



Drainage Design - Planning Condition

3 New Close Colliers Wood SW19 2SX

Reference: 702 -Rev - V1

Date: Sep-25

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- 3 Discharge Arrangement
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- C Drainage Calculations
- D Drainage System General Arrangement

London Office

5th Floor, 167, 169 Great Portland St,
London W1W 5PF

Oxford Office

Oxford Innospace, Old Music Hall, 106-108
Cowley Road, Oxford, OX4 1JE

info@urban-water.co.uk



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3 New Close Colliers Wood SW19 2SX

Reference: 702 -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 which addresses each point relating to relevant planning conditions.

Scope

- 1.2 This Sustainable Drainage Strategy (SDS) outlines the key drainage principles and requirements for the proposed development at 3 New Close Colliers Wood SW19 2SX . 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?	No
Soils and Geology	Soil permeability? - See appendix B for results	No
Space constraints	Space for SuDS components?	No
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	0.005	0.019
Permeable Areas		
Connected to Drainage	0.000	0.011
Self Draining Areas	0.000	0.000
Areas Draining Away from drainage System	0.034	0.009
Total Development Area	0.039	0.039

- 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 Kempton Park Gravel Member - 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 And Silt.
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 the findings on groundwater and soils within the site
Is a discharge to a watercourse feasible?	There is no watercourse near the site.
Is a discharge to a surface water sewer feasible?	There is a surface water sewer in the proximity to the site. It is possible to connect to the surface water sewer, and it is proposed to discharge into this surface water sewer.
Is a discharge to a combined sewer feasible?	There is no combined water sewer in the proximity to the site.

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	0.10	2.20	0.7	0.0000
1 in 30 + CC	N/A	N/A	0.7	0.0000
1 in 100	0.20	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	Yes	Yes	×		
<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 design demonstrates that the development can be sustainably drained to comply with the requirements of the NPPF.

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. Undertake inspection after leaf fall in autumn	Annually
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 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

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

Appendix A

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

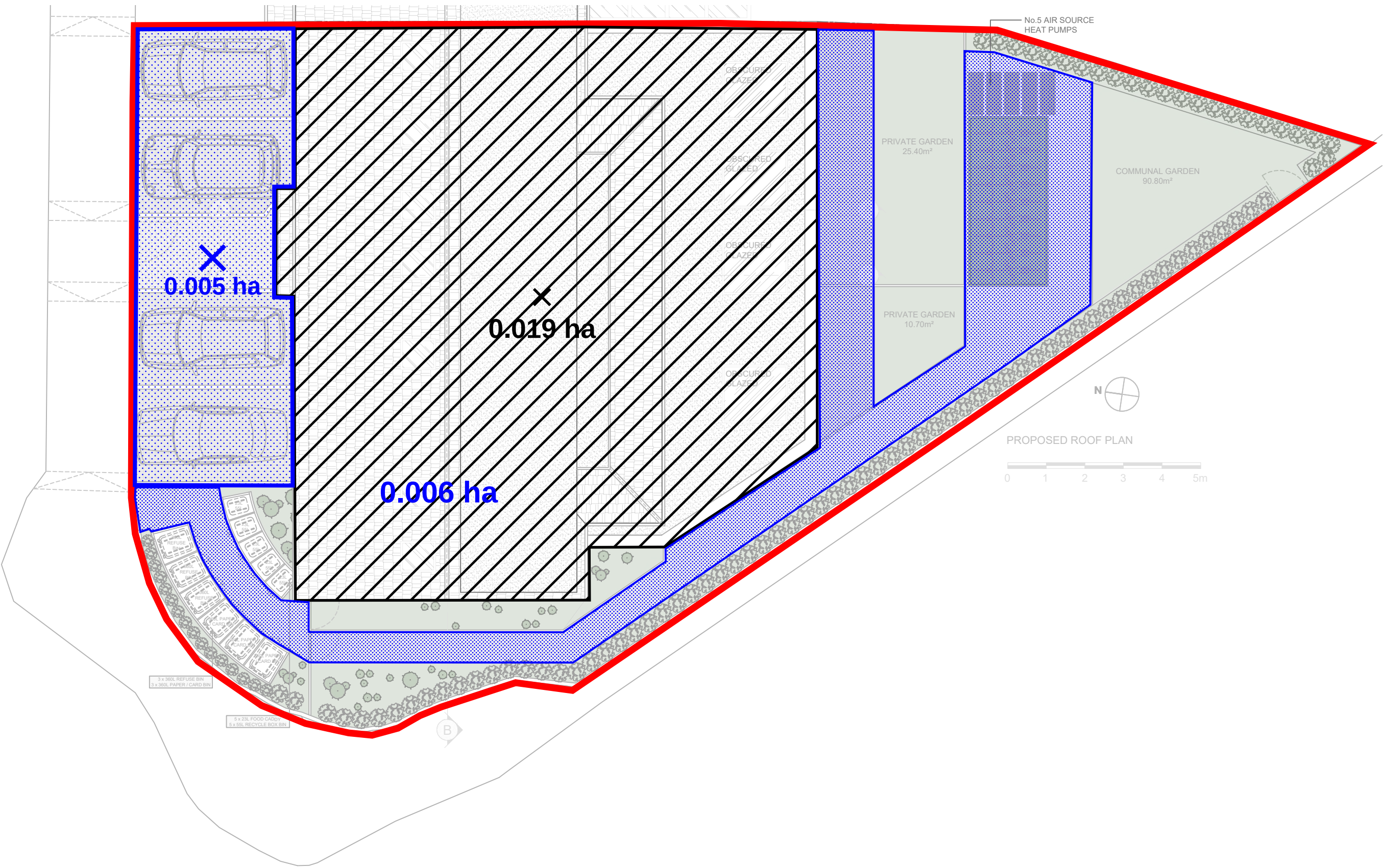


Client:

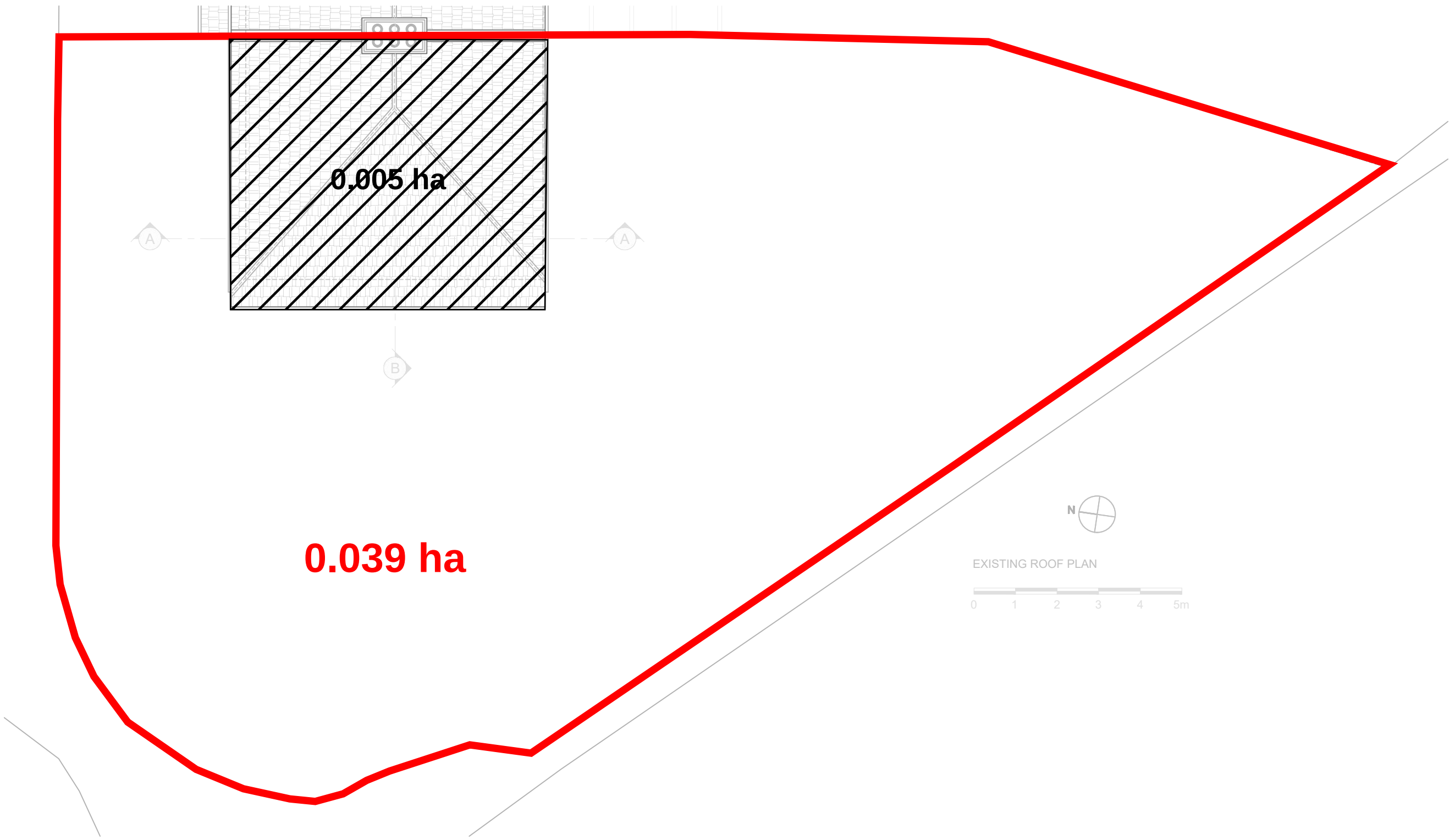
Project:
3 New Close Colliers Wood SW19 2SX

Drawing:
Existing and Proposed Areas
Permeable and Impermeable

Print Size:	Project No:	Drawing No:	Revision:
A1	0702	002	P1



PROPOSED SITE
1:100

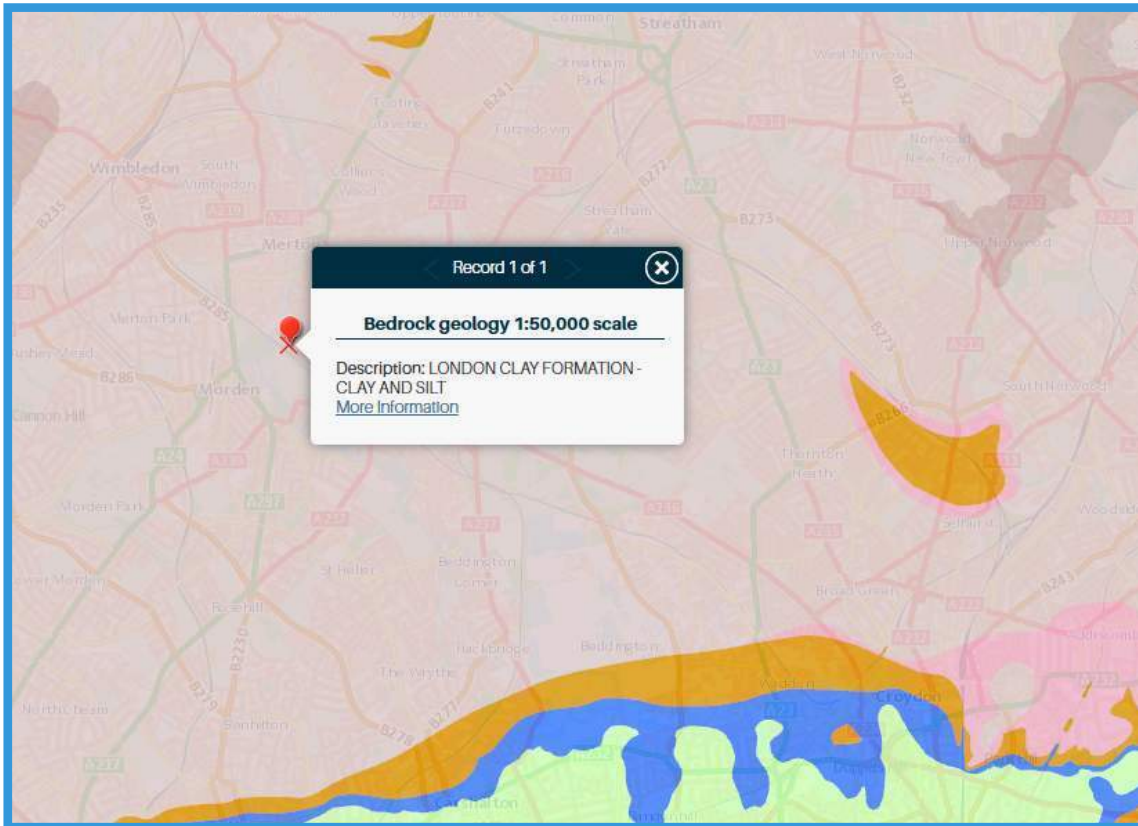


EXISTING SITE
1:100

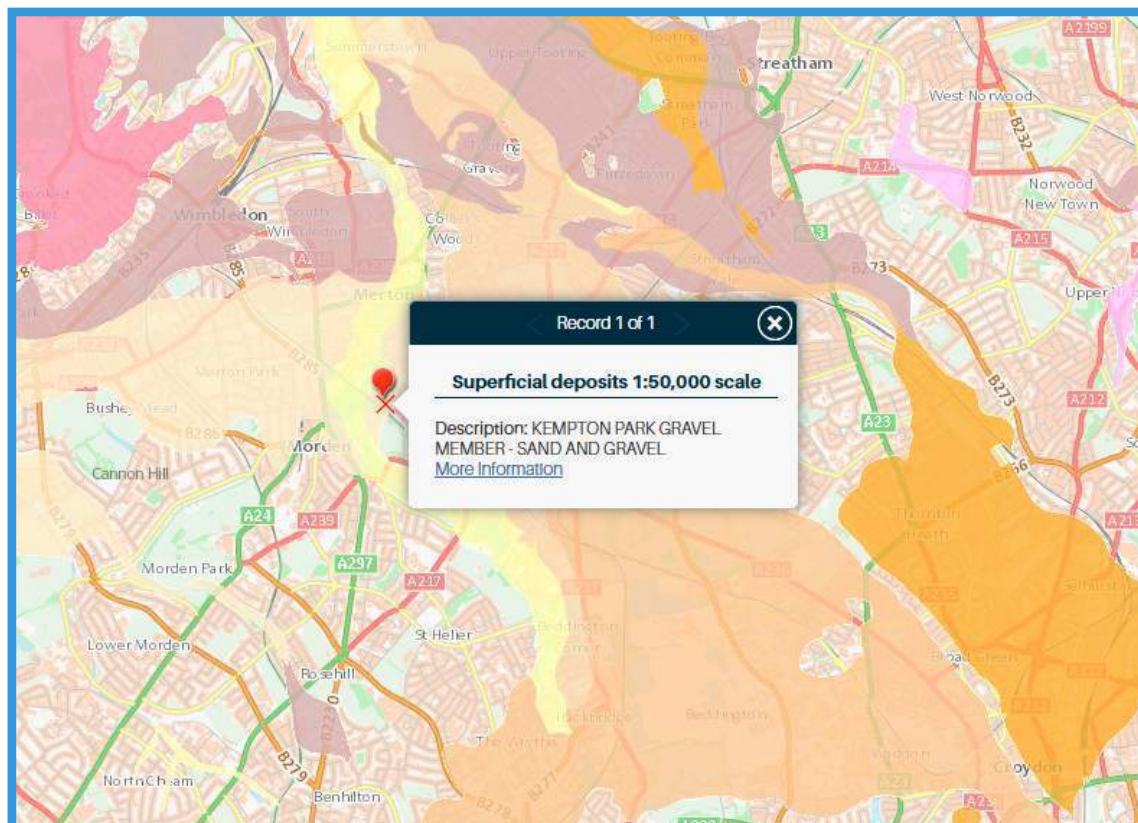
Appendix B



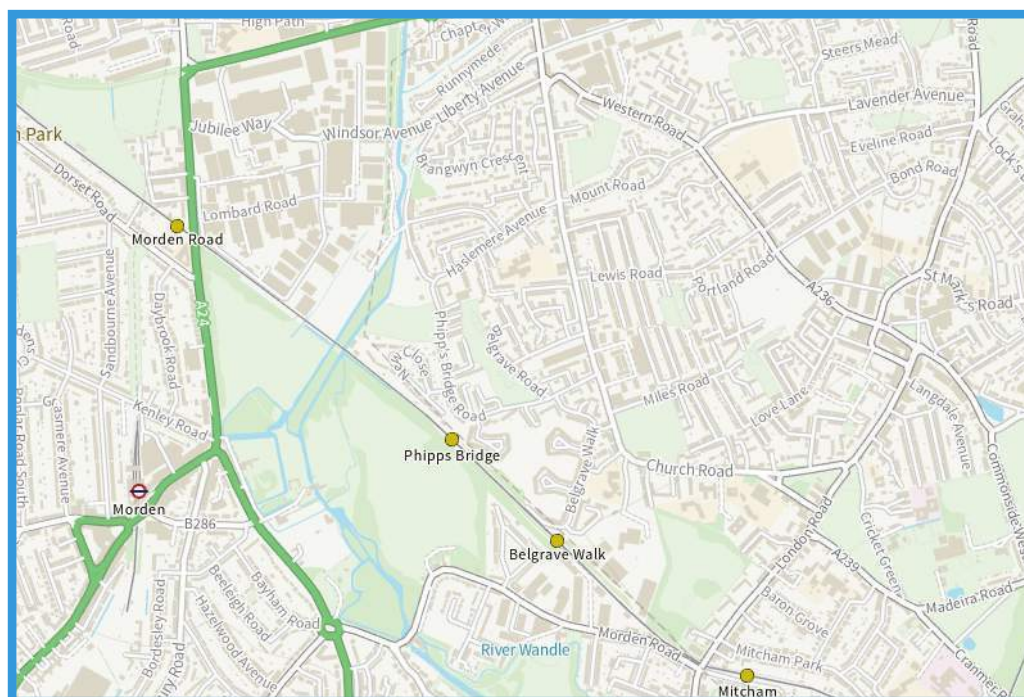
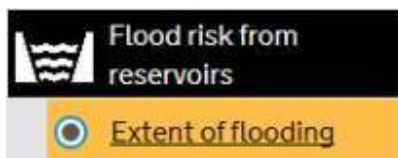
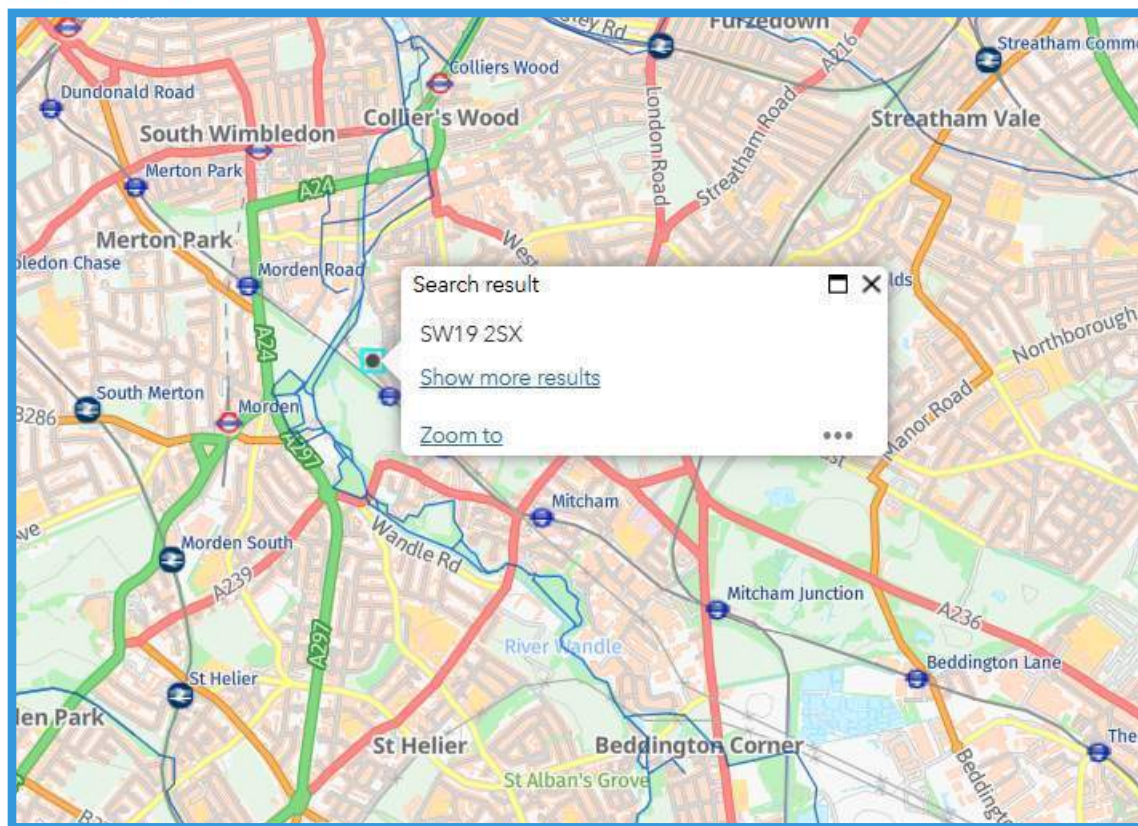
GEOLOGY - BEDROCK - London Clay Formation - Clay And Silt



GEOLOGY - SUPERFICIAL DEPOSITS - Kempton Park Gravel Member - Sand And Gravel



Main River Map



- When river levels are normal
- When there is also flooding from rivers

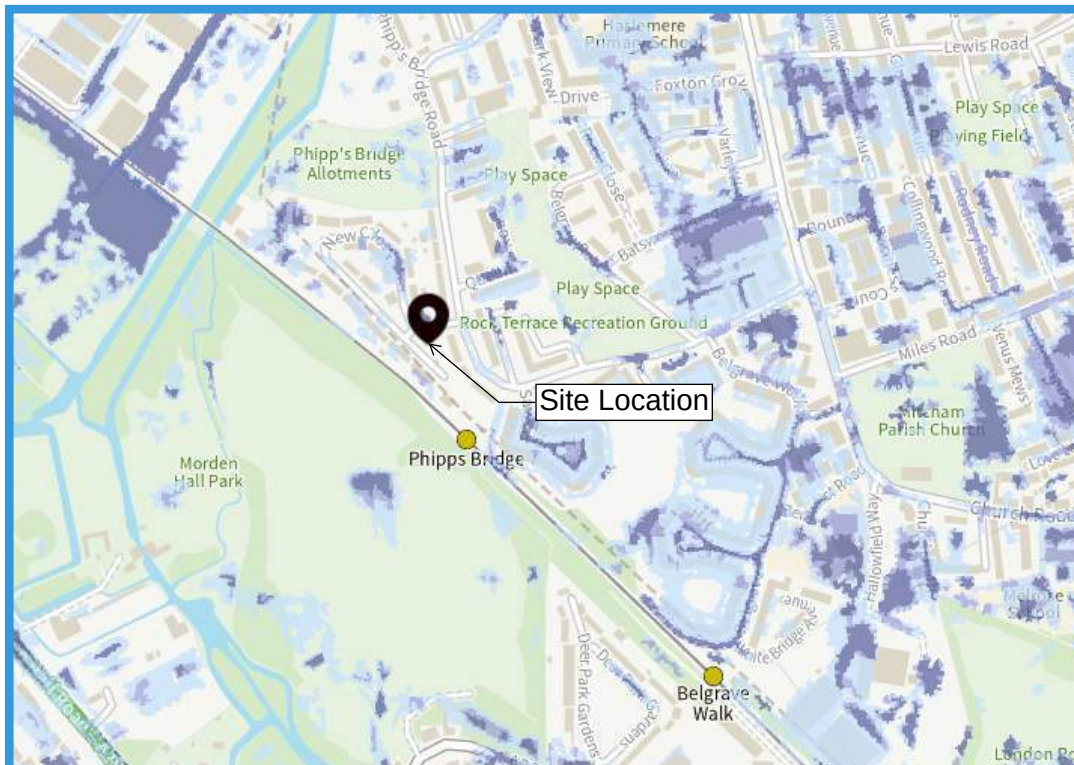
SITE SURFACE WATER FLOOD RISK

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



Yearly chance of flooding

-  Flood area (extent)
-  High chance
-  Medium chance
-  Low chance

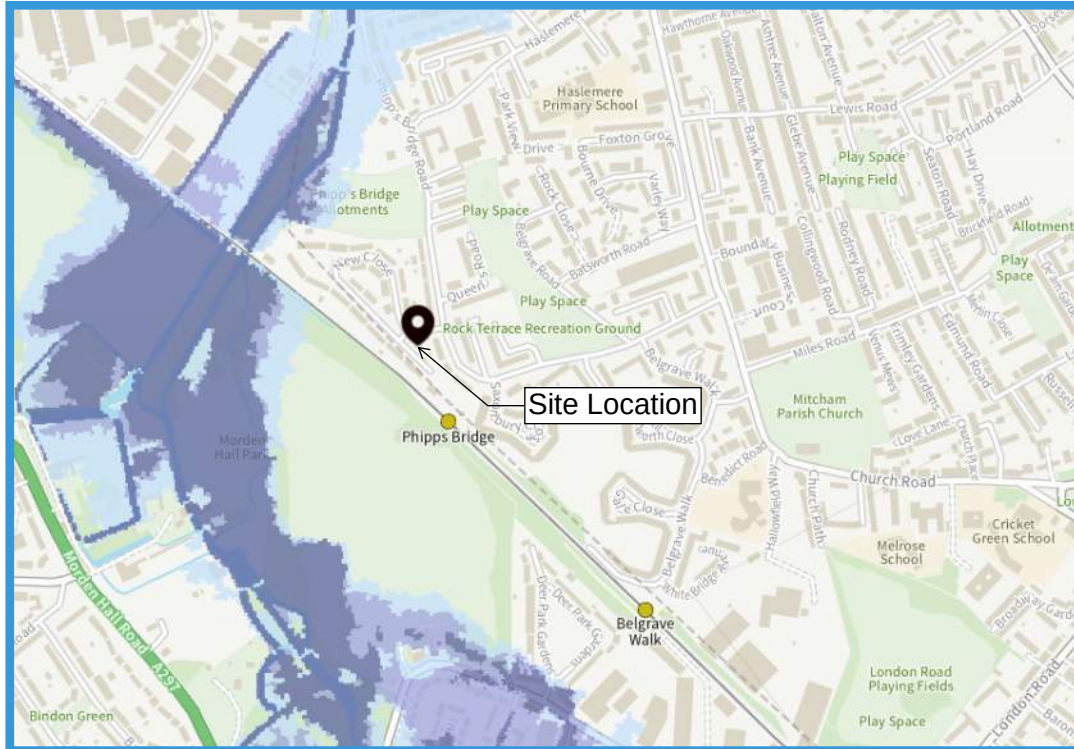


Yearly chance of flooding between 2040 and 2060

-  Flood area (extent)
-  High chance
-  Medium chance
-  Low chance

RIVER AND SEA FLOOD RISK MAP

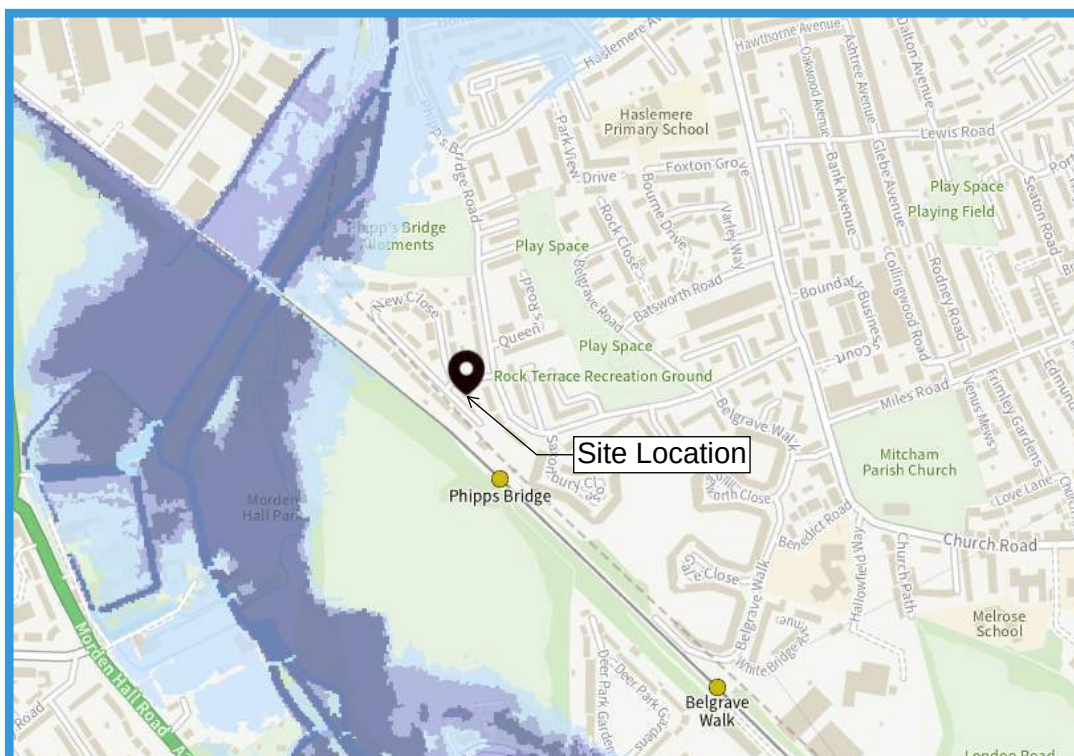
- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
- Medium - Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year
- Low - Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given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



Yearly chance of flooding

● Flood area (extent)

- High chance
- Medium chance
- Low chance
- Very low chance



Yearly chance of flooding between 2036 and 2069

● Flood area (extent)

- High chance
- Medium chance
- Low chance
- Very low chance
- No data available

MAGIC RESULTS



Site Check Results

Site Check Report generated on Mon Sep 22 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: TQ26476884

Aquifer Designation Map (Superficial Drift) (England)

TPOLOGY

Secondary A

Aquifer Designation Map (Bedrock) (England)

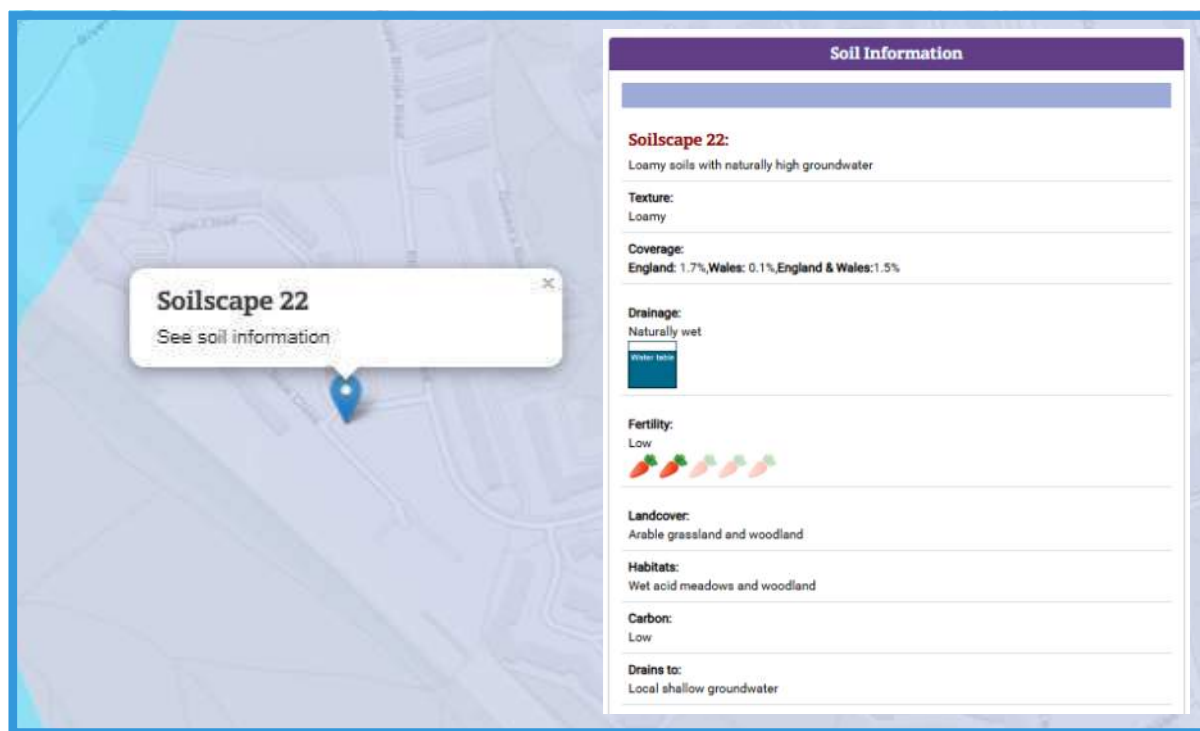
TPOLOGY

Unproductive

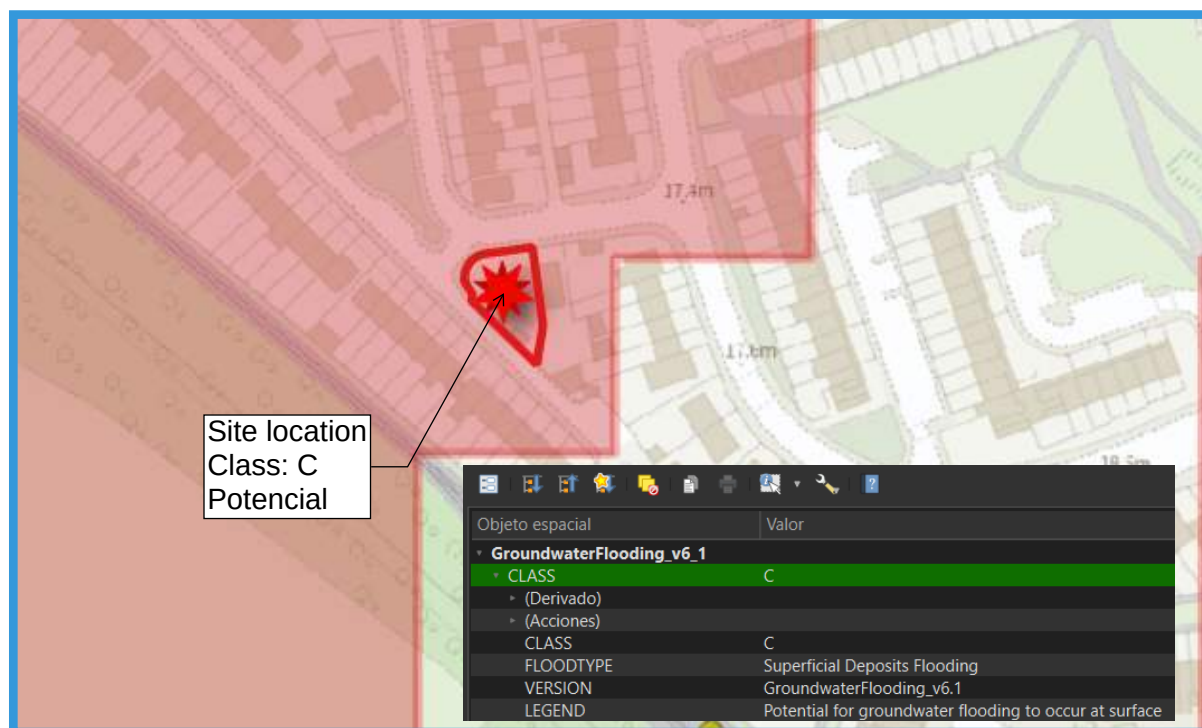
Source Protection Zones merged (England)

No Features found

SOILSCAPES MAP



GROUND WATER FLOOD RISK



Flood map for planning

Your reference	Location (easting/northing)	Created
Unspecified	526473/168840	22 September 2025 16:05

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

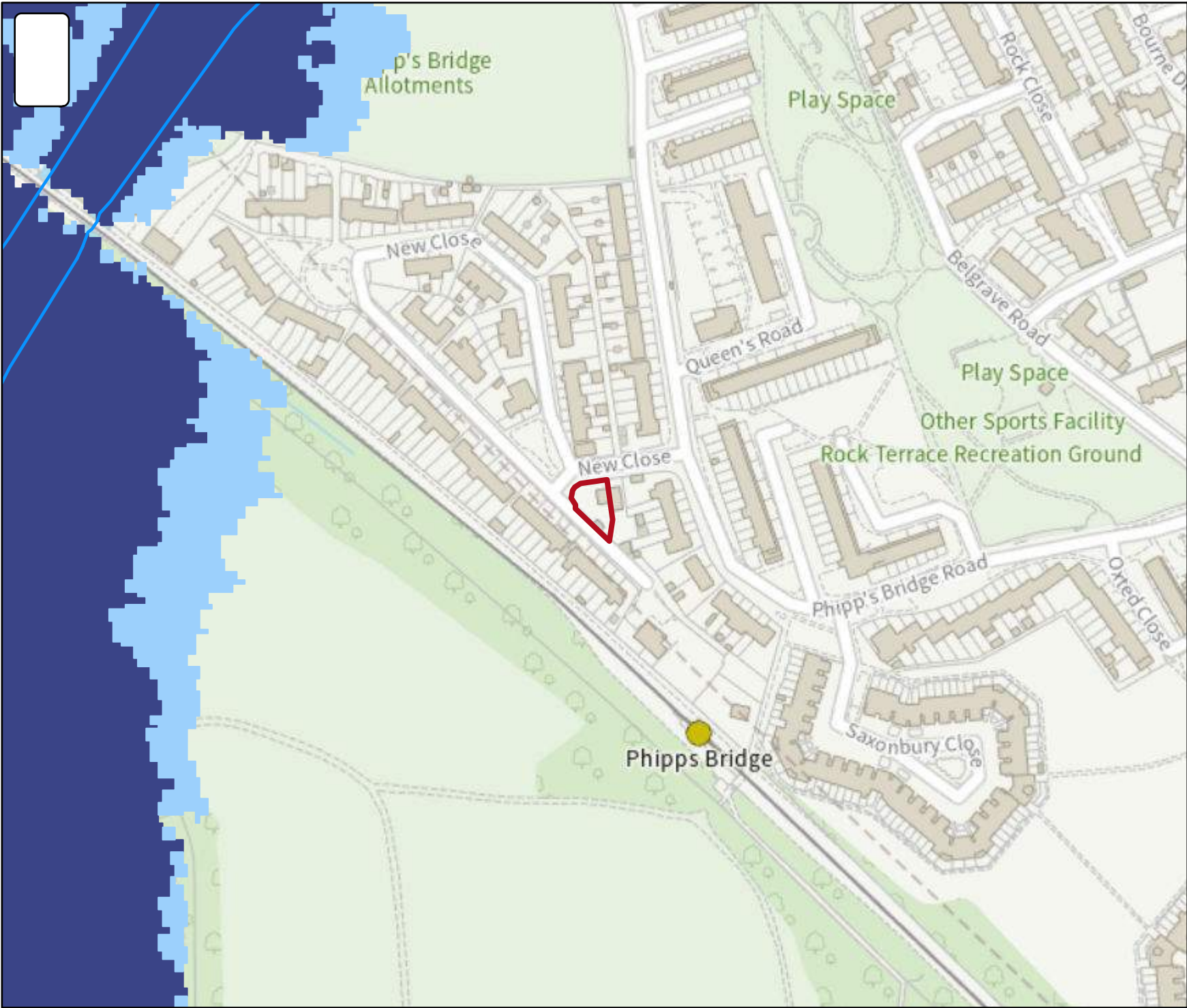
Notes

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>



)ORRG PDS IRU S
<RXU UHIHUHQFH
8QVSHFLILHG
/RFDWLRQ HDVWL
6FDOH
&UHDWHG
6HS

- 6HOHFWHG DUH
-)ORRG JRQH
-)ORRG JRQH
-)ORRG JRQH
-)ORRG GHIHQFH
- 0DLQ ULYHU
- :DWHU VWRUDJ



3DJH RI

Site Check Report generated on Mon Sep 22 2025

The following features have been found in your search area:

You selected the location: Centroid Grid Ref: TQ26476884

Soilscape (England)

ID

22

SOIL_COND

LOAMY SOILS WITH NATURALLY HIGH GROUNDWATER

MAIN_SURFA

LOAMY

NAT_DRAIN

NATURALLY WET

NAT_FERT

LOW

SEM_NAT_HA

WET ACID MEADOWS AND PASTURES AND WOODLAND

M_LANDCOV

ARABLE, GRASSLAND AND WOODLAND

HYPERLINK

[/Metadata_for_magic/soilscape_summary.pdf](#)

Aquifer Designation Map (Superficial Drift) (England)

TYPOLOGY

Secondary A

Aquifer Designation Map (Bedrock) (England)

TYPOLOGY

Unproductive

Source Protection Zones merged (England)

No Features found

Wild Bird General Licence Protected Sites Condition Zone (England)

No Features found

Nitrate Vulnerable Zones 2017 Designations (England)

No Features found

Less Favoured Areas (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 SSSIs 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

CEB Design Group Ltd
13

BRISTOL
BS8 4PT

Search address supplied 3
New Close
London
SW19 2SX

Your reference 3 New Close

Our reference ALS/ALS Standard/2024_4970137

Search date 3 April 2024

Notification of Price Changes

From 1st April 2024 Thames Water Property Searches will be increasing the prices of its CON29DW Residential and Commercial searches along with the Asset Location Search. Costs will rise in line with RPI as per previous years, which is sat at 6%.

Customers will be emailed with the new prices by February 28th 2024.

Any orders received with a higher payment prior to the 1st April 2024 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: 3, New Close, London, SW19 2SX

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, 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 address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

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.

This report 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.

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.

Payment for this Search

A charge will be added to your suppliers account.

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. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational 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

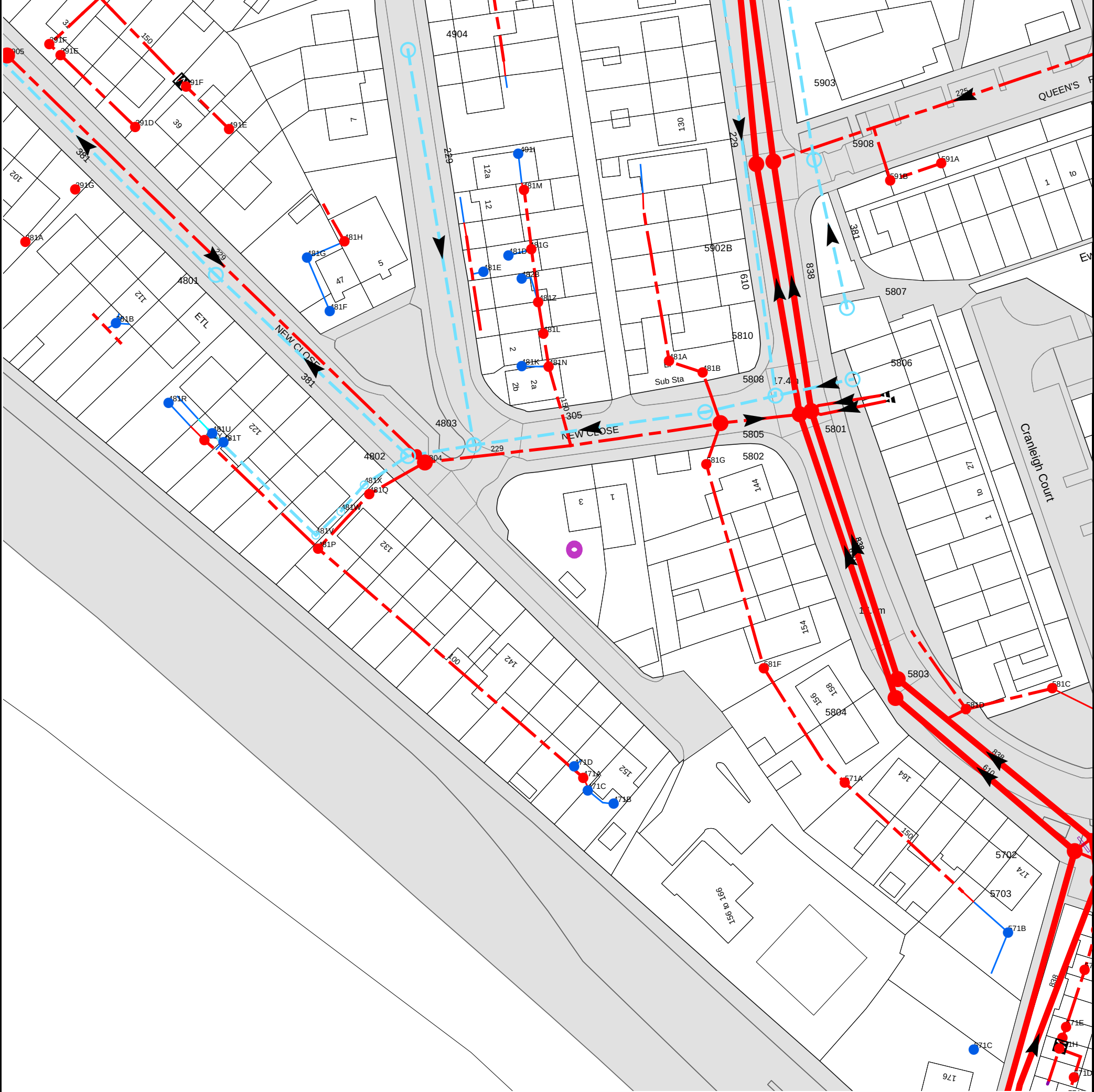
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or 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 200 m and the centre of the map is located at OS coordinates 526472,168838
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
571D	n/a	n/a
571C	n/a	n/a
571H	n/a	n/a
571E	n/a	n/a
571F	n/a	n/a
571B	n/a	n/a
571G	n/a	n/a
5703	18.08	12.53
5702	18.05	12.32
5701	18.1	12.48
571A	n/a	n/a
581D	n/a	n/a
5804	17.68	12.23
581C	n/a	n/a
5803	17.53	12.47
581F	n/a	n/a
5802	17.43	12.2
5801	17.38	12.41
5808	17.43	15.25
5806	17.72	15.28
5807	17.48	15.78
591B	n/a	n/a
5902B	17.24	12.1
591A	n/a	n/a
5903	17.27	12.32
5908	17.35	15.57
481R	n/a	n/a
481Y	n/a	n/a
481U	n/a	n/a
4801	16.67	14.68
481T	n/a	n/a
481G	n/a	n/a
481V	n/a	n/a
481P	n/a	n/a
481F	n/a	n/a
481W	n/a	n/a
481X	n/a	n/a
481Q	n/a	n/a
4802	17.06	15.02
4804	16.95	13.1
4803	16.88	14.75
481E	n/a	n/a
482B	n/a	n/a
481G	n/a	n/a
481L	n/a	n/a
481A	n/a	n/a
481B	n/a	n/a
5810	17.32	n/a
581G	n/a	n/a
5805	17.34	n/a
3905	16.27	13.76
381A	n/a	n/a
391F	n/a	n/a
391E	n/a	n/a
391G	n/a	n/a
391D	n/a	n/a
491F	n/a	n/a
491E	n/a	n/a
481H	n/a	n/a
4904	16.47	15.42
491I	n/a	n/a
481M	n/a	n/a
471B	n/a	n/a
471C	n/a	n/a
471A	n/a	n/a
471D	n/a	n/a
481N	n/a	n/a
481K	n/a	n/a
481Z	n/a	n/a
481D	n/a	n/a
381B	n/a	n/a
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.		



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

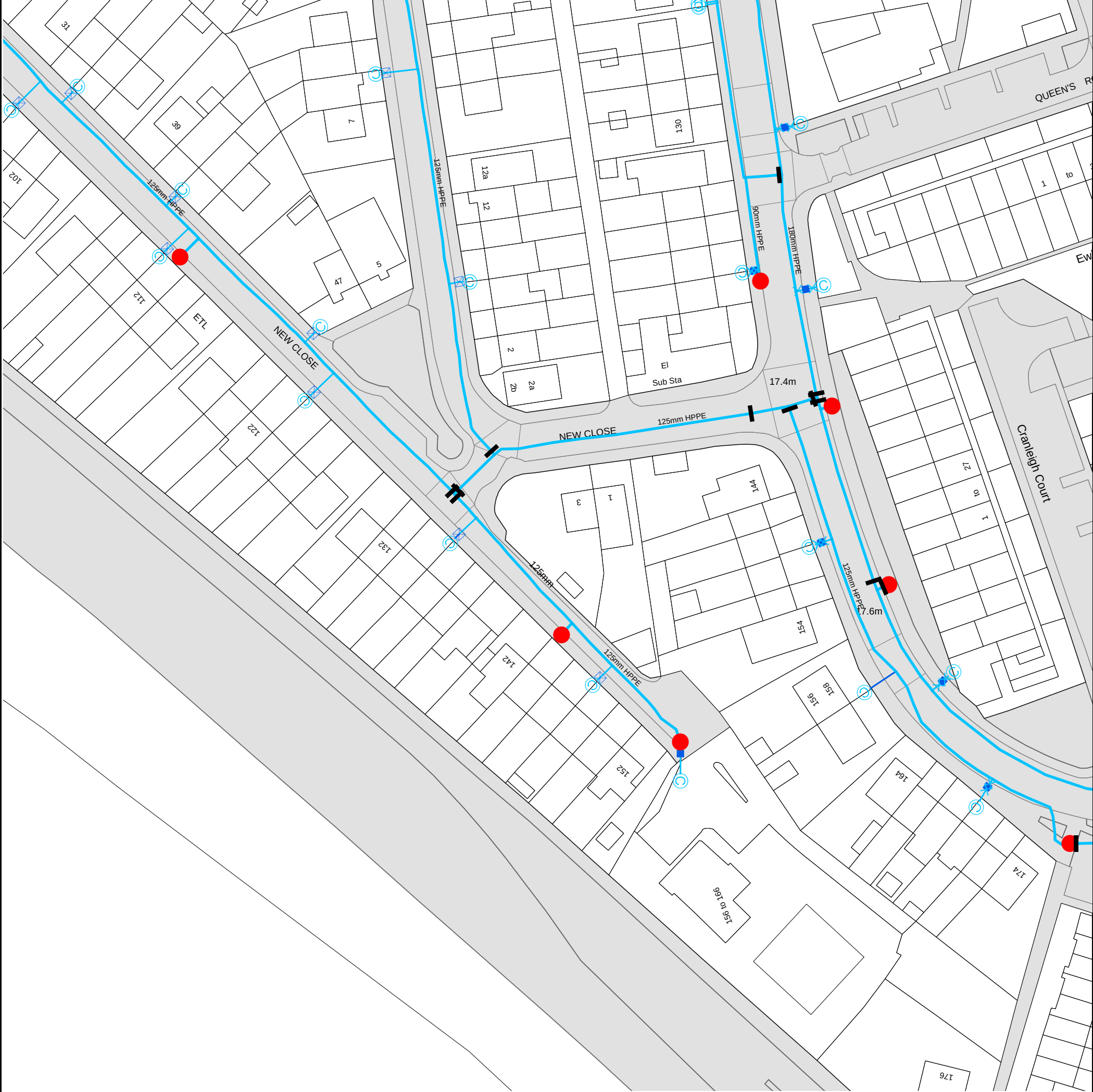
Ducts or Crossings

Ducts may contain high voltage cables. Please check with Thames Water.

	Casement
	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 200 m and the centre of the map is located at OS coordinates 526472, 168838.

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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Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

-  **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
-  **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.
-  **Supply Main:** A supply main indicates that the water main is used as a supply for a single property or group of properties.
-  **Fire Main:** Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
-  **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' 6")
600mm and bigger (24" plus)	1200mm (4')

Valves

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

Hydrants

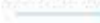
-  Single Hydrant

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.

Payment 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 Thames Water Utilities Ltd 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 within 14 days of the 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. 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'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water'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 still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

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)	20.000	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)	1.00	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)	20.000	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	0.840	30 year (l/s)	0.1
Analysis Speed	Normal	100 year (l/s)	0.2
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)	0.039	Betterment (%)	0
SAAR (mm)	615	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)	0.1
Growth Factor 1 year	0.85	Q 100 year (l/s)	0.2
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)	20.000	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)	1.00	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)	20.000	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	0.840	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)	0.005	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)	20.000	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)	1.00	Enforce best practice design rules	✓

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
RE01	0.007	1.00	17.250		34.652	29.243	0.500
S01	0.007	1.00	17.250	450	21.650	21.567	0.550
S02	0.007	1.00	17.250	450	-18.041	21.905	0.652
Tank	0.003	1.00	17.250		-24.333	49.175	1.100
Outfall			17.250		-68.137	49.239	1.160
Carpark	0.003	1.00	17.250		-24.363	72.907	0.450

Links

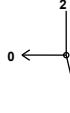
Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
2.000	RE01	S01	5.000	0.600	16.750	16.700	0.050	100.0	150	1.08	50.0
2.001	S01	S02	10.200	0.600	16.700	16.598	0.102	100.0	150	1.25	50.0
2.002	S02	Tank	5.000	0.600	16.598	16.450	0.148	33.8	150	1.30	50.0
1.000	Carpark	Tank	23.732	0.600	16.800	16.436	0.364	65.2	150	1.32	50.0
1.001	Tank	Outfall	6.000	0.600	16.150	16.090	0.060	100.0	225	1.39	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
2.000	1.005	17.8	1.3	0.350	0.400	0.007	0.0	27	0.583
2.001	1.005	17.8	2.5	0.400	0.502	0.014	0.0	38	0.715
2.002	1.737	30.7	3.8	0.502	0.650	0.021	0.0	35	1.184
1.000	1.247	22.0	0.5	0.300	0.664	0.003	0.0	15	0.494
1.001	1.307	52.0	4.8	0.875	0.935	0.027	0.0	46	0.824

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
RE01	34.652	29.243	17.250	0.500					
S01	21.650	21.567	17.250	0.550	450		0 2.000 16.750 150 1 2.000 16.700 150 0 2.001 16.700 150		

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S02	-18.041	21.905	17.250	0.652	450		1	2.001	16.598	150
							0	2.002	16.598	150
Tank	-24.333	49.175	17.250	1.100			1	2.002	16.450	150
							2	1.000	16.436	150
							0	1.001	16.150	225
Outfall	-68.137	49.239	17.250	1.160			1	1.001	16.090	225
Carpark	-24.363	72.907	17.250	0.450			0	1.000	16.800	150

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	240
FSR Region	England and Wales	Additional Storage (m³/ha)	0.0
M5-60 (mm)	20.000	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	0.840	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)	0.005	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		

Node Tank Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Downstream Link	1.001	Sump Available	✓
Replaces Downstream Link	x	Product Number	CTL-SHE-0035-7000-1500-7000
Invert Level (m)	16.150	Min Outlet Diameter (m)	0.075
Design Depth (m)	1.500	Min Node Diameter (mm)	1200
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)	16.150
Side Inf Coefficient (m/hr)	0.00000	Porosity	1.00	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	15.0	0.0	0.800	15.0	0.0	0.801	0.0	0.0

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE01	8	16.784	0.034	2.1	0.0000	0.0000	OK
15 minute summer	S01	8	16.749	0.049	4.0	0.0078	0.0000	OK
15 minute summer	S02	8	16.643	0.045	5.8	0.0071	0.0000	OK
120 minute summer	Tank	82	16.325	0.175	2.3	2.6242	0.0000	OK
120 minute summer	Outfall	76	16.105	0.015	0.4	0.0000	0.0000	OK
15 minute summer	Carpark	9	16.817	0.017	0.8	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	RE01	2.000	S01	2.0	0.492	0.110	0.0200	
15 minute summer	S01	2.001	S02	3.7	0.784	0.209	0.0483	
15 minute summer	S02	2.002	Tank	5.4	1.270	0.177	0.0214	
120 minute summer	Tank	1.001	Outfall	0.4	0.396	0.008	0.0064	4.3
15 minute summer	Carpark	1.000	Tank	0.6	0.549	0.028	0.0264	

Results for 2 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE01	8	16.790	0.040	2.8	0.0000	0.0000	OK
15 minute summer	S01	8	16.758	0.058	5.4	0.0092	0.0000	OK
15 minute summer	S02	8	16.651	0.053	7.7	0.0084	0.0000	OK
180 minute summer	Tank	120	16.378	0.228	2.2	3.4176	0.0000	SURCHARGED
30 minute summer	Outfall	49	16.105	0.015	0.4	0.0000	0.0000	OK
15 minute summer	Carpark	9	16.819	0.019	1.0	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	RE01	2.000	S01	2.6	0.526	0.147	0.0250	
15 minute summer	S01	2.001	S02	5.0	0.841	0.279	0.0601	
15 minute summer	S02	2.002	Tank	7.3	1.371	0.236	0.0265	
30 minute summer	Tank	1.001	Outfall	0.4	0.396	0.008	0.0064	3.3
15 minute summer	Carpark	1.000	Tank	0.8	0.587	0.034	0.0307	

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE01	8	16.807	0.057	5.2	0.0000	0.0000	OK
15 minute summer	S01	8	16.785	0.085	10.1	0.0135	0.0000	OK
15 minute summer	S02	8	16.674	0.076	14.6	0.0122	0.0000	OK
120 minute summer	Tank	108	16.631	0.481	5.3	7.2104	0.0000	SURCHARGED
15 minute summer	Outfall	103	16.105	0.015	0.4	0.0000	0.0000	OK
15 minute summer	Carpark	8	16.827	0.027	1.9	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	RE01	2.000	S01	4.9	0.600	0.277	0.0410	
15 minute summer	S01	2.001	S02	9.4	0.975	0.529	0.0982	
15 minute summer	S02	2.002	Tank	13.8	1.612	0.450	0.0429	
15 minute summer	Tank	1.001	Outfall	0.4	0.396	0.008	0.0064	4.7
15 minute summer	Carpark	1.000	Tank	1.5	0.717	0.068	0.0503	

Results for 30 year +35% CC Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE01	8	16.820	0.070	7.1	0.0000	0.0000	OK
15 minute summer	S01	8	16.804	0.104	13.7	0.0166	0.0000	OK
120 minute summer	S02	120	16.802	0.204	5.4	0.0324	0.0000	SURCHARGED
120 minute summer	Tank	120	16.802	0.652	6.9	9.7770	0.0000	SURCHARGED
120 minute summer	Outfall	122	16.105	0.015	0.5	0.0000	0.0000	OK
15 minute summer	Carpark	8	16.831	0.031	2.5	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	RE01	2.000	S01	6.7	0.627	0.376	0.0529	
15 minute summer	S01	2.001	S02	12.7	1.035	0.717	0.1254	
15 minute summer	S02	2.002	Tank	18.8	1.726	0.612	0.0544	
120 minute summer	Tank	1.001	Outfall	0.5	0.413	0.009	0.0070	8.7
15 minute summer	Carpark	1.000	Tank	2.0	0.780	0.093	0.1880	

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	RE01	8	16.818	0.068	6.8	0.0000	0.0000	OK
15 minute summer	S01	8	16.801	0.101	13.2	0.0161	0.0000	OK
120 minute summer	S02	122	16.789	0.191	5.4	0.0303	0.0000	SURCHARGED
120 minute summer	Tank	120	16.789	0.639	6.8	9.5782	0.0000	SURCHARGED
120 minute summer	Outfall	122	16.105	0.015	0.5	0.0000	0.0000	OK
15 minute summer	Carpark	8	16.831	0.031	2.4	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	RE01	2.000	S01	6.4	0.625	0.361	0.0511	
15 minute summer	S01	2.001	S02	12.3	1.029	0.690	0.1214	
15 minute summer	S02	2.002	Tank	18.1	1.713	0.589	0.0528	
120 minute summer	Tank	1.001	Outfall	0.5	0.412	0.009	0.0070	8.6
15 minute summer	Carpark	1.000	Tank	2.0	0.775	0.090	0.1711	

Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 99.33%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	RE01	180	17.215	0.465	1.9	0.0000	0.0000	FLOOD RISK
180 minute summer	S01	180	17.215	0.515	3.8	0.0818	0.0000	FLOOD RISK
180 minute summer	S02	180	17.215	0.617	5.7	0.0980	0.0000	FLOOD RISK
180 minute summer	Tank	180	17.215	1.065	6.8	12.0075	0.0000	FLOOD RISK
180 minute summer	Outfall	180	16.107	0.017	0.6	0.0000	0.0000	OK
180 minute summer	Carpark	180	17.215	0.415	0.8	0.0000	0.0000	FLOOD RISK

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	RE01	2.000	S01	8.7	0.625	0.490	0.0686	
15 minute summer	S01	2.001	S02	16.6	1.102	0.937	0.1579	
15 minute summer	S02	2.002	Tank	24.9	1.820	0.810	0.0742	
180 minute summer	Tank	1.001	Outfall	0.6	0.441	0.012	0.0081	11.8
15 minute summer	Carpark	1.000	Tank	2.8	0.856	0.129	0.2331	

Appendix D

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

- All dimensions are in millimetres and levels in m AOD unless stated otherwise.
- Do not scale. If in any doubt, consult Engineer.
- Read in conjunction with the architects and engineers schedule drawings.
- Check inverts and sizes of existing pipes prior to the commencement of any work. Report any discrepancies to the engineer and await instructions.
- 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.

KEY

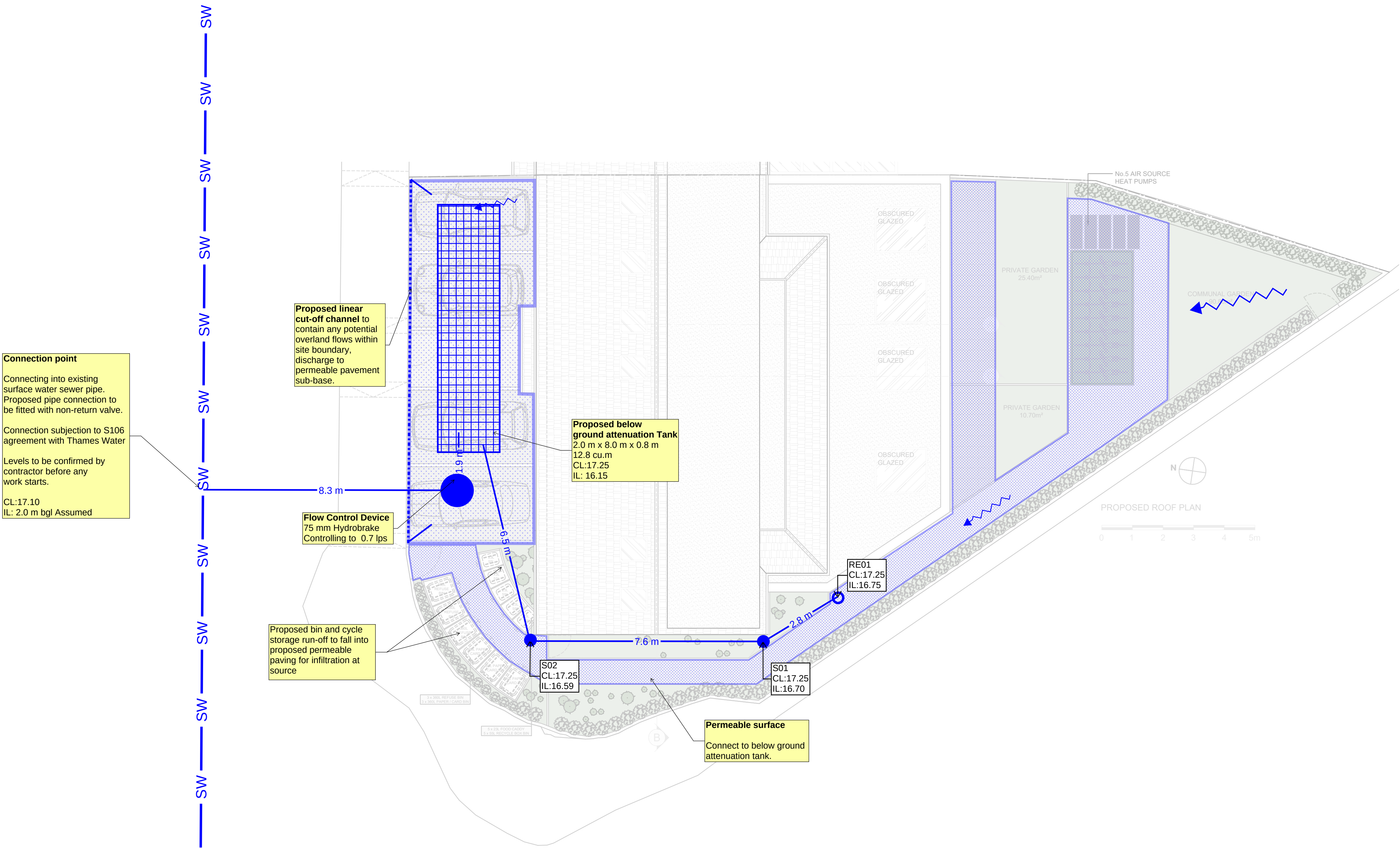
- Proposed Surface Water Sewer Pipe
- Exceedance Flows
- Permeable Surface as per architect's details Sub-base 350mm Type 3
- Linear Drainage Channel
- Silt Trap
- Existing Surface Water Sewer Pipe

Rev	Details	Date	By	Chd

Drawing Status: **PRELIMINARY**



Client:
3 New Close Colliers Wood SW19 2SX
Project:
Drawing:
Proposed Drainage Strategy



Connection point
Connecting into existing surface water sewer pipe. Proposed pipe connection to be fitted with non-return valve.
Connection subjection to S106 agreement with Thames Water
Levels to be confirmed by contractor before any work starts.
CL:17.10
IL: 2.0 m bgl Assumed

Proposed linear cut-off channel
to contain any potential overland flows within site boundary, discharge to permeable pavement sub-base.

Proposed below ground attenuation Tank
2.0 m x 8.0 m x 0.8 m
12.8 cu.m
CL:17.25
IL: 16.15

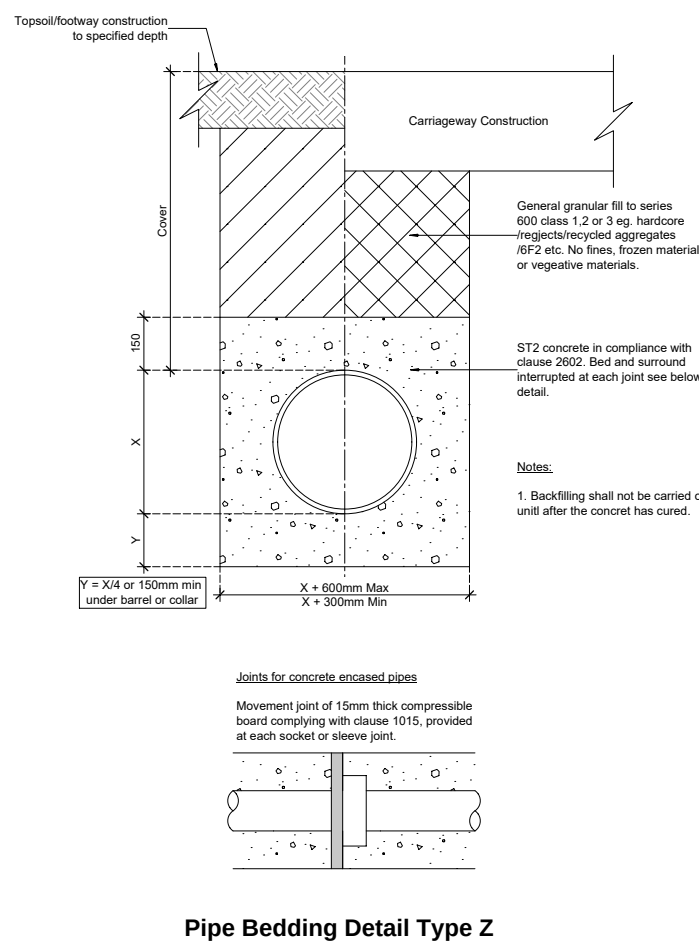
Flow Control Device
75 mm Hydrobrake
Controlling to 0.7 lps

Proposed bin and cycle storage run-off to fall into proposed permeable paving for infiltration at source

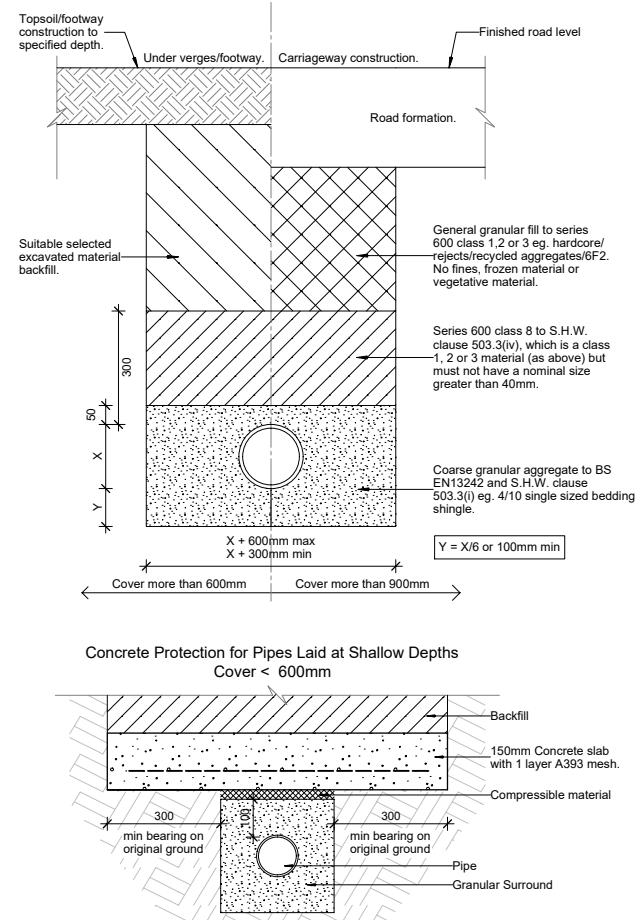
Permeable surface
Connect to below ground attenuation tank.

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			

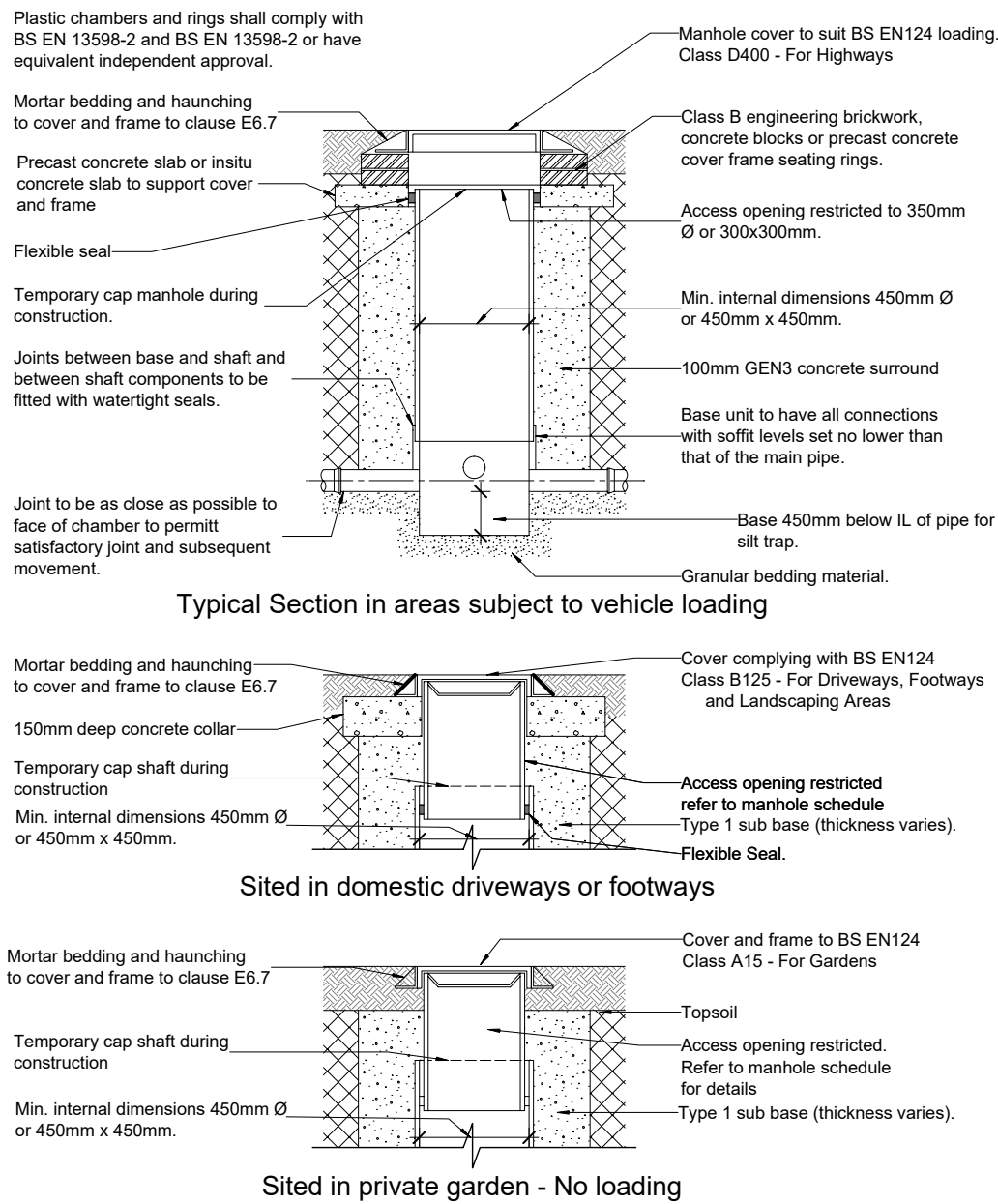
GENERAL NOTES



Pipe Bedding Detail Type Z

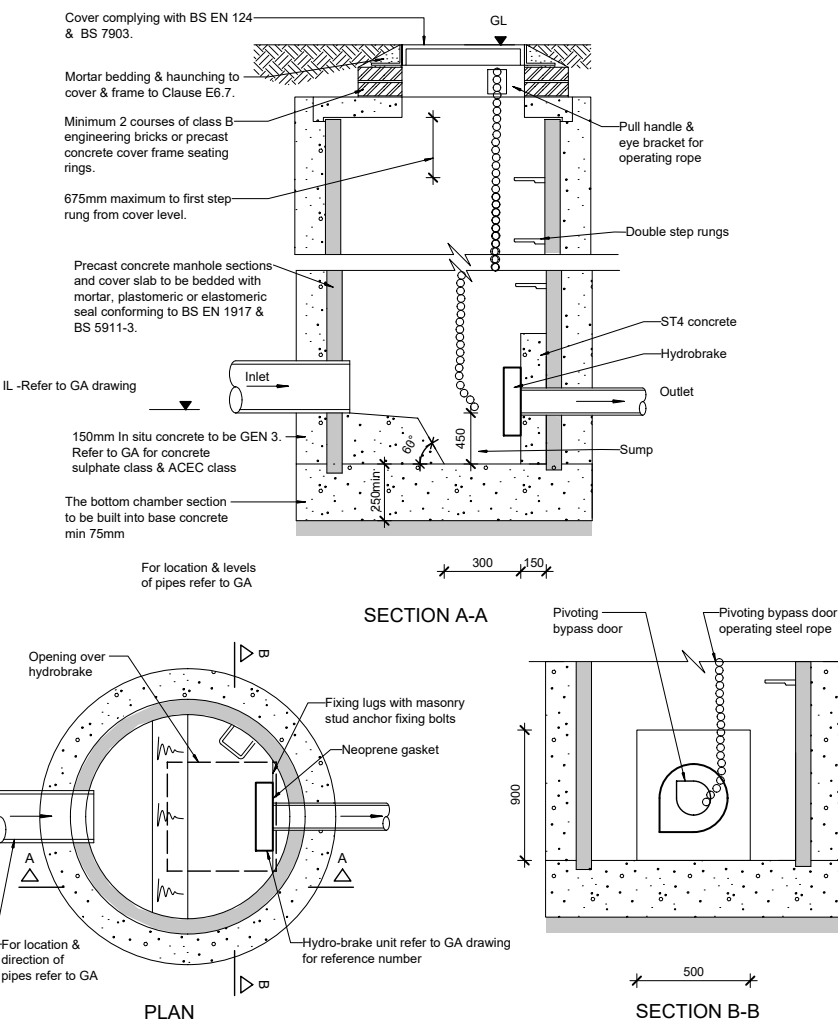


Pipe Bedding Detail Type S

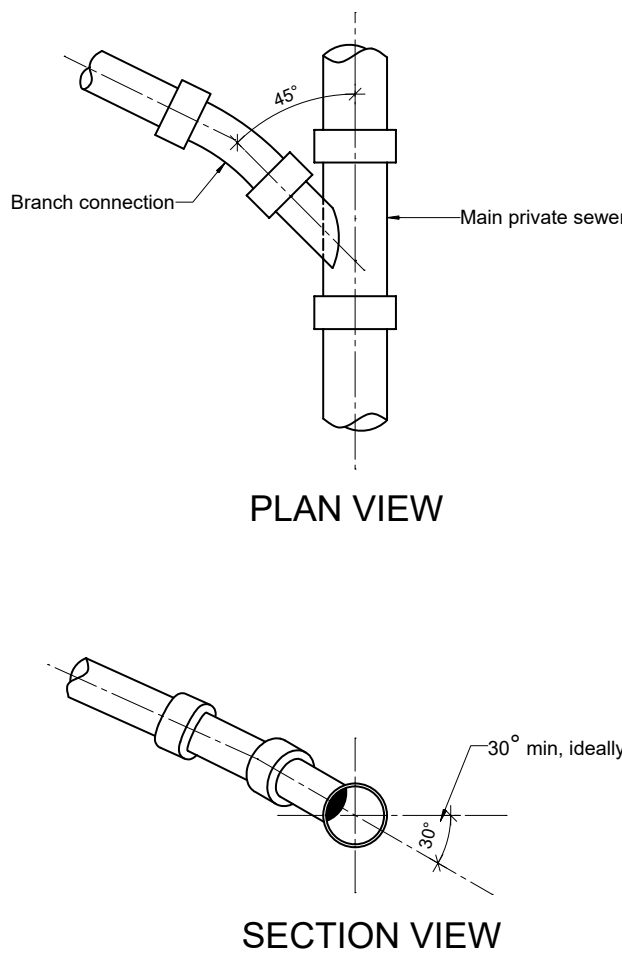
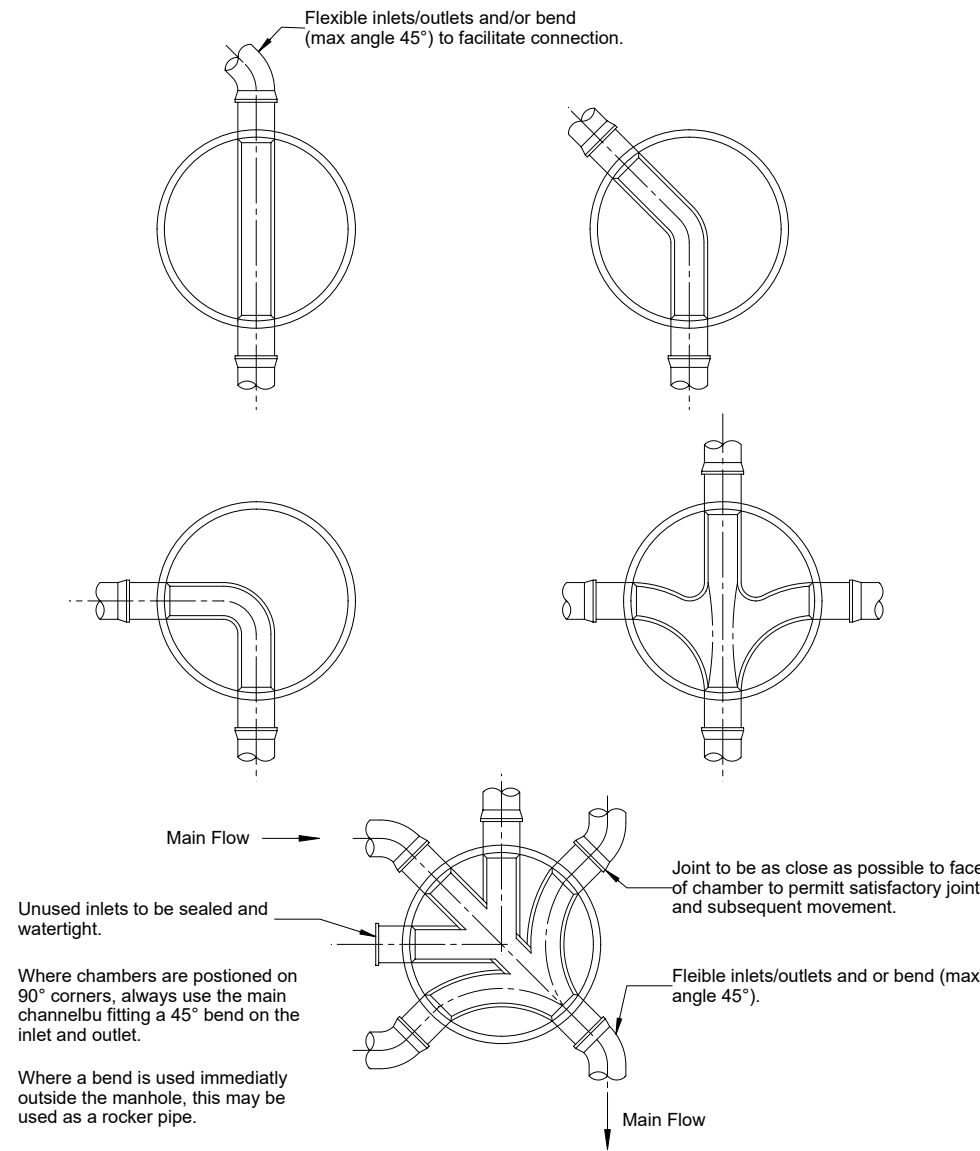


Notes:
1. Refer to drawing 8193 for base layouts.

Silt Trap Plastic

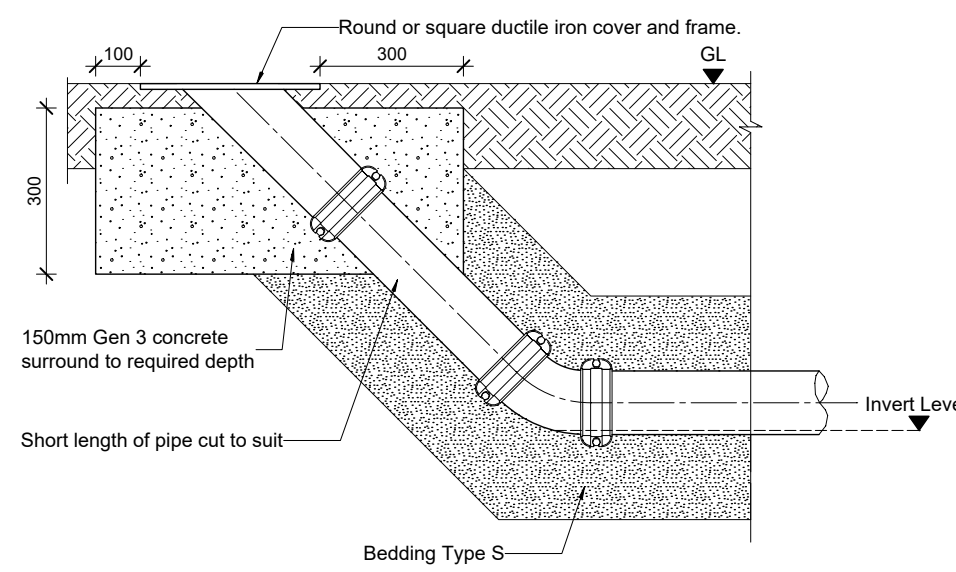


Chamber Type 3 Base Layouts

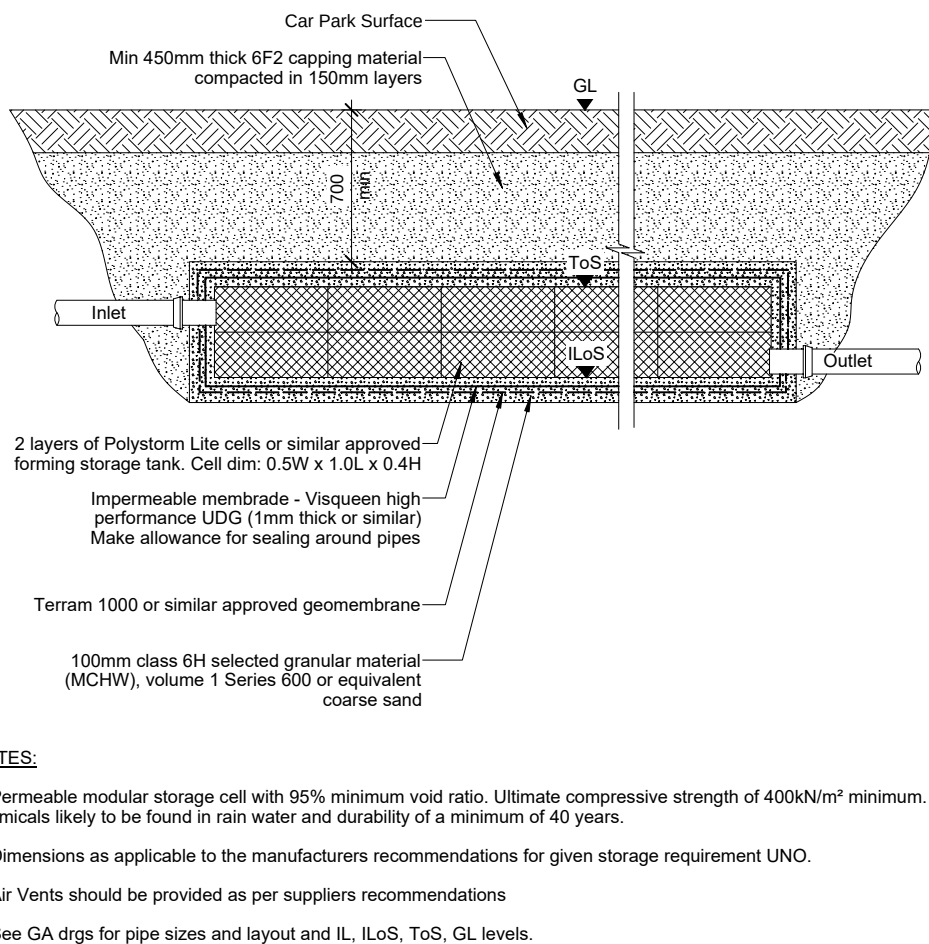


NOTES:
1. The vertical angle between the connecting pipe and the horizontal should be greater than 0° and not more than 60°.
2. Where the connection is being made to a sewer with a nominal internal diameter of 300 mm or less, connections should be made using 45° angle, or 90° angle, curved square junctions.
3. Connections made with junction fittings should be made by cutting the existing pipe, inserting the junction fitting and joining with flexible repair couplings or slip couplers.

Lateral Connection to private sewer

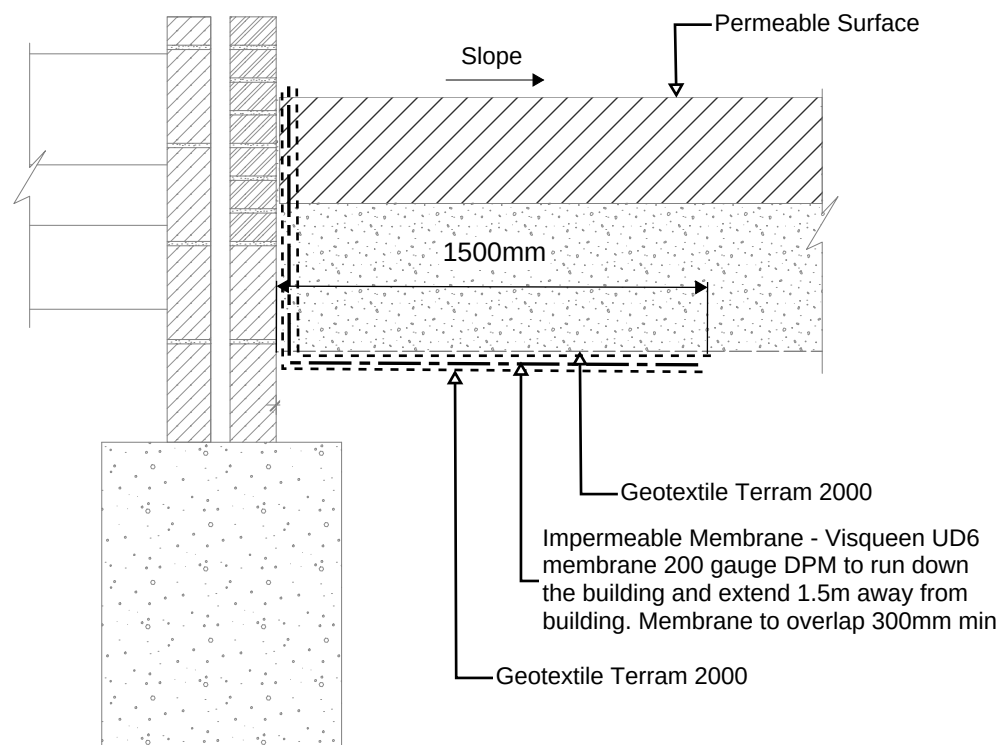


External Rodding Eye Detail

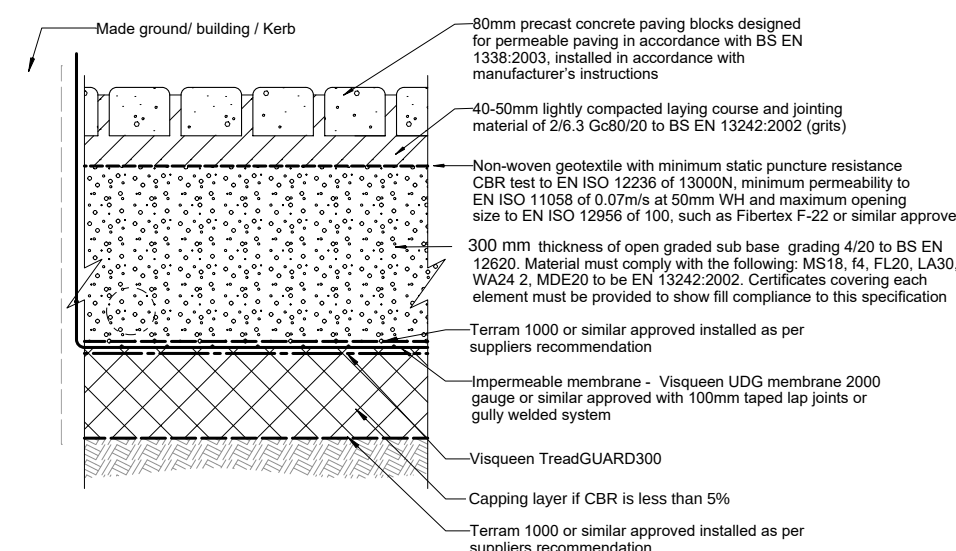


NOTES:
1. Permeable modular storage cell with 95% minimum void ratio. Ultimate compressive strength of 400kN/m² minimum. Resistant to chemicals likely to be found in rain water and durability of a minimum of 40 years.
2. Dimensions as applicable to the manufacturers recommendations for given storage requirement UNQ.
3. Air Vents should be provided as per suppliers recommendations
4. See GA drgs for pipe sizes and layout and IL, ILs, ToS, GL levels.

Cellular Attenuation System - Landscape Area



Permeable Surface Against Building



Permeable Paving - Attenuation

Rev	Details	Date	By	Chd
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Drawing Status:
PRELIMINARY



Client:
Project:
3 New Close Colliers Wood SW19 2SX
Drawing:
Standard Details