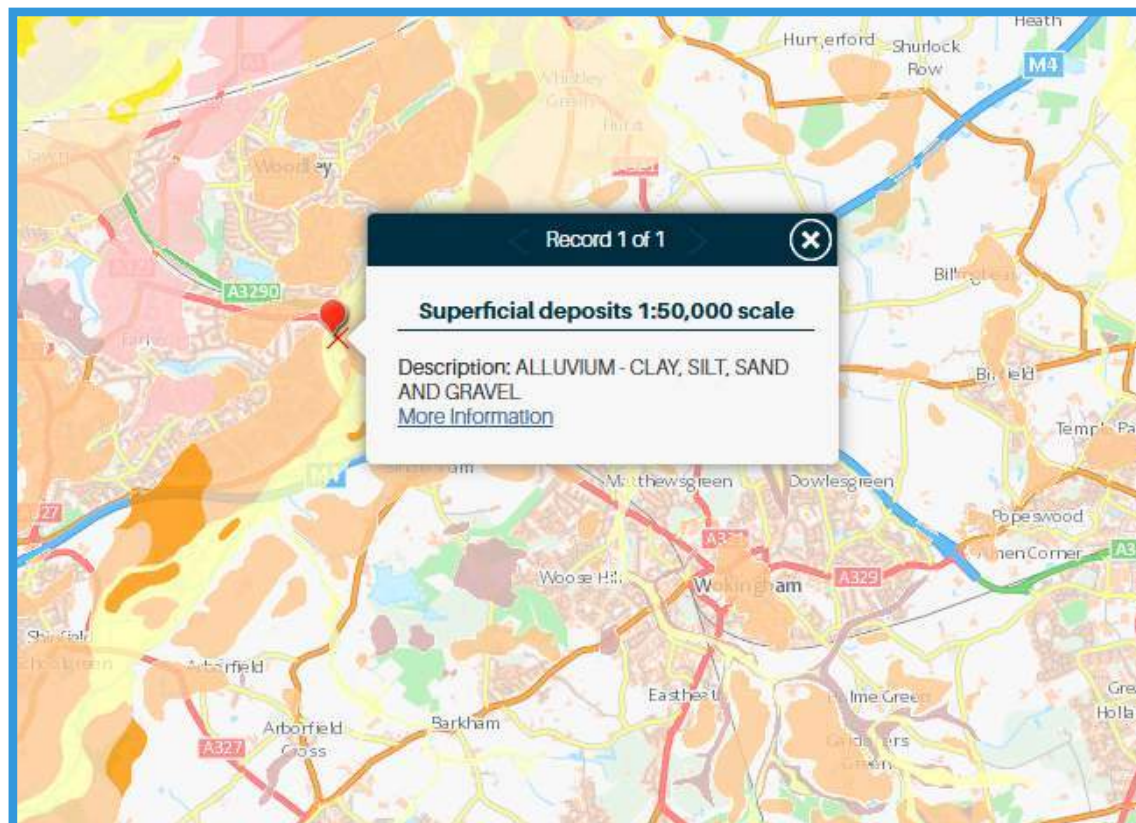


**GEOINDEX
ONSHORE**

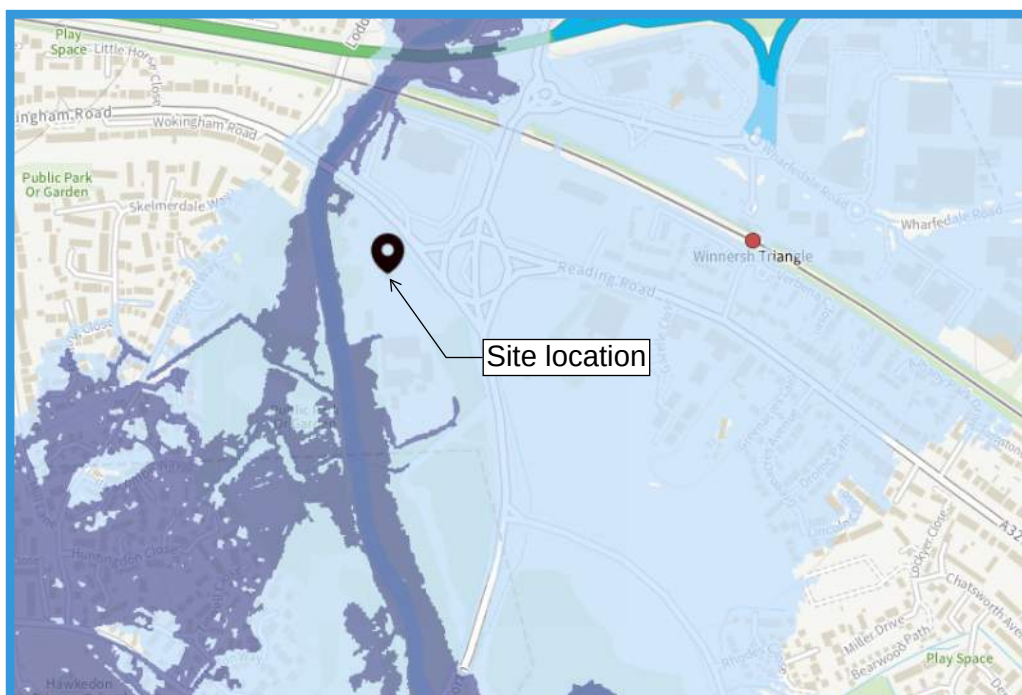
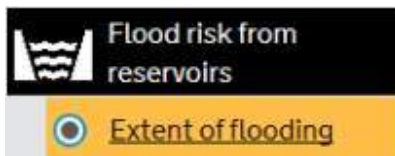
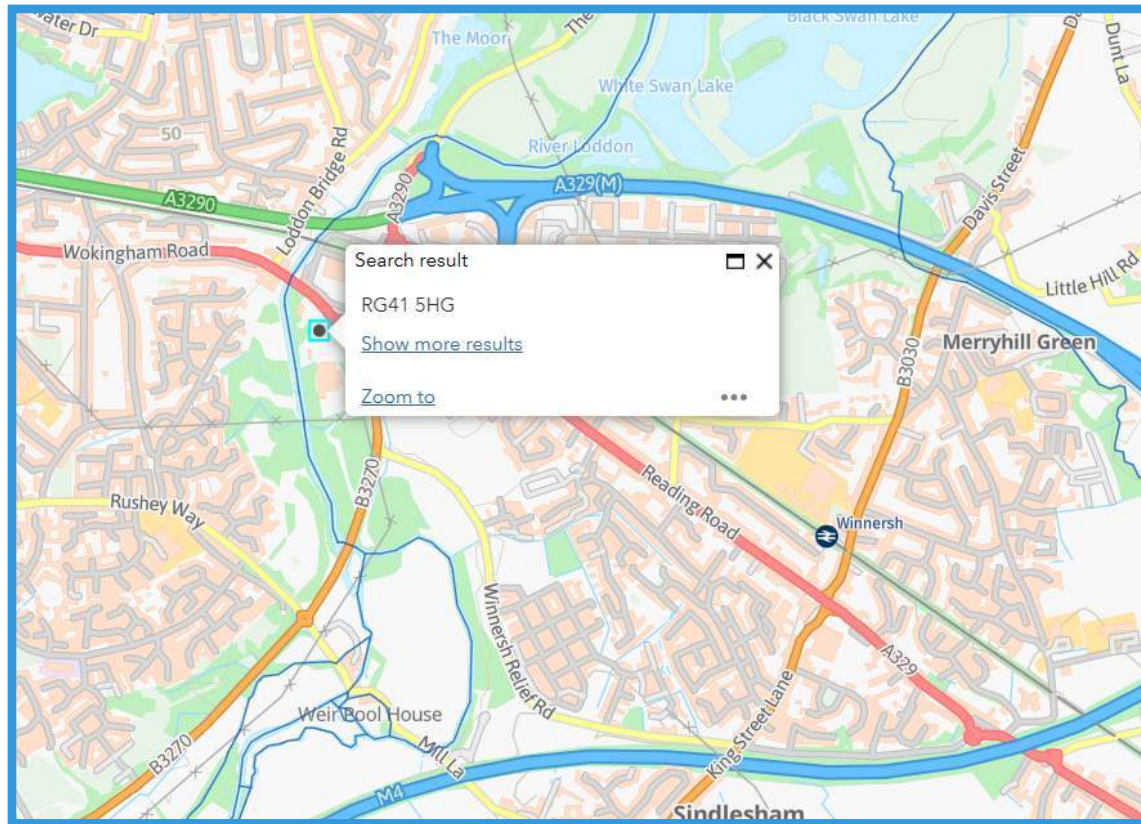


GEOLOGY - SUPERFICIAL DEPOSITS

Alluvium - Clay, Silt, Sand And Gravel

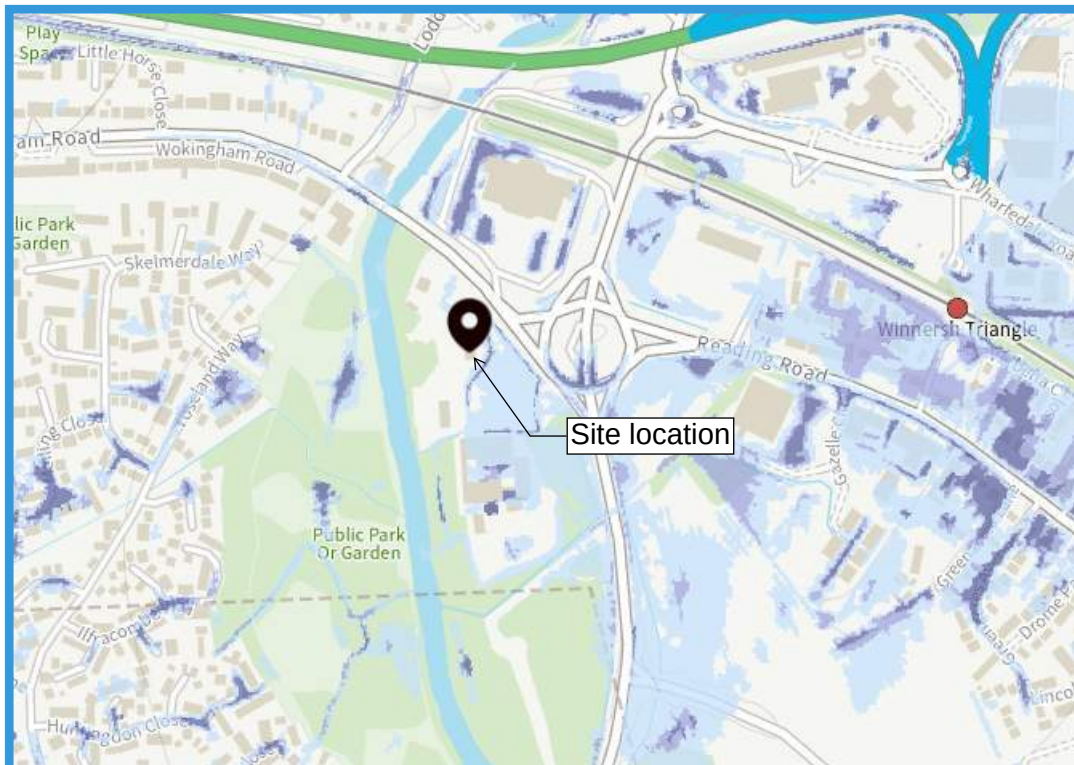
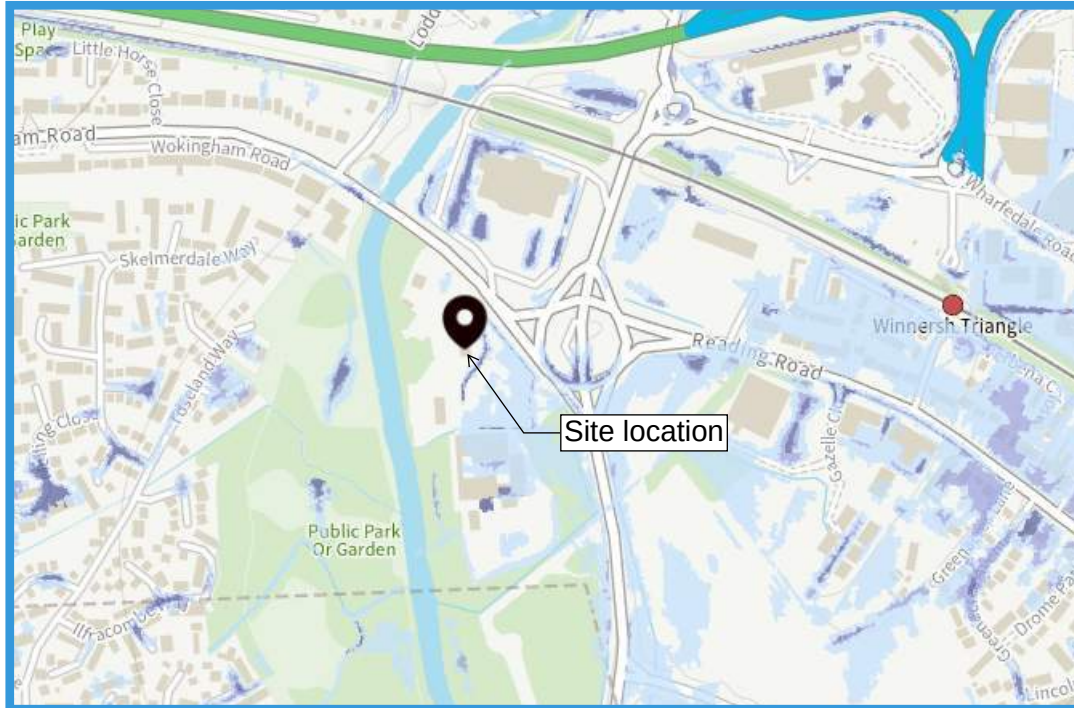


Main River Map



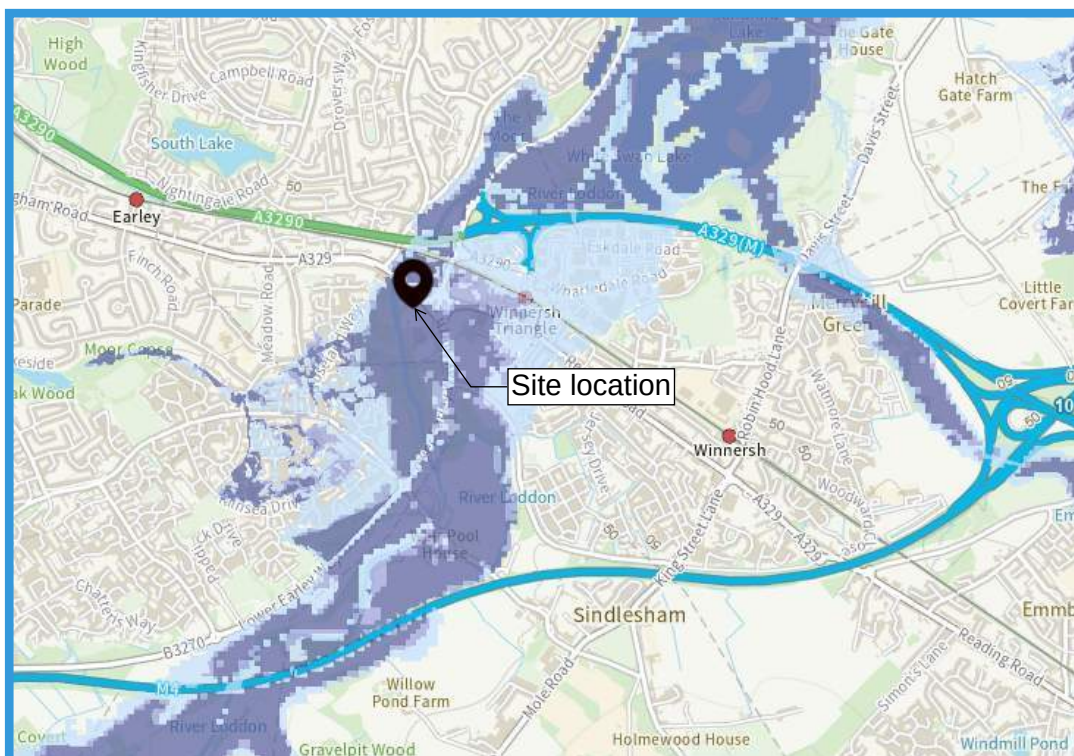
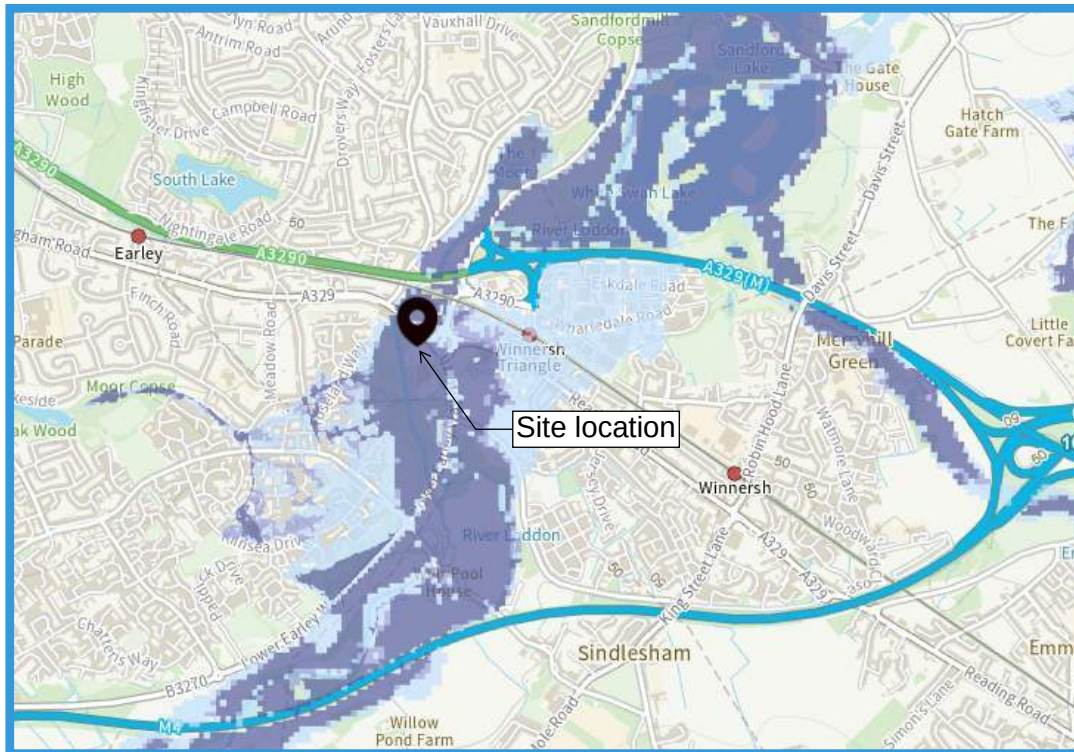
SITE SURFACE WATER FLOOD RISK

High risk means a chance of flooding greater than 3.3% (1:30)
 Medium risk means a chance of flooding of btw 1% (1:100) and 3.3%
 Low risk means a chance of flooding of btw 0.1% (1:1000) and 1%
 Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding



RIVER AND SEA FLOOD RISK MAP

- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
- Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
- Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year
- Very low - less than 1 in 1000 (0.1%) chance of flooding in any given year



MAGIC RESULTS



Site Check Results

Site Check Report generated on Mon Aug 11 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: SU76627143

Aquifer Designation Map (Superficial Drift) (England)

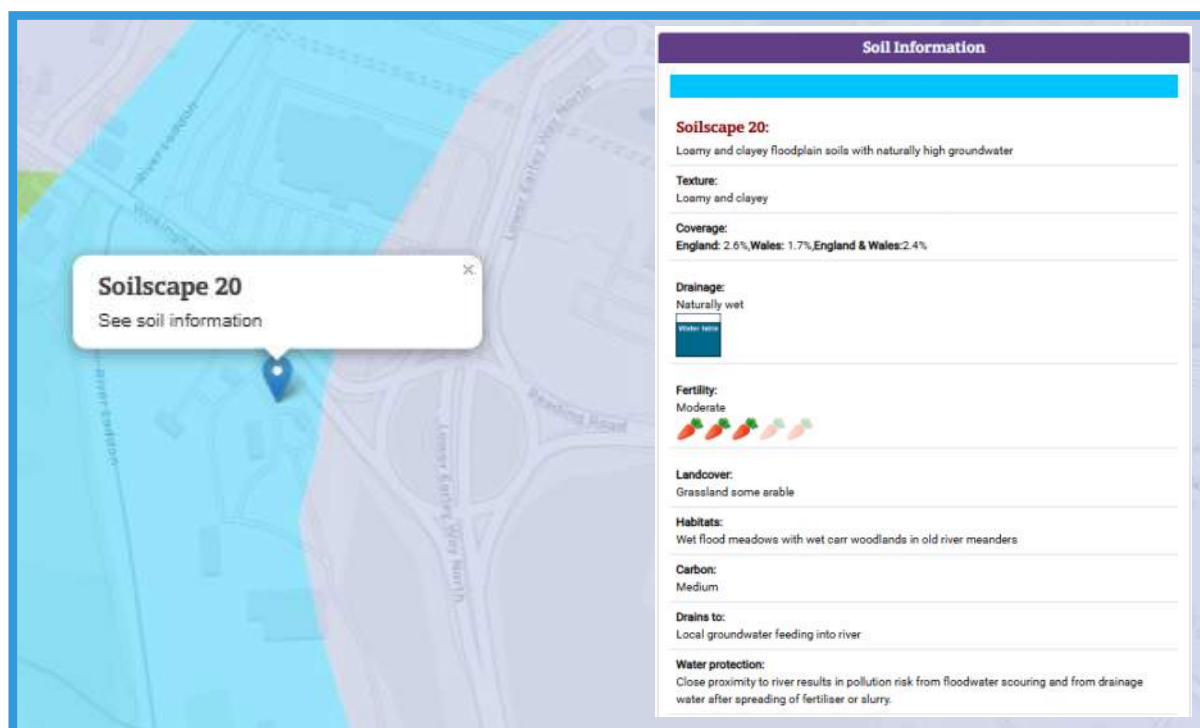
TYPOLOGY Secondary A

Aquifer Designation Map (Bedrock) (England)

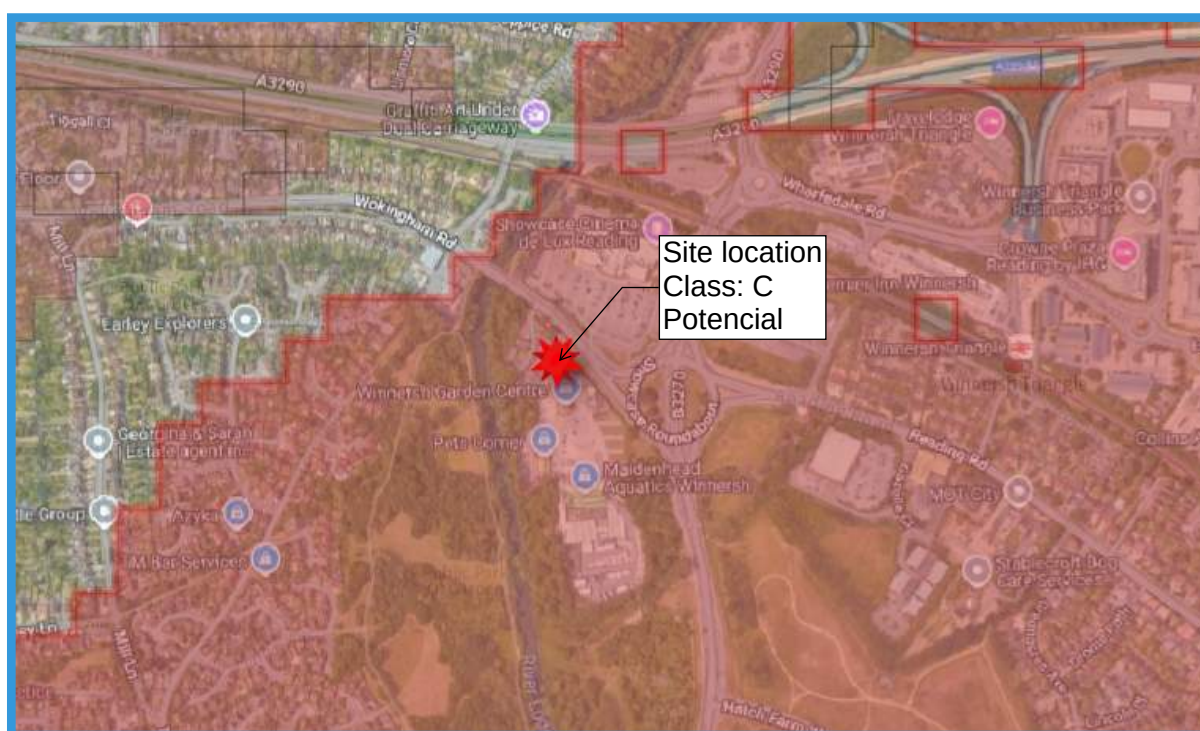
TYPOLOGY Unproductive

Source Protection Zones merged (England)

No Features found



GROUND WATER FLOOD RISK



Flood map for planning

Your reference
Unspecified

Location (easting/northing)
476622/171428

Created
7 August 2025 11:08

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>)

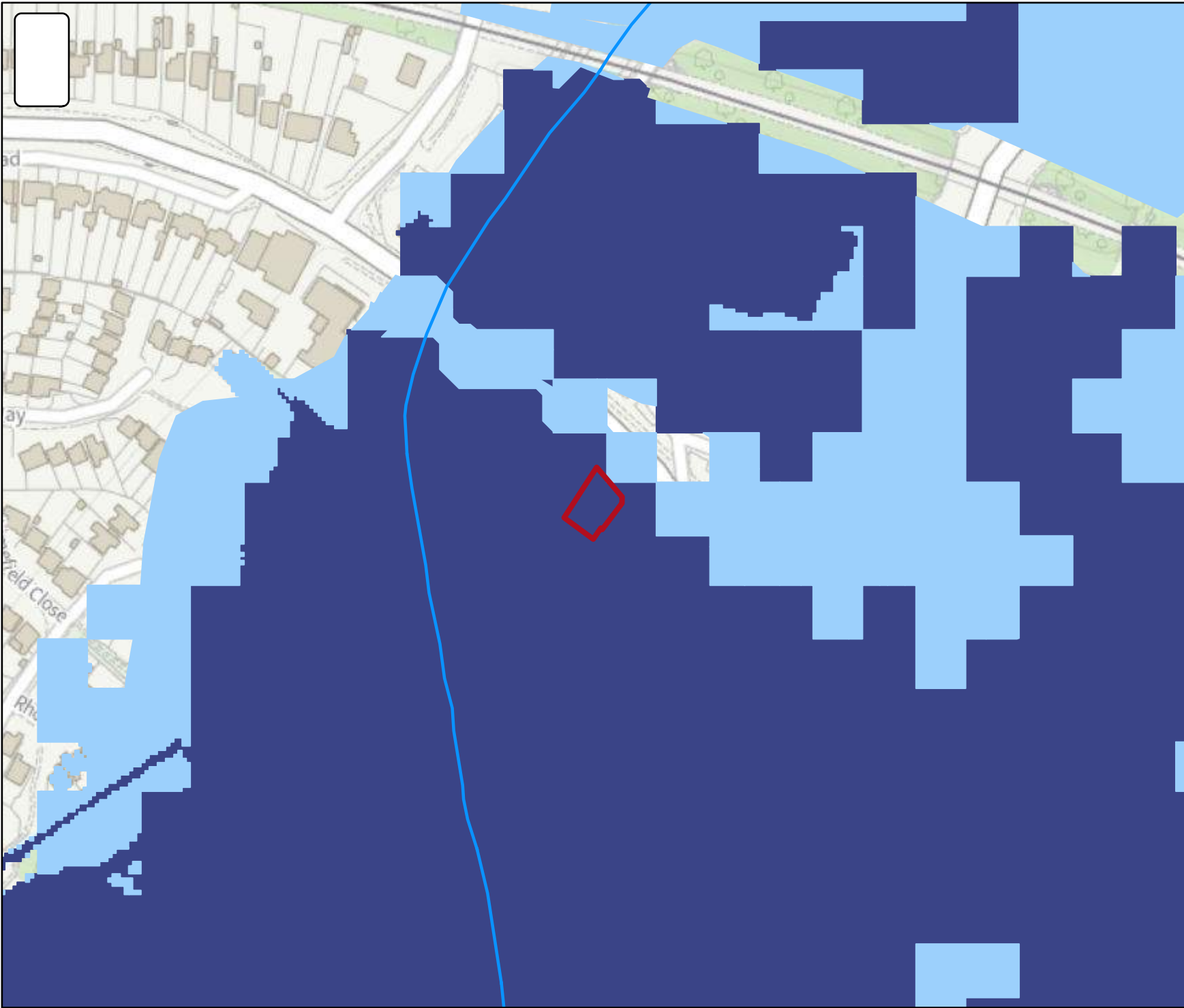
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2025 AC0000807064. <https://flood-map-for-planning.service.gov.uk/os-terms>



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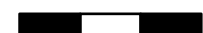
)ORRG JRQH

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)ORRG GHIHQFH

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:DWHU VWRUDJ



P

3DJH RI

Site Check Report generated on Mon Aug 11 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: SU76627143

Soilscape (England)

ID

20

SOIL_COND

LOAMY AND CLAYEY FLOODPLAIN SOILS WITH NATURALLY HIGH GROUNDWATER

MAIN_SURFA

LOAMY

NAT_DRAIN

NATURALLY WET

NAT_FERT

MODERATE

SEM_NAT_HA

WET FLOOD MEADOWS AND PASTURE WITH WET CARR WOODLANDS

M_LANDCOV

GRASSLAND SOME ARABLE

HYPERLINK

/Metadata_for_magic/soilscape_summary.pdf

Aquifer Designation Map (Superficial Drift) (England)

TPOLOGY

Secondary A

Aquifer Designation Map (Bedrock) (England)

TPOLOGY

Unproductive

Source Protection Zones merged (England)

No Features found

Biosphere Reserves (England)

No Features found

Biosphere Reserves (England) - points

No Features found

Potential Special Protection Areas (England)

No Features found

Potential Special Protection Areas (England) - points

No Features found

Special Protection Areas (England)

No Features found

Special Protection Areas (England) - points

No Features found

Possible Special Areas of Conservation (England)

No Features found

Possible Special Areas of Conservation (England) - points

No Features found

Special Areas of Conservation (England)

No Features found

Special Areas of Conservation (England) - points

No Features found

SSSI Impact Risk Zones - for LPAs to determine likely impacts on terrestrial SSIs and when to consult Natural England

No Features found

Sites of Special Scientific Interest (England)

No Features found

Sites of Special Scientific Interest (England) - points

No Features found
Sites of Special Scientific Interest Units (England)
No Features found
Sites of Special Scientific Interest Units (England) - points
No Features found
Proposed Ramsar Sites (England)
No Features found
Proposed Ramsar Sites (England) - points
No Features found
Ramsar Sites (England)
No Features found
Ramsar Sites (England) - points
No Features found
National Parks (England)
No Features found
National Nature Reserves (England)
No Features found
National Nature Reserves (England) - points
No Features found
Moorland Line (England)
No Features found
Local Nature Reserves (England)
No Features found
Local Nature Reserves (England) - points
No Features found
Limestone Pavement Orders (England)
No Features found
Areas of Outstanding Natural Beauty (England)
No Features found

Urban Water
THE WHEELHOUSE FIRST FLOOR, AN
OXFORD
OX4 1AW

Search address supplied Country Gardens Plc
Garden Centre House
656
Reading Road
Winnersh
Wokingham
RG41 5HG

Your reference U0681

Our reference ALS/ALS Standard/2025_5205673

Search date 6 August 2025

Keeping you up-to-date

Notification of price changes

We're changing our report prices from 4th June 2025. The price will increase by 3.5% based on Retail Price Index (RPI).

Find our new prices on our website thameswater.co.uk/property-searches

Any Questions? We're happy to talk through the changes with you – give our Property Searches team a call on 0800 009 4540 .



Thames Water Utilities Ltd
Property Searches,
Clearwater Court, Vastern Road, Reading RG1 8DB



property.searches@thameswater.co.uk
thameswater.co.uk/propertysearches



0800 009 4540

Search address supplied: Country Gardens Plc, Garden Centre House, 656, Reading Road, Winnersh, Wokingham, RG41 5HG

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position and size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the contact details below:

Thames Water Utilities Ltd
Property Searches
Clearwater Court
Vastern Road
Reading
RG1 8DB

Email: property.searches@thameswater.co.uk

Web: thameswater.co.uk/propertysearches

Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

SU7671NE
SU7671SW
SU7671SE

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority. Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners. The public sewer map relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus. The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- 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.

Clean Water Services

Please provide a copy extract from the public water main map.

The following quartiles have been printed as they fall within Thames' water area:



SU7671NE
SU7671SW
SU7671SE

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies. For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- 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.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. You can do this by emailing customer.feedback@thameswater.co.uk with the email subject header 'Enquiry – TWOSA', along with details of the request.

If you have any questions regarding sewer connections, budget estimates, diversions or building over issues please direct them to our service desk which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

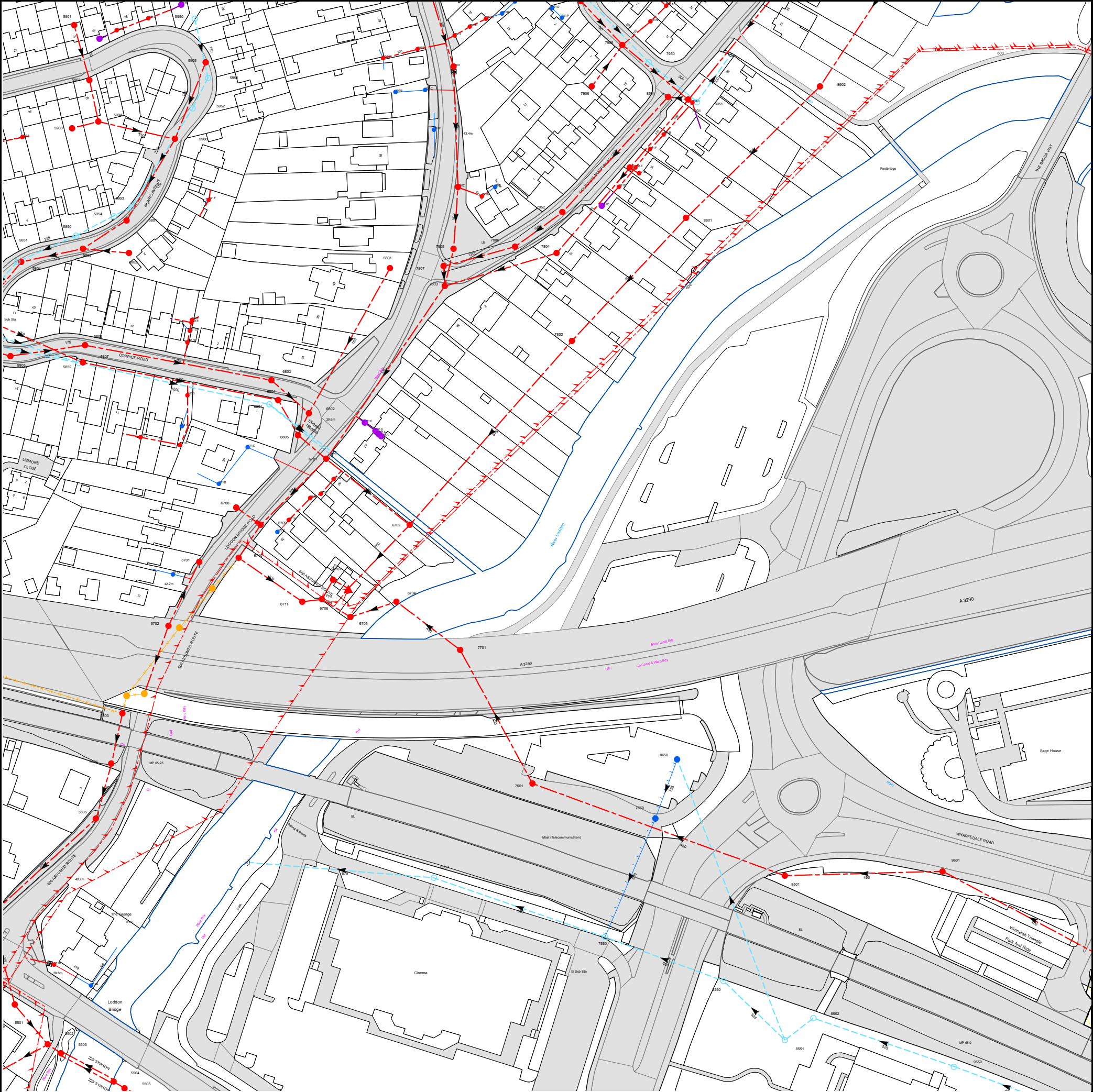
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 476750,171750

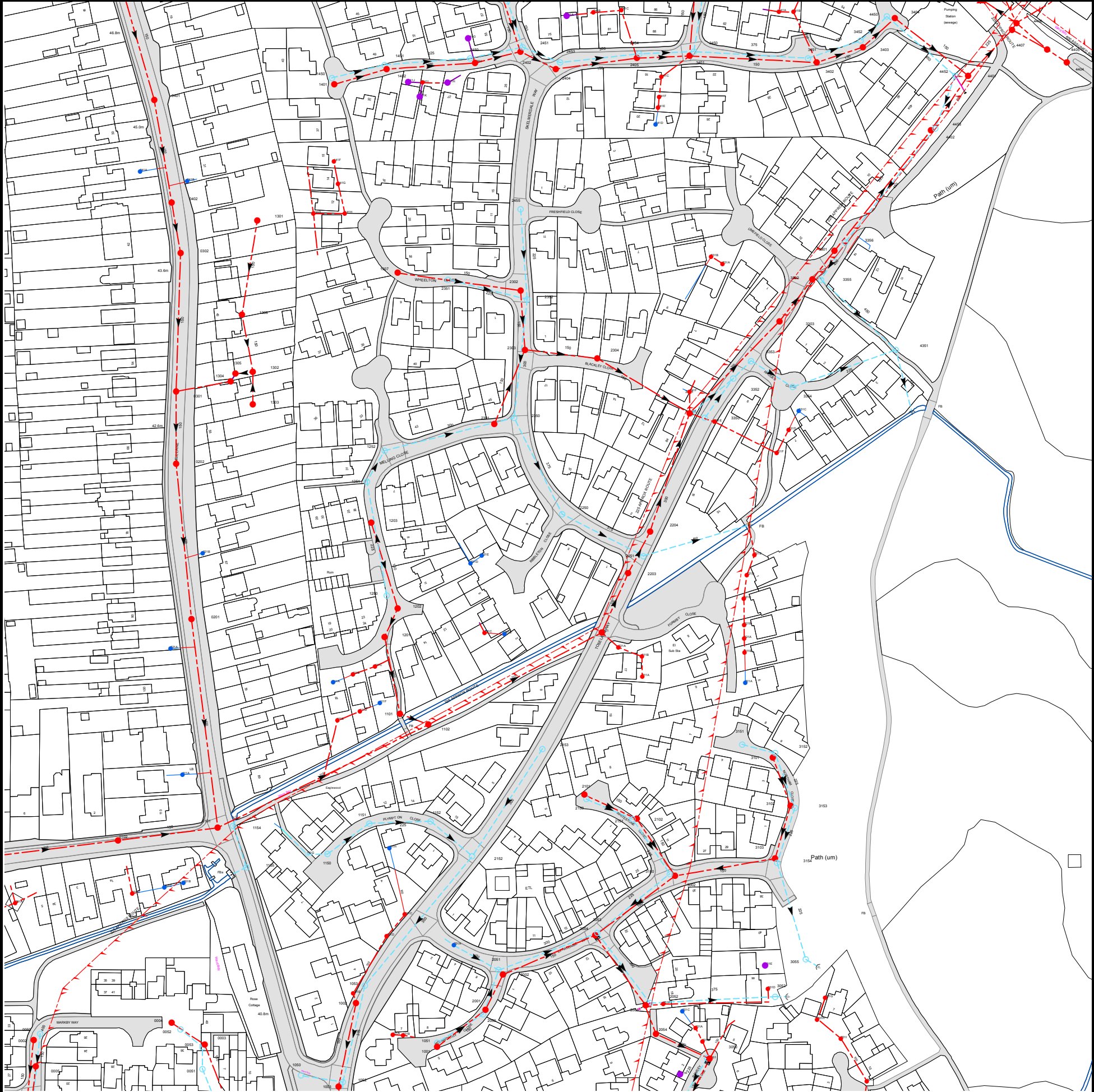
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
791O	n/a	n/a
791P	n/a	n/a
5901	n/a	n/a
591E	n/a	n/a
591D	n/a	n/a
591C	n/a	n/a
591B	n/a	n/a
5950	47.15	45.5
8902	n/a	n/a
9550	39.1	37.17
8551	38.26	36.83
8552	38.38	36.8
8550	38.13	36.65
8501	38.19	35.93
9601	37.97	36.14
8650	38.28	36.85
691D	n/a	n/a
691B	n/a	n/a
691E	n/a	n/a
691C	n/a	n/a
7901	n/a	n/a
791I	n/a	n/a
791H	n/a	n/a
791G	n/a	n/a
791K	n/a	n/a
791J	n/a	n/a
7904	n/a	n/a
7951	41.55	40.31
7906	n/a	n/a
7905	40.05	38.68
7950	39.49	38.32
791N	n/a	n/a
891A	n/a	n/a
6701	38.9	36.29
671D	n/a	n/a
681C	n/a	n/a
681B	n/a	n/a
681A	n/a	n/a
671A	n/a	n/a
6801	n/a	n/a
7807	40.9	36.29
7803	41.07	36.4
7805	41.38	38.83
7902	42.67	40.37
791M	n/a	n/a
791L	n/a	n/a
7806	39.94	36.42
7804	39.18	36.49
7952	39.6	36.49
7802	37.79	35.59
791C	n/a	n/a
791D	n/a	n/a
791A	n/a	n/a
791E	n/a	n/a
791B	n/a	n/a
791F	n/a	n/a
891B	n/a	n/a
8954	38.97	37
8801	n/a	n/a
8901	38.98	36.71
891C	n/a	n/a
8951	39.06	37.58
5505	n/a	n/a
5504	n/a	n/a
7550	38.1	36.62
6550	38.03	36.48
7650	38.15	36.7
5605	41.6	35.83
7601	38.17	35.59
5604	n/a	n/a
5603	n/a	n/a
7701	38.06	33.96
5702	n/a	n/a
6705	35.57	33.87
6711	n/a	n/a
6704	37.89	33.87
6706	n/a	n/a
6707	n/a	n/a
571A	n/a	n/a
5701	n/a	n/a
6710	41.7	35.07
671G	n/a	n/a
6709	40.8	36.14
6702	n/a	n/a
671H	n/a	n/a
6708	41.83	37.34
5852	40.72	38.65
5807	40.75	39.12
5806	40.79	39.69
571C	n/a	n/a
571D	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
581C	n/a	n/a
581G	n/a	n/a
581B	n/a	n/a
581D	n/a	n/a
671B	n/a	n/a
671C	n/a	n/a
6851	n/a	n/a
6803	40.65	38.87
6804	40.68	37.35
6805	39.38	36.82
6802	39.7	37.94
671F	n/a	n/a
671E	n/a	n/a
581E	n/a	n/a
581F	n/a	n/a
5802	44.58	43.71
5803	44.05	42.67
5850	44.47	43.22
5801	44.49	43.11
5954	44.72	43.52
5953	45.17	43.93
591F	9.75	9
5906	45.99	44.81
5903	n/a	n/a
5904	47.66	46.16
5952	46.12	44.48
5902	47.97	46.8
5951	46.73	45.04
5905	46.69	45.48
5805	n/a	n/a
5851	43.03	41.73
5804	43.07	41.72
591A	n/a	n/a
5503	n/a	n/a
5502	n/a	n/a
5501	39.91	n/a
551A	n/a	n/a
551B	n/a	n/a
691F	n/a	n/a
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 476250,171250

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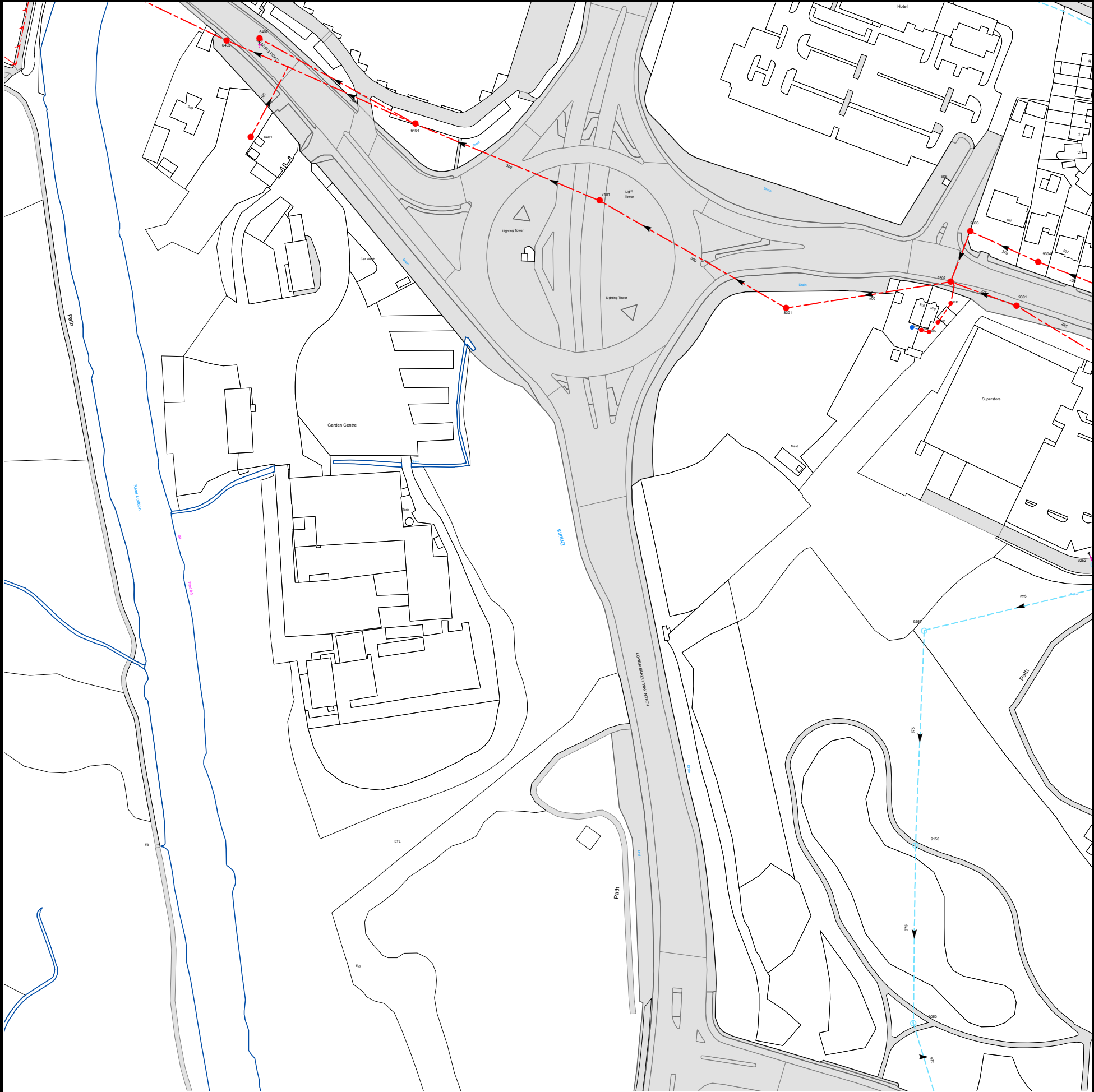
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Manhole Reference	Manhole Cover Level	Manhole Invert Level
4351	39.62	38.02
3356	40.34	39.19
4402	39.94	37.55
4453	39.89	38.4
4452	39.8	38.46
4401	n/a	n/a
4404	n/a	n/a
4405	39.41	35.15
3403	40.2	38.29
3452	40.22	38.66
4407	39.47	37.17
4406	n/a	n/a
3404	40.19	38.19
4450	40.26	38.64
321E	n/a	n/a
2204	40.25	38.39
2250	40.2	38.32
321F	n/a	n/a
331D	n/a	n/a
2301	40.4	39
331E	n/a	n/a
3350	40.08	38.88
2350	40.44	38.46
3351	40.4	38.82
3305	40.07	38.26
331C	n/a	n/a
331F	n/a	n/a
3354	39.61	38.4
3352	40.09	38.77
3353	40.11	38.65
2304	40.41	38.61
2303	40.65	38.84
3303	39.97	37.92
2352	40.98	39.56
2302	40.92	39.02
3302	40.09	37.93
3355	40.1	38.19
331A	n/a	n/a
331B	n/a	n/a
3301	39.95	37.93
2455	41.11	39.87
301J	n/a	n/a
2050	39.98	38.43
2001	39.95	38.07
2051	40.01	38.16
2002	39.97	37.96
2004	39.6	37.5
2053	39.62	37.87
2003	39.89	37.17
2052	39.84	37.34
2054	n/a	n/a
301F	n/a	n/a
3150	39.4	38.2
3002	39.51	38.26
301C	n/a	n/a
301A	n/a	n/a
301B	n/a	n/a
3050	39.75	38.28
3001	39.7	36.83
301E	n/a	n/a
301D	n/a	n/a
3052	39.68	37.34
3055	39.53	37.43
301H	n/a	n/a
301G	n/a	n/a
301I	n/a	n/a
141J	n/a	n/a
1450	43.58	41.99
1402	43.12	41.17
1451	43.2	41.53
241D	n/a	n/a
241E	n/a	n/a
241F	n/a	n/a
341C	n/a	n/a
2404	41.85	39.88
2401	42.59	40.59
2453	41.86	40.24
3402	40.29	38.44
3451	40.33	38.8
2405	41.34	39.24
2450	42.64	40.94
3401	40.94	38.98
2454	41.3	39.65
2402	42.07	40.13
3450	40.92	39.31
2451	42.16	40.56
241G	n/a	n/a
241A	n/a	n/a
241B	n/a	n/a
341B	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
341A	n/a	n/a
241C	n/a	n/a
2452	42.96	41.36
2403	43.03	41.09
041A	n/a	n/a
0401	45.45	43.27
0402	n/a	n/a
0301	42.71	41.08
0302	43.73	42.18
041B	n/a	n/a
1304	n/a	n/a
1305	n/a	n/a
1306	42.69	41.68
1302	n/a	n/a
1303	n/a	n/a
1301	n/a	n/a
131D	n/a	n/a
141F	n/a	n/a
1401	43.43	41.65
141G	n/a	n/a
141H	n/a	n/a
1307	41.64	39.5
141K	n/a	n/a
141I	n/a	n/a
241H	n/a	n/a
2351	41.33	39.66
021A	n/a	n/a
0202	42.41	40.68
0201	41.88	40.24
021B	n/a	n/a
111A	n/a	n/a
111B	n/a	n/a
1251	40.83	38.82
1203	40.78	39.59
111C	n/a	n/a
1252	40.76	38.7
1201	40.67	39.26
1250	40.64	38.93
1202	40.6	39.35
221D	n/a	n/a
2152	40.98	39.52
221E	n/a	n/a
221C	n/a	n/a
221B	n/a	n/a
2153	40.68	39.81
2101	40.02	38.93
2150	39.91	38.56
2201	40.73	39.04
221A	n/a	n/a
2203	40.51	38.52
2151	39.78	38.43
2102	39.89	38.64
211B	n/a	n/a
211A	n/a	n/a
2251	40.38	38.08
3151	39.68	38.09
321C	n/a	n/a
321B	n/a	n/a
321A	n/a	n/a
311B	n/a	n/a
311A	n/a	n/a
321D	n/a	n/a
3101	39.84	39.23
3103	39.71	38.65
3152	39.8	38.01
3154	39.79	37.7
3102	39.69	38.96
3153	39.68	37.87
101D	n/a	n/a
101C	n/a	n/a
001B	n/a	n/a
1155	41.18	39.86
111G	n/a	n/a
1150	40.73	39.92
111H	n/a	n/a
0101	41.48	39.77
1154	41.15	39.97
1151	40.57	39.84
1152	40.48	39.74
011A	n/a	n/a
1102	40.75	39.07
111E	n/a	n/a
1101	40.77	39.15
111D	n/a	n/a
111F	n/a	n/a
1003	40.82	38.52
1052	40.86	38.94
1050	40.27	39.31
0051	41.14	39.74
1001	40.21	38.52
0053	41.16	39.81
0003	41.13	39.53
1051	40.15	38.7

Manhole Reference	Manhole Cover Level	Manhole Invert Level
101B	n/a	n/a
101A	n/a	n/a
0052	41.13	39.88
0004	41.25	39.84
1002	41.05	38.97
101E	n/a	n/a
1053	41.09	39.09
201A	n/a	n/a
001A	n/a	n/a
0002	41.64	39.82
0005	n/a	n/a
0050	41.38	39.99
0102	n/a	n/a
001D	n/a	n/a
001C	n/a	n/a
301K	n/a	n/a
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 476750,171250

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
931C	n/a	n/a
931B	n/a	n/a
931A	n/a	n/a
931D	n/a	n/a
8301	38.69	36.62
9301	38.92	36.88
931E	n/a	n/a
9302	38.8	36.74
9304	39.07	37
9303	38.69	36.89
7401	39.73	36.13
6401	n/a	n/a
6404	n/a	n/a
6402	n/a	n/a
6407	n/a	n/a
9050	39.13	36.92
9150	38.89	37.1
9250	38.76	37.24
9252	39.33	37.36
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Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

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

Other Sewer Types (Not operated and maintained by Thames Water)

	Sewer
	Culverted Watercourse
	Proposed
	Decommissioned Sewer
	Content of this drainage network is currently unknown
	Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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		Meter
	Dam Chase		Vent
	Fitting		

Operational Controls

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

	Ancillary		Drop Pipe
	Control Valve		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.

	Inlet		Outfall
	Undefined End		

Other Symbols

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

	Change of Characteristic Indicator		Public / Private Pumping Station
	Invert Level		Summit

Areas

Lines denoting areas of underground surveys, etc.

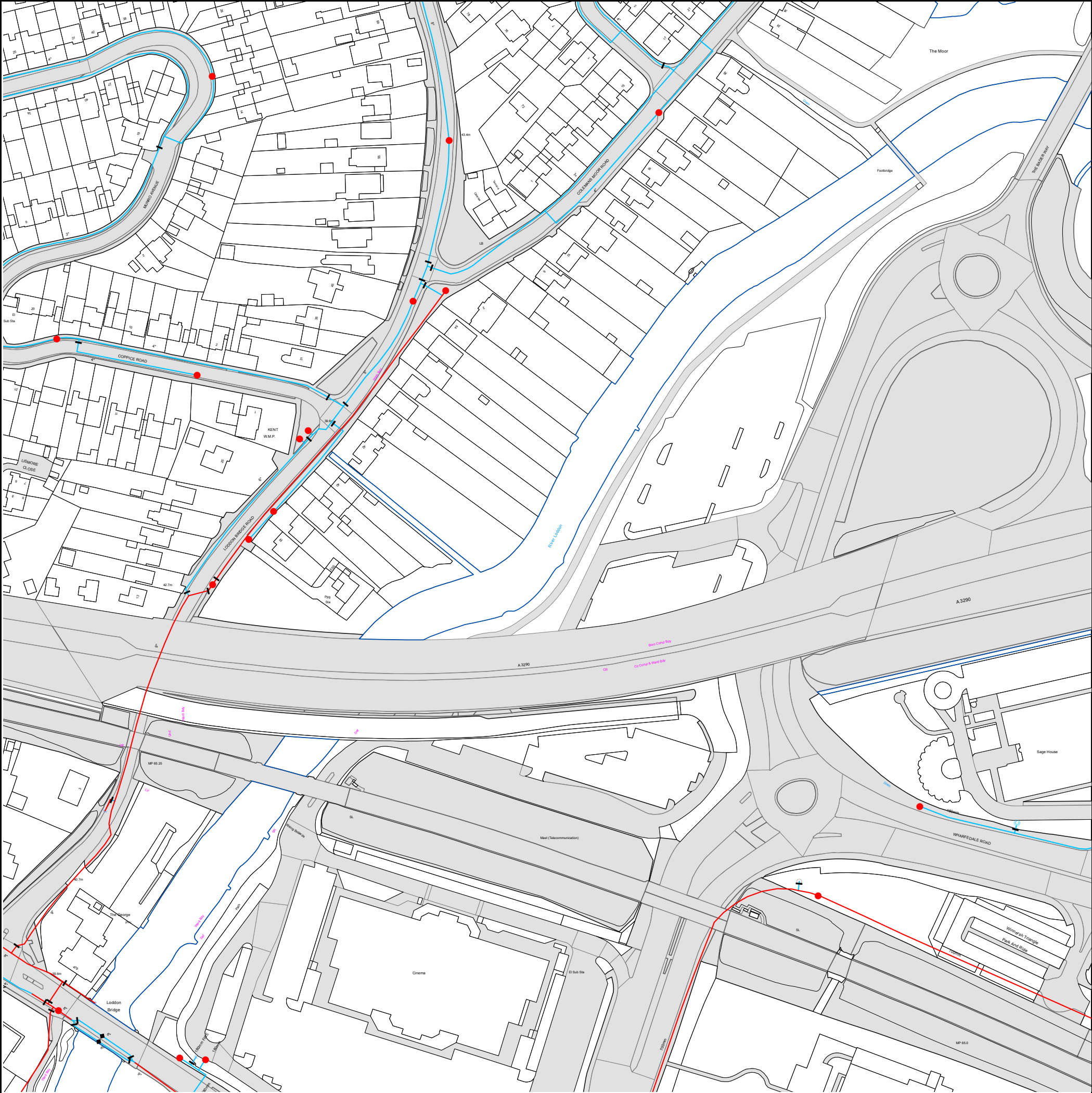
	Agreement
	Chamber
	Operational Site

Ducts or Crossings

	Casement	Ducts may contain high voltage cables. Please check with Thames Water.
	Conduit Bridge	
	Subway	
	Tunnel	

5) 'na' or '0' on a manhole indicates that data is unavailable.

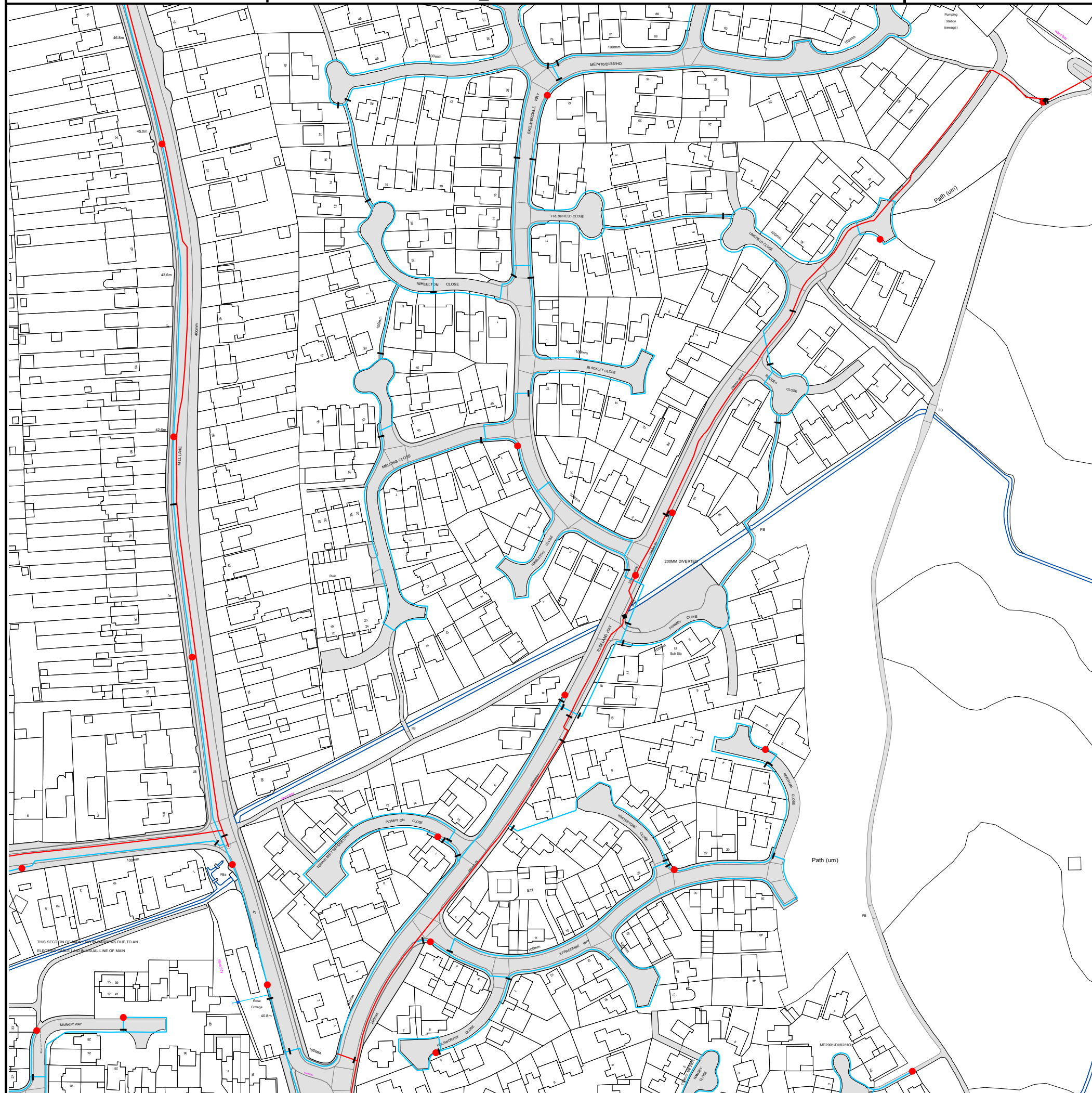
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009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



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 476750,171750

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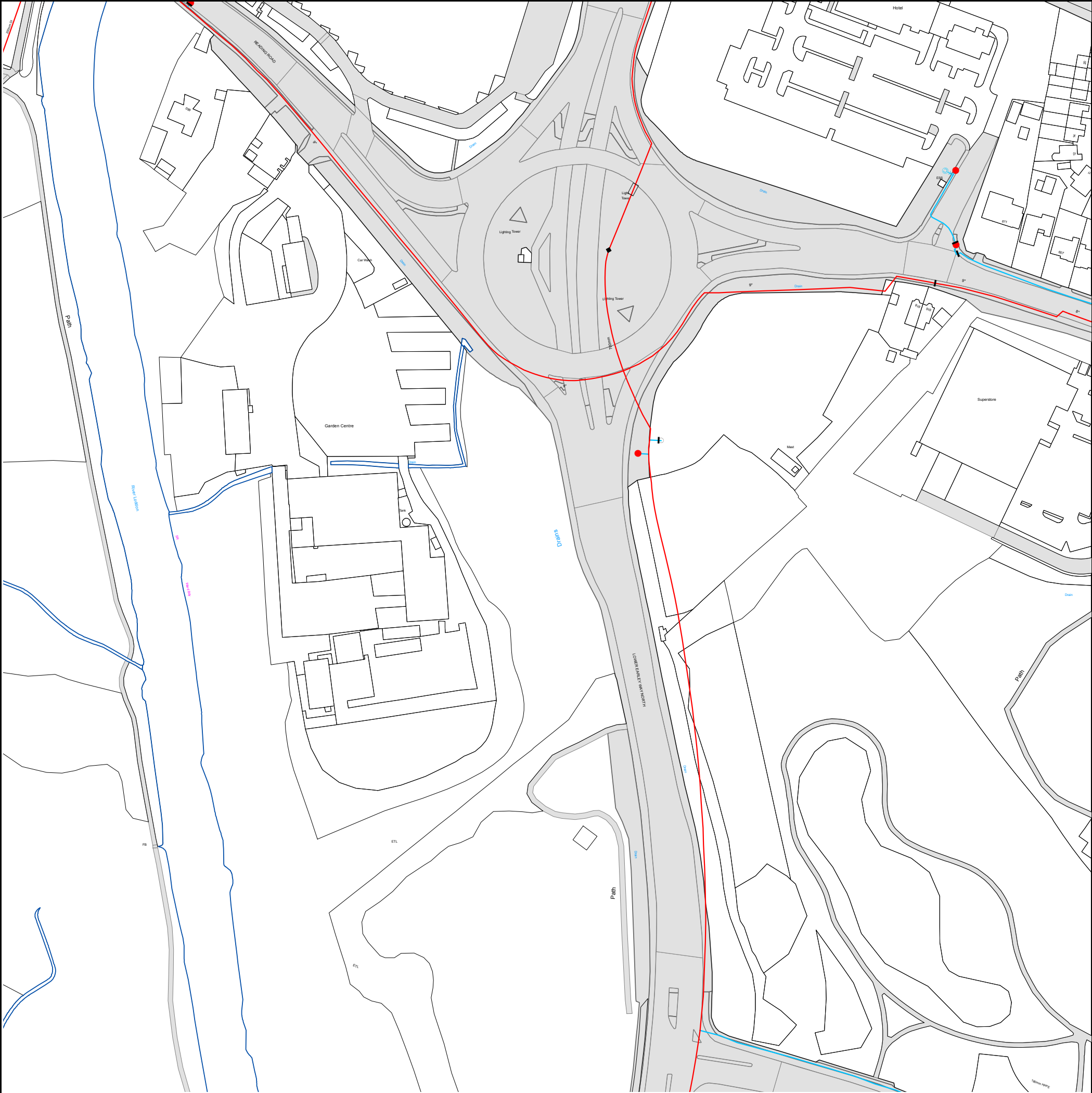
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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 16"** **Trunk Main:** A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
- 3" SUPPLY** **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
- 3" FIRE** **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
- 3" METERED** **Metered Pipe:** A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
- Transmission Tunnel:** A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
- Proposed Main:** A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

- Other Water Company Main:** Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
- Private Main:** Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Appendix C

**Design Settings**

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Inverts
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	6.00	Enforce best practice design rules	✓

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
Rainfall Events	Singular	Additional Storage (m³/ha)	0.0
FSR Region	England and Wales	Starting Level (m)	
M5-60 (mm)	17.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	0.1
Summer CV	1.000	2 year (l/s)	0.1
Winter CV	1.000	30 year (l/s)	0.2
Analysis Speed	Normal	100 year (l/s)	0.3
Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	2.40
Greenfield Method	IH124	Growth Factor 100 year	3.19
Positively Drained Area (ha)	0.051	Betterment (%)	0
SAAR (mm)	645	QBar	0.1
Soil Index	2	Q 1 year (l/s)	0.1
SPR	0.30	Q 2 year (l/s)	0.1
Region	6	Q 30 year (l/s)	0.2
Growth Factor 1 year	0.85	Q 100 year (l/s)	0.3
Growth Factor 2 year	0.88		



Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Inverts
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	6.00	Enforce best practice design rules	✓

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
Rainfall Events	Singular	Additional Storage (m³/ha)	0.0
FSR Region	England and Wales	Starting Level (m)	
M5-60 (mm)	17.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	0.9
Summer CV	1.000	2 year (l/s)	1.2
Winter CV	1.000	30 year (l/s)	2.2
Analysis Speed	Normal	100 year (l/s)	2.8
Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Brownfield	Betterment (%)	0
Brownfield Method	MRM	Q 1 year (l/s)	0.9
Contributing Area (ha)	0.006	Q 2 year (l/s)	1.2
PIMP (%)	100	Q 30 year (l/s)	2.2
CV	1.000	Q 100 year (l/s)	2.8
Time of Concentration (mins)	6.00		

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Inverts
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	6.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
1	0.022	6.00	38.700	450	-9.210	49.947	0.150
Tank			38.700		47.964	48.884	0.350
Outfall			38.700		106.837	48.247	0.550

Links (Input)

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	1	Tank	10.000	0.600	38.550	38.350	0.200	50.0	150	6.12	50.0
1.001	Tank	Outfall	10.000	0.600	38.350	38.150	0.200	50.0	150	6.23	50.0

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	0.0
M5-60 (mm)	17.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	1 year (l/s)	0.9
Summer CV	1.000	2 year (l/s)	1.2
Winter CV	1.000	30 year (l/s)	2.2
Analysis Speed	Normal	100 year (l/s)	2.8
Skip Steady State	x	Check Discharge Volume	x

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
2	0	0	0
30	0	0	0
30	35	0	0
100	0	0	0
100	40	0	0

Pre-development Discharge Rate

Site Makeup	Brownfield	Time of Concentration (mins)	6.00
Brownfield Method	MRM	Betterment (%)	0
Contributing Area (ha)	0.006	Q 1 year (l/s)	
PIMP (%)	100	Q 30 year (l/s)	
CV	1.000	Q 100 year (l/s)	

Node Tank Online Orifice Control

Flap Valve	x	Invert Level (m)	38.350	Diameter (m)	0.034
Downstream Link	1.001	Design Depth (m)	0.150	Discharge Coefficient	0.600
Replaces Downstream Link	x	Design Flow (l/s)	0.7		

Node Tank Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	38.350
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	196

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	27.0	30.0	0.300	27.0	30.0	0.301	0.0	30.0

Approval Settings

Node Size	✓	Minimum Full Bore Velocity (m/s)	
Node Losses	✓	Maximum Full Bore Velocity (m/s)	3.000
Link Size	✓	Proportional Velocity	✓
Minimum Diameter (mm)	150	Return Period (years)	
Link Length	✓	Minimum Proportional Velocity (m/s)	0.750
Maximum Length (m)	100.000	Maximum Proportional Velocity (m/s)	3.000
Coordinates	✓	Surcharged Depth	✓
Accuracy (m)	1.000	Return Period (years)	
Crossings	✓	Maximum Surcharged Depth (m)	0.100
Cover Depth	✓	Flooding	✓
Minimum Cover Depth (m)		Return Period (years)	30
Maximum Cover Depth (m)	3.000	Time to Half Empty	x
Backdrops	✓	Discharge Rates	✓
Minimum Backdrop Height (m)		Discharge Volume	✓
Maximum Backdrop Height (m)	1.500	100 year 360 minute (m ³)	
Full Bore Velocity	✓		

Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	9	38.587	0.037	2.9	0.0060	0.0000	OK
120 minute summer	Tank	78	38.410	0.060	1.5	1.5510	0.0000	OK
120 minute summer	Outfall	78	38.165	0.015	0.5	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	2.9	1.346	0.116	0.0313	
120 minute summer	Tank	1.001	Outfall	0.5	0.566	0.020	0.0089	2.8

Results for 2 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	38.592	0.042	3.8	0.0067	0.0000	OK
120 minute summer	Tank	78	38.428	0.078	1.8	2.0048	0.0000	OK
120 minute summer	Outfall	78	38.166	0.016	0.6	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	3.8	1.398	0.152	0.0421	
120 minute summer	Tank	1.001	Outfall	0.6	0.596	0.024	0.0100	3.6

Results for 30 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	38.607	0.057	7.2	0.0090	0.0000	OK
120 minute summer	Tank	82	38.506	0.156	3.5	3.9965	0.0000	FLOOD RISK
120 minute summer	Outfall	82	38.169	0.019	0.9	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	7.2	1.495	0.287	0.0845	
120 minute summer	Tank	1.001	Outfall	0.9	0.673	0.035	0.0132	6.8

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	38.616	0.066	9.7	0.0105	0.0000	OK
120 minute summer	Tank	84	38.566	0.216	4.7	5.5525	0.0000	FLOOD RISK
120 minute summer	Outfall	84	38.171	0.021	1.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	9.7	1.534	0.386	0.1115	
120 minute summer	Tank	1.001	Outfall	1.1	0.710	0.042	0.0150	9.2

Results for 100 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	1	10	38.615	0.065	9.3	0.0103	0.0000	OK
120 minute summer	Tank	84	38.561	0.211	4.6	5.4150	0.0000	FLOOD RISK
120 minute summer	Outfall	84	38.171	0.021	1.1	0.0000	0.0000	OK

Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	9.3	1.529	0.370	0.1077	
120 minute summer	Tank	1.001	Outfall	1.1	0.708	0.042	0.0149	9.0

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

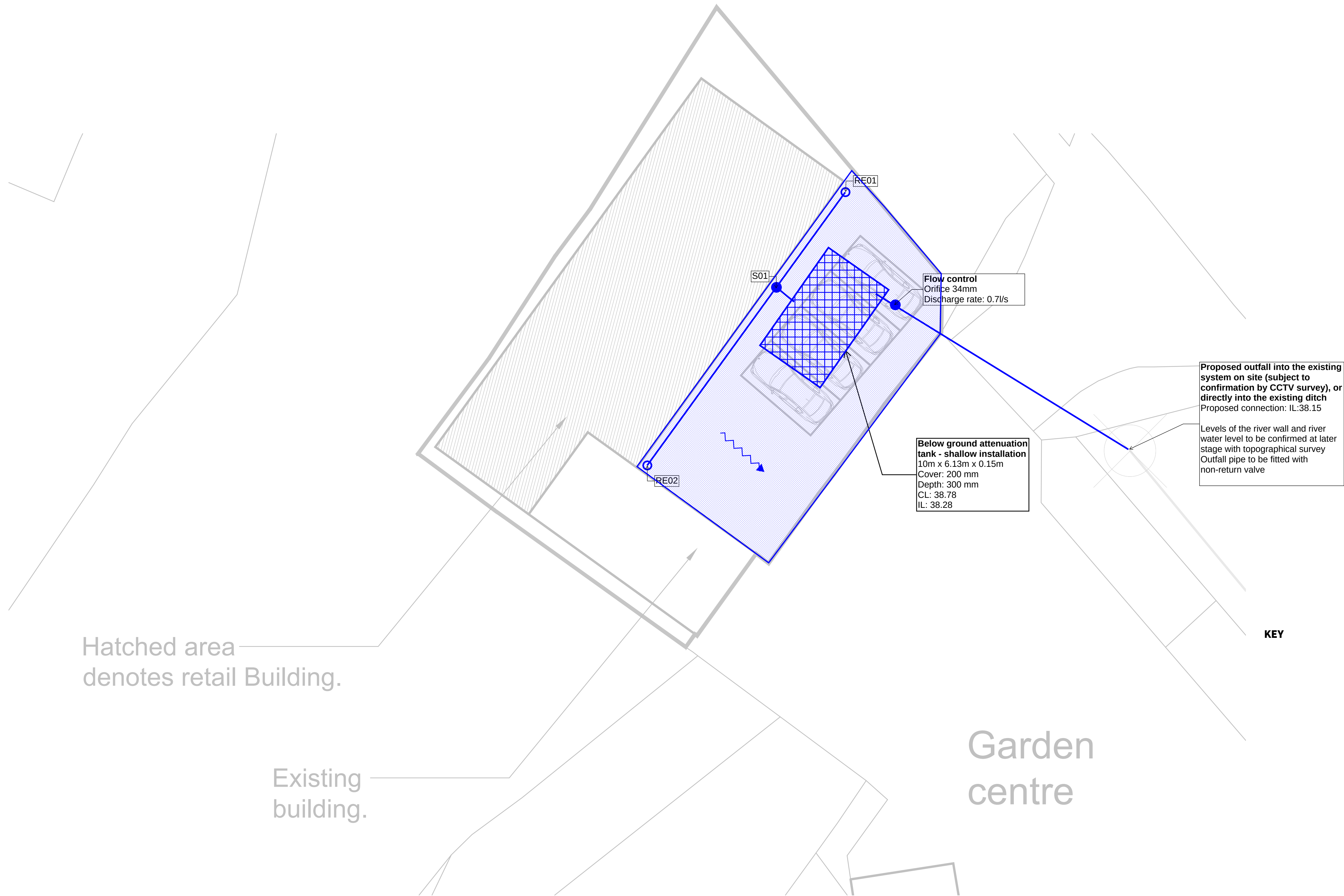
Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
120 minute summer	1	86	38.681	0.131	6.4	0.0209	0.0000	OK
120 minute summer	Tank	86	38.681	0.331	6.4	7.7078	0.0000	FLOOD RISK
120 minute summer	Outfall	86	38.174	0.024	1.3	0.0000	0.0000	OK
Link Event (Outflow)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	1	1.000	Tank	13.0	1.553	0.515	0.1313	
120 minute summer	Tank	1.001	Outfall	1.3	0.761	0.053	0.0176	12.6

Appendix D

Drawing Scale Bar		Drawing Scale Bar	
Drawing scale	Line length	Drawing scale	Line length
1:5	= 0.25 metres	1:200	= 10.0 metres
1:10	= 0.5 metres	1:250	= 12.5 metres
1:20	= 1.0 metres	1:500	= 25.0 metres
1:25	= 1.25 metres	1:1000	= 50.0 metres
1:50	= 2.5 metres	1:1250	= 62.5 metres
1:100	= 5.0 metres	1:2500	= 125 metres
Measure length of line above for checking of scale			

GENERAL NOTES

1. All dimensions are in millimetres and levels in m AOD unless stated otherwise.
2. Do not scale. If in any doubt, consult Engineer.
3. Read in conjunction with the architects and engineers schedule drawings.
4. Check inverts and sizes of existing pipes prior to the commencement of any work. Report any discrepancies to the engineer and await instructions.
5. The location of services is shown as indicative. This drawing should be read in conjunction with the utilities drawings. No warranty to their accuracy can be given. The contractor shall take all necessary measures to satisfy himself as to the location of the existing services and connection points. Excavation should be undertaken in compliance with HSG47.



Rev	Details	Date	By	Chd

Drawing Status: **PRELIMINARY**



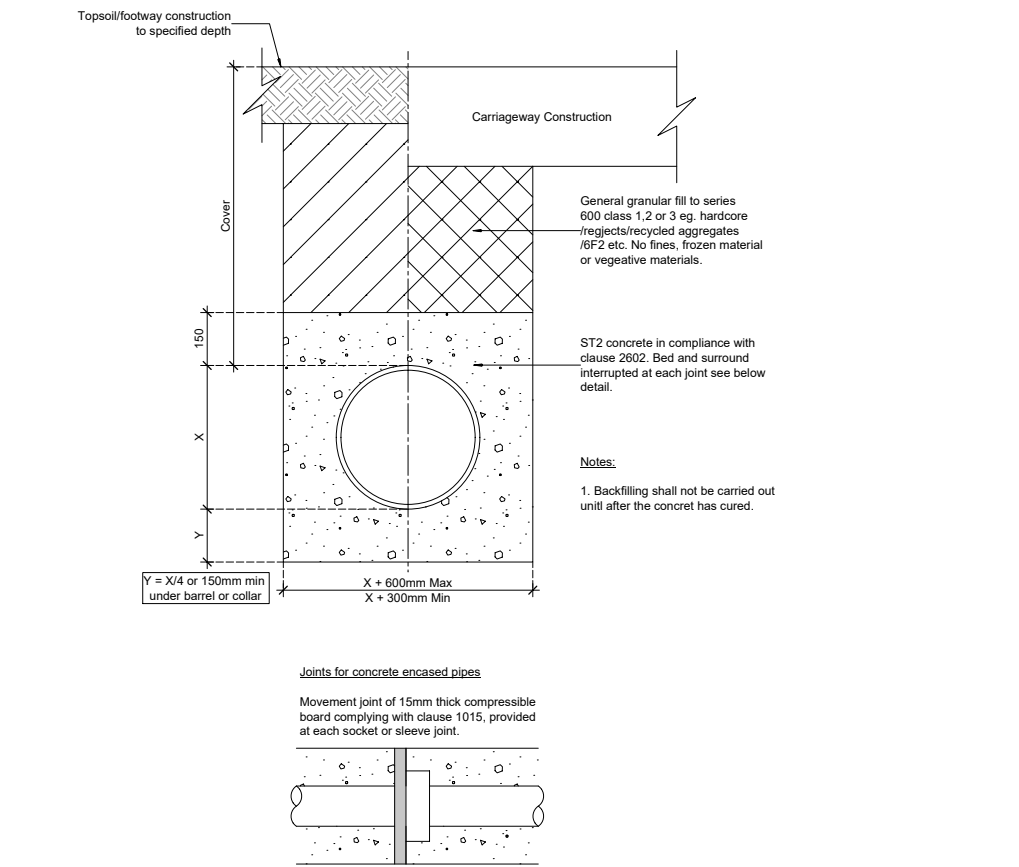
Client:

Project:

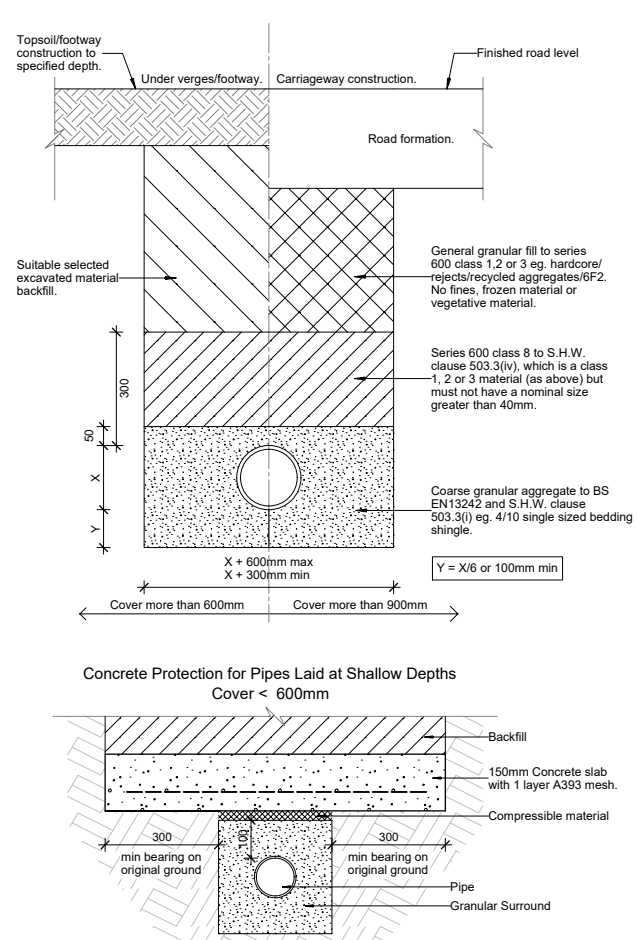
656, Reading road, Winnersh , Wokingham RG41 5HG

Drawing:

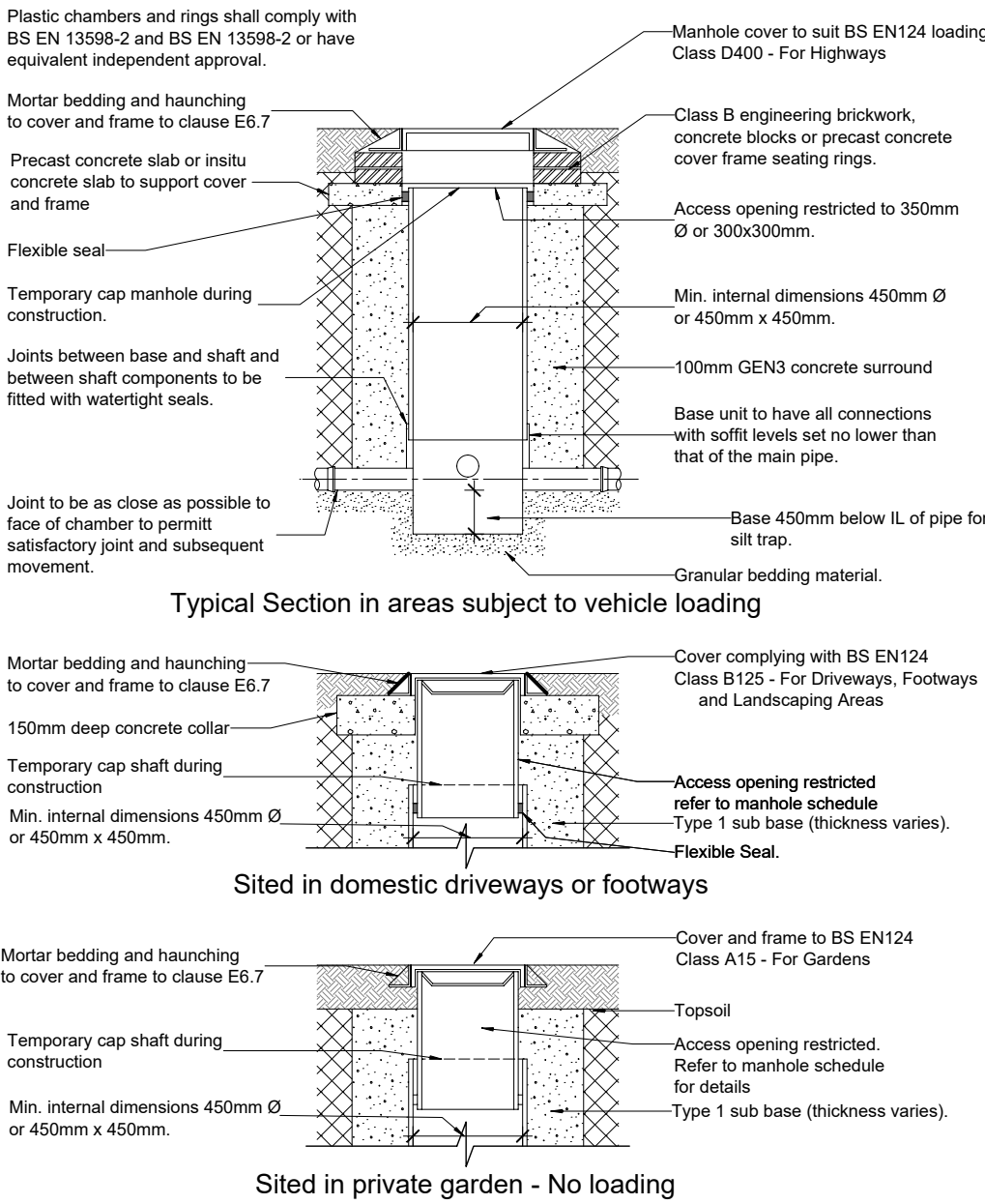
Proposed Drainage Strategy



Pipe Bedding Detail Type Z

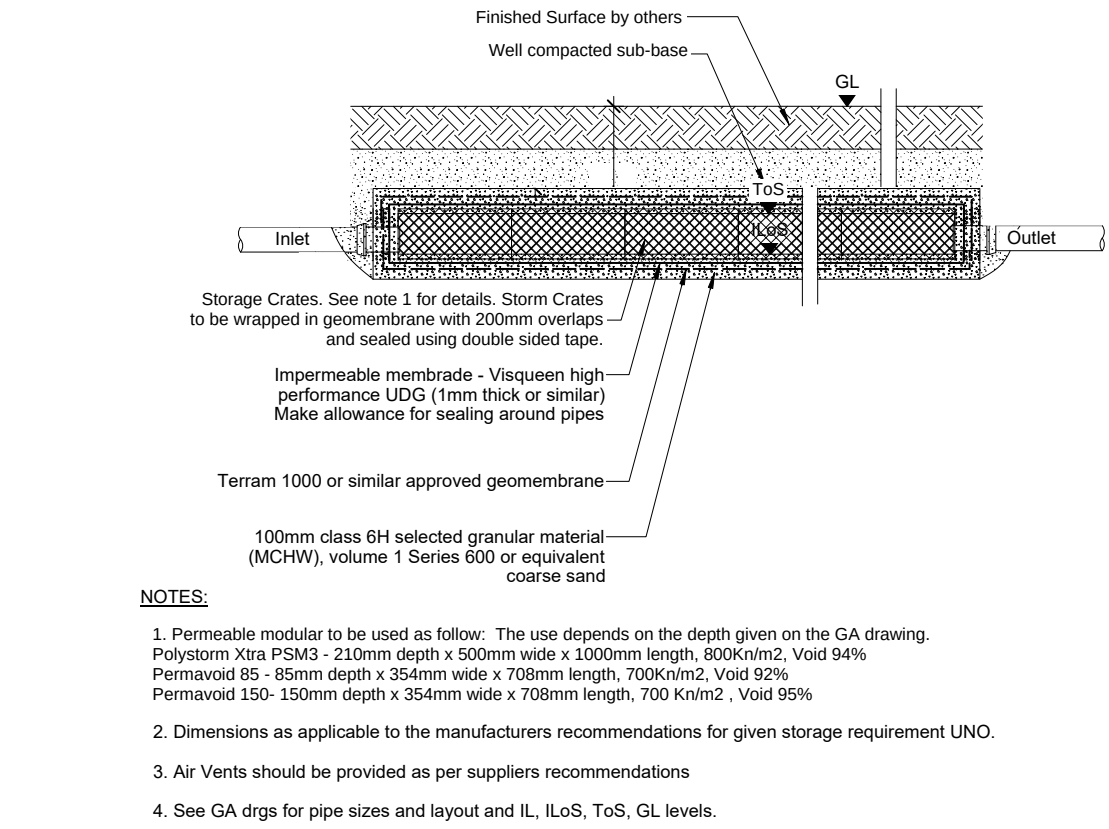


Pipe Bedding Detail Type S

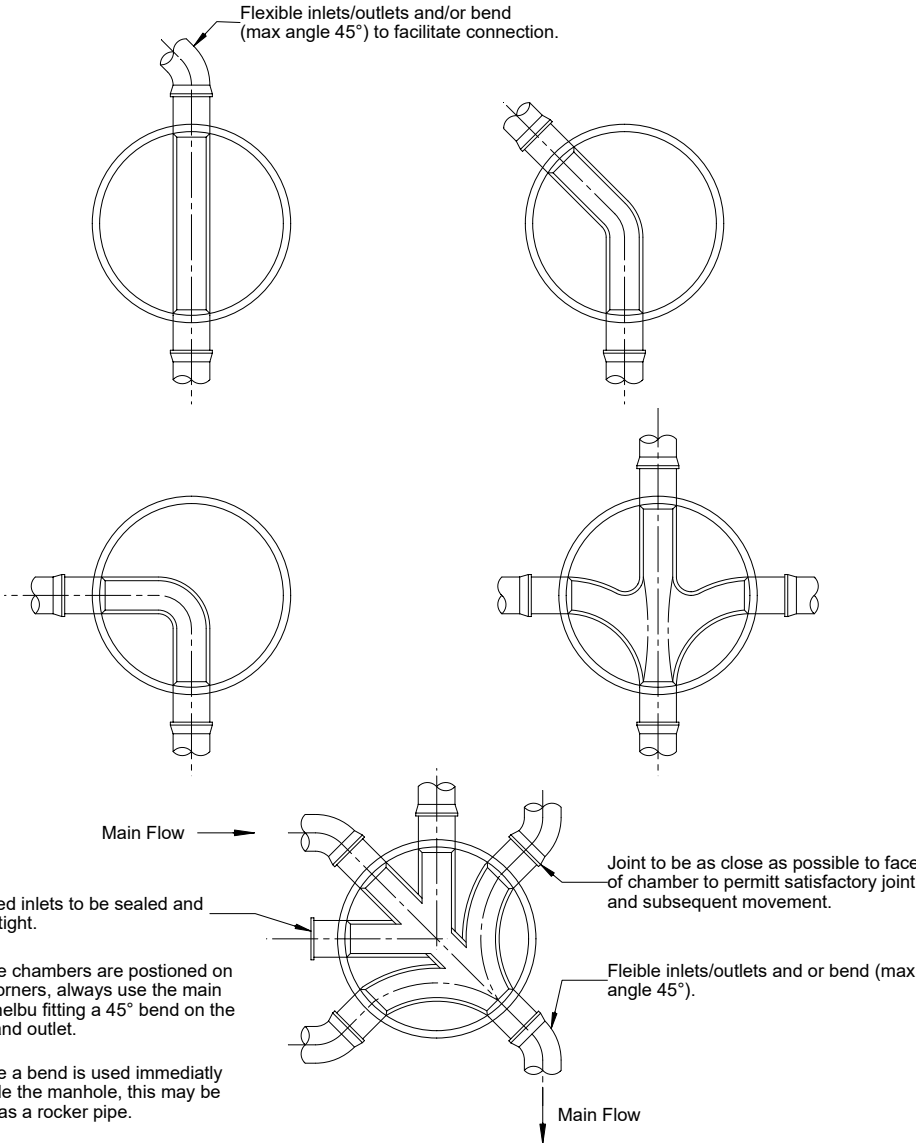


Notes:
1. Refer to drawing 8193 for base layouts.

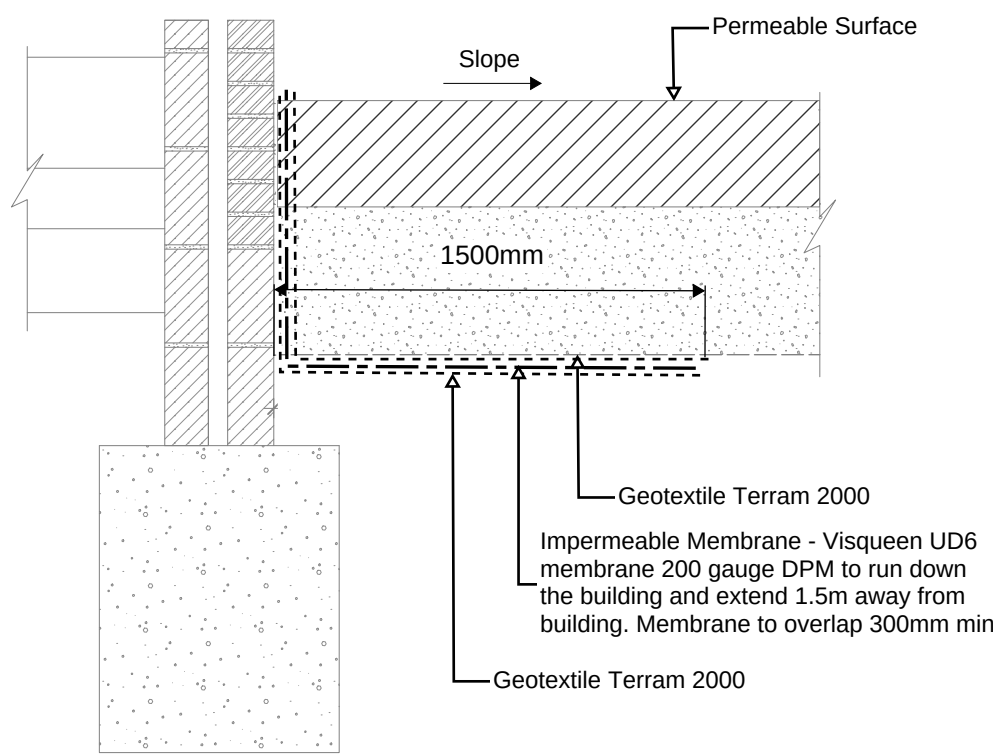
Silt Trap Plastic



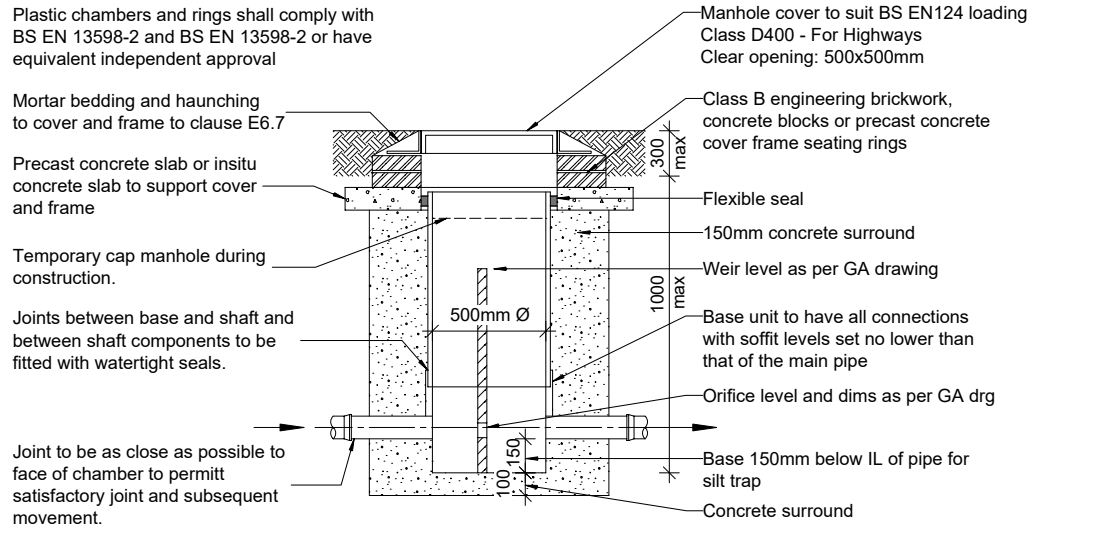
Cellular Attenuation System - Shallow Installation



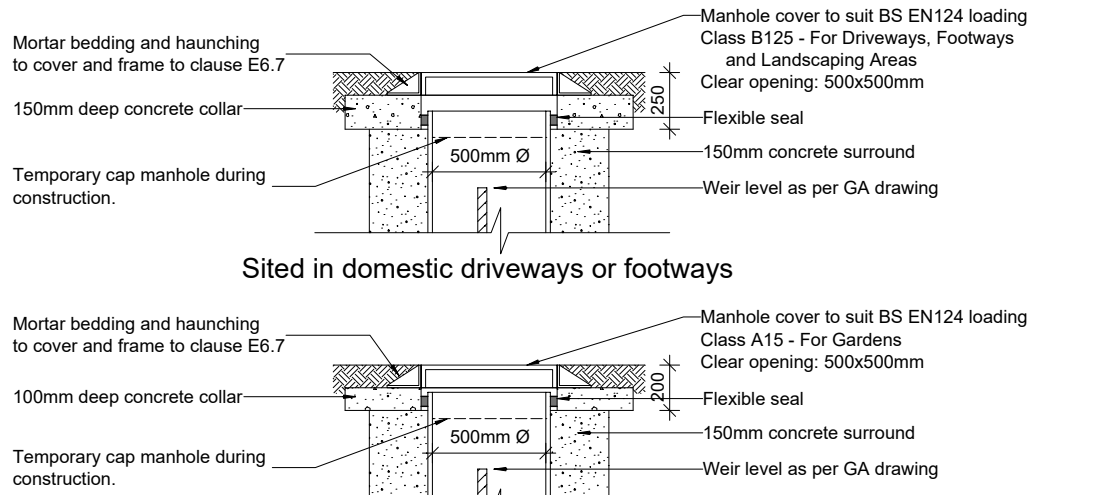
Chamber Type 3 Base Layouts



Permeable Surface Against Building

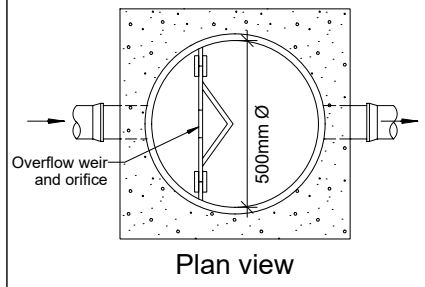


Typical Section in areas subject to vehicle loading

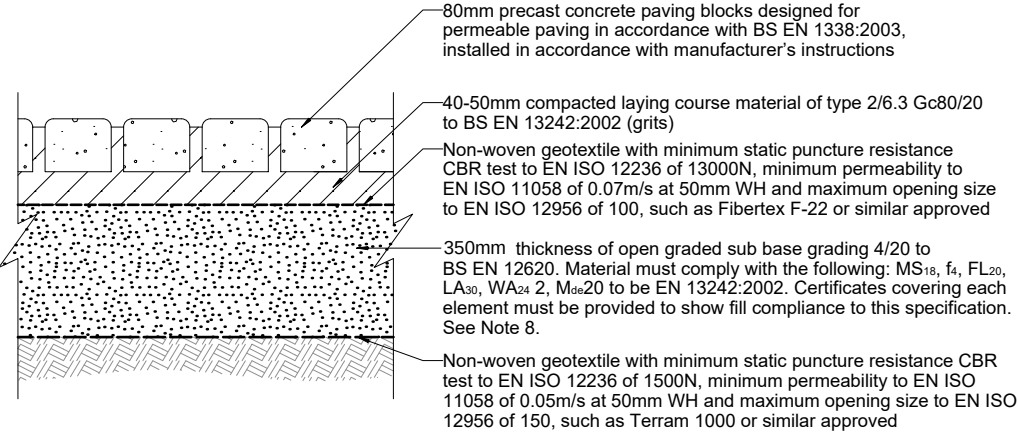


NOTES:
1. Refer to GA drg for pipe layout.
2. Chamber can be fabricated by Seel Environmental UK.

Flow Control -Orifice Plate - Plastic - Type 3



Flow Control -Orifice Plate - Plastic - Type 3



Permeable Paving - Infiltration

Do not scale from this drawing. Refer to figured dimensions only. RIDA Reports Ltd registered in England and Wales No. 10590566. This drawing is copyright of RIDA Reports Ltd.

Drawing Scale Bar			
Drawing scale	Line length	Drawing scale	Line length
1:5	= 0.25 metres	1:200	= 10.0 metres
1:10	= 0.5 metres	1:250	= 12.5 metres
1:20	= 1.0 metres	1:500	= 25.0 metres
1:25	= 1.25 metres	1:1000	= 50.0 metres
1:50	= 2.5 metres	1:1250	= 62.5 metres
1:100	= 5.0 metres	1:2500	= 125 metres
Measure length of line above for checking of scale			

GENERAL NOTES

Rev	Details	Date	By	Chd
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Drawing Status:
PRELIMINARY



Client:

Project:

656, Reading road, Winnersh , Wokingham RG41 5HG

Drawing:

Standard Details

Print Size:	Scale:	Project No:	Drawing No:	Revision:
A1	NTS	0681	006	P1