G Sustainable Drainage Strategy

elliottwood

12 Pilgrim's Lane, Camden, NW3 1SN

Sustainable Drainage Strategy

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		Remarks:	Issued for Planning				
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Date:	29/06/2022	Signature		Signature		Signature	

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One

Executive Summary

Elliott Wood Partnership Ltd have been appointed to produce a Sustainable Drainage Strategy in support of the proposed redevelopment of the site at 12 Pilgrim's Lane, NW3 1SN in the London Borough of Camden.

The national grid reference for the site is 526850E: 185679N

The existing site is located within Flood Zone 1 in an area designated as 'critical drainage area'. As such, a site-specific Flood Risk Assessment is required for the development site, see report 2210419-EWP-ZZ-XX-RP-C-0001.

Thames Water sewer records show that the offsite sewer network is a combined water network. Records show a 940x635mm combined water sewer within Pilgrim's Lane. A CCTV drainage survey undertaken on site identified that the development drains to Pilgrim's Lane via a 100mm outfall pipe.

Surface water runoff from the proposed development will be managed through the use of permeable paving and below ground geo-cellular attenuation, with the peak discharge rate restricted to 2.0 l/s.

All foul water drainage from above ground floor will offset at high-level within the building, as designed by the M&E engineer, and drop to the below ground drainage network. All ground floor drainage will be connected to this network. To protect the building from flooding due to sewer surcharge all foul drainage below ground floor level will be positively pumped, discharging to the high-level suspended gravity network.

It is proposed that foul and surface water will outfall from the site via the existing 150mm diameter combined outfall to Pilgrim's Lane.

Two

Introduction

Elliott Wood Partnership Ltd have been appointed to provide a Sustainable Drainage Strategy to support the planning application for the proposed redevelopment of 12 Pilgrim's Lane.

The purpose of this report is to explain the approach taken with regards to the below ground drainage strategy. It evaluates the selection of SuDS devices and highlights how the drainage disposal hierarchy has been followed.

This report has been prepared in accordance with the GOV.UK *Sustainable Drainage Systems: Non-statutory Technical Standards, London Local Plan 2021, Camden Local Plan 2017.*

Three

Existing Site Conditions

Site Location

The site is located in Hampstead Town within the London Borough of Camden. The site is bounded by Pilgrim's Lane to the west and private residential developments to the north, east and south. The closest stations to the site are Hampstead Underground Station, which is approximately 575m to the west and Hampstead Heath Overground Station which is located 675m to the east. The site is located within the Hampstead Conservation Area.

The site centred OS grid reference is 526850E: 185679N and the total site area is approximately 785m^2 (0.0785ha). 330m^2 of this is impermeable area.

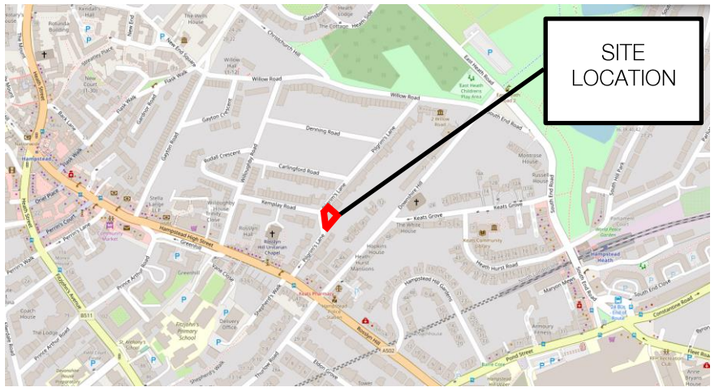

Figure 1: Site Location

Existing Development

The building is a two-storey high semi-detached residential building, oriented south to north. The site includes a garden east, west and south of the building.

Figure 2: Existing Site Plan

Topography

A Measured Building Survey was undertaken by target surveys in September 2021.

External levels show that the site is largely flat but with differing topographical features on the west and east sides of the building. The western side falls to the southeast towards the building, with levels starting at 99.9 mAOD falling to 99.7 mAOD. The eastern side has a fall to the southeast away from the building, with levels starting at approximately 97.55AOD and falling to approximately 97.25 mAOD at the boundary of the garden.

The measured building survey can be found in **Appendix A.**

Four

Underlying Geology

The underlying geology of the area is recorded by the British Geological Survey (BGS) maps. These indicate that the ground conditions on the site should consist of bedrock deposits of claygate member and London clay member, with no superficial deposits recorded. In the absence of a site-specific investigation, nearby borehole data indicates that similar ground conditions to those shown in **Table 1** can be reasonably be expected on site.

Table 1 Anticipated Ground Conditions

Soil Type	Depth BGL (m)
Made Ground	0-2
London Clay	2-110
Woolwich and Reading Beds	110-126
Thanet Sand	126-135
Upper Chalk	135-180

Five

Existing Drainage

Public sewer records have been obtained from Thames Water. An extract of the asset plan is shown in **Figure 3** below.

The records show that the area is served by a network of combined water sewers. The records show a 940x635mm diameter combined sewer located under Pilgrim's Lane headed northwards. Another 305mm diameter combined sewer is located under Pilgrim's Lane that travels south.

The development boundary is over 6.0m away from the Thames Water sewer on plan, and as such there is no need for a sewer build near or build over agreement. Confirmation of this has been included in Appendix B

Refer to **Appendix B** for Thames Water asset records and correspondence.

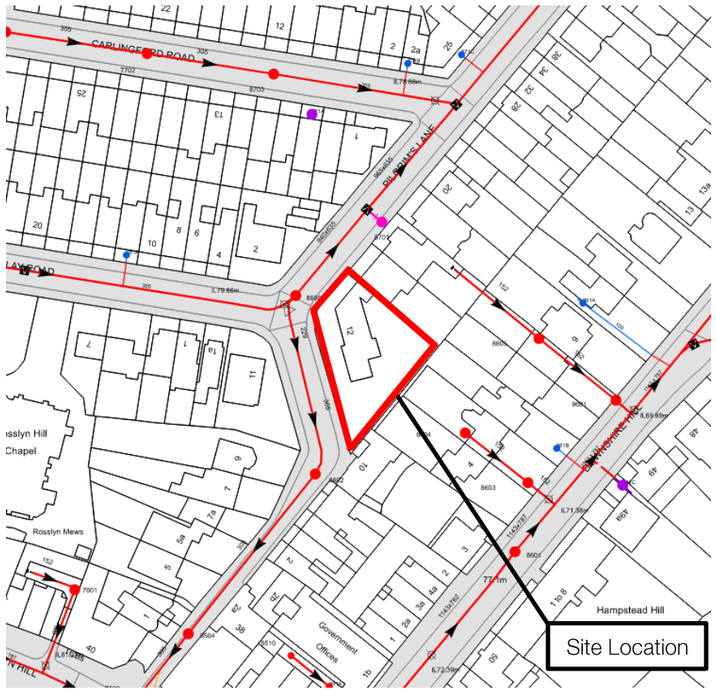

Figure 3: Extract from Thames Water Sewer Records

A CCTV survey of the existing private drainage network was undertaken by G.O. Drainage in June 2022. The survey shows the site to be served by a combined water network. This network discharges into the combined water sewer beneath Pilgrim's Lane, near Thames Water manhole 8606.

The CCTV Survey is included in **Appendix C.**

Existing Surface Water Run-off Rate

The surface water runoff rates for the existing site have been calculated using the Modified Rational Method equation below (based on CIRIA C697) and are shown in Table 1:

$$Q = 2.78C.i.A$$

Where Q = Existing peak runoff (l/s), C = non-dimensional runoff coefficient=1.0, i = Rainfall intensity (see table 1) and A = total catchment area being drained=0.0330ha

Table 2 Existing Surface Water Run-off rates

Return Period	Rainfall Intensity (mm/hr)	Existing run-off (l/s)
1yr	31.74	2.8
30yr	79.87	7.1
100yr	101.88	9.1

Note that the rainfall intensities used in the above calculations have been based on average rainfall intensities for a 15-minute storm using the Wallingford Procedure. The calculations will be included in Appendix D.

Six

Proposed Development

It is proposed that the site will undergo an internal and external refurbishment with a new lower ground floor being added to the building to provide approximately 205m^2 additional floor area. This area will contain a pool, plant room, gym and new bedroom.

Figure 4: North Elevation of the Proposed Development

Seven

Proposed Drainage

The surface water drainage system has been designed in accordance with the requirements of Planning Practice Guidance (PPG) and the London Borough of Camden Plan. The following drainage hierarchy has therefore been considered:

1) Rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2) Rainwater infiltration to ground at or close to source.
3) Rainwater attenuation in green infrastructure features for gradual release (for example blue/green roofs, rain gardens).
4) Rainwater discharge direct to a watercourse (unless not appropriate)
5) Controlled rainwater discharge to a surface water sewer or drain.
6) Controlled rainwater discharge to a combined sewer.

The Camden Local Plan and London Plan guidance documents state that developments should aim to achieve greenfield runoff rates wherever possible. The greenfield runoff for the site has been calculated using HR Wallingford online tool and are shown in Table 3. Refer to Appendix E for calculations.

Table 3 Greenfield Runoff Rates (from HRWallingford online tool)

Return Period	Greenfield Runoff Rate (l/s)
1 in 1 year	0.38
1 in 30 years	1.02
1 in 100 years	1.41

Appraising the use of Rainwater Harvesting

It is not proposed to implement rainwater harvesting and instead low flow appliances will be installed to reduce the building's demand on potable water.

Appraising the use of Infiltration Techniques

In order to comply with building regulations, infiltration techniques such as soakaways must not be installed within 5m of a building or highway. Due to the nature of the building taking up so much of the site there is not sufficient space for infiltration techniques to be practicable.

The underlying geology also comprises clay and silty gravels, with made ground above which does not lend itself to effective infiltration techniques.

Based on the above, infiltration has not been deemed feasible for this site.

Appraising the use of Open Water Features

There is little external area on site available and space for open water features is limited. Open water features are deemed not to be feasible due to the proposed usage of the site.

Appraising the use of above and below ground attenuation

A blue roof system restricts surface water at the rainwater outlets and provides temporary attenuation at roof level through the use of a layer of geocellular crate. As the proposed development has a pitched roof, there is insufficient flat space throughout to incorporate a blue roof for water attenuation.

There is an opportunity to locate a below ground geocellular attenuation tank beneath the parking area in the northwest of the site. The area available for the tank is limited by tree root protection areas and the building foundations.

Appraising the use of permeable surfaces

The proposed development includes approximately 70m^2 of open, external hardstanding areas, comprising parking and the building entrance. Permeable paving with a lined porous sub-base will be utilised in this area to provide attenuation storage for run-off from the paved areas. The permeable paving will help control surface water runoff at source, providing attenuation and filtration of runoff in these areas.

The evaluation of SuDS is demonstrated in Table 4 below.

Table 4 Evaluation of SuDS techniques

SuDS Technique	Y/N	Comment
Rainwater reuse	N	Rainwater reuse is not proposed for the development, low flow appliances to be installed.
Open Water features	N	The confined nature of the development makes open water features unfeasible.
Infiltration devices (i.e. Soakaways)	N	Soakaways are not deemed feasible for this site due to restricted space on site.The underlying ground conditions are also not conducive to infiltration
Blue Roofs	N	Blue roofs are not proposed for the site as there is insufficient flat roof space.
Green Roofs	N	A green roof is not proposed for this development.
Permeable Surfaces	Y	The proposed development has sufficient external hardstanding area to the front of the building to introduce permeable surfaces.
Tanked systems	Y	A buried tank will help achieve suitable water attenuation for the development.

The development will use a mixture of permeable surfacing and a below ground storage tank with vortex flow control to provide sufficient attenuation to achieve the peak surface water discharge rate of 2.0 l/s for all storms up

to and including the 1 in 100 year return + 40% climate change allowance. While the greenfield runoff rates are lower for the 1 in 1, 1 in 30 and 1 in 100-year return periods, the area available for attenuation is limited by root protection areas and building foundations, and the increased restriction of the flow control devices would increase the risk of blockage and subsequent flooding. The tank has not been located beneath the lower ground floor slab to avoid introducing a pump into the below ground surface water network and facilitates the retention of the existing outfall manhole. The permeable surfacing with porous subbase adheres to the CIRIA guidelines, providing improvements water quality via filtration through the gravels and permeable materials while also increasing the time of entry into the accepting sewer.

In order to achieve the proposed discharge rates a volume of approximately 11.5 m^3 of attenuation is to be provided.

Refer to **Appendix F** for Microdrainage Source Control results

The post-development runoff improvement against the existing runoff has been provided in **Table 5.**

Table 5 Post Development Runoff Improvement

Return Period	Existing Runoff Rate (l/s)	Proposed Runoff Rate (l/s)	Percentage Betterment
1 in 1 year	2.8	1.8	35.7
1 in 30 years	7.1	2.0	71.8
1 in 100 years	9.1	2.0	78.0
1 in 100 years + 40% Climate Change	>9.1	2.0	>78.0

As can be seen in the table above, although it is not possible to achieve greenfield runoff rates a significant betterment can be achieved over the existing runoff rates. The proposed SuDS strategy reduces surface water runoff by 78% in the 1 in 100-year return event.

Refer to **Appendix G** for the London Borough of Camden SuDS proforma.

Refer to **Appendix H** for the proposed below ground drainage layout.

Proposed Foul Water Strategy

All foul water drainage from above ground floor will offset at high-level within the building, as designed by the M&E engineer, and drop to the below ground drainage network. All ground floor drainage will be connected to this network.

To protect the building from flooding due to sewer surcharge all foul drainage below ground floor level will be positively pumped, discharging to the high-level suspended gravity network. Pumping stations are to include dual vortex pumps (duty and standby), non-return valves located in an accessible location to protect against public sewer surcharge, alarms, and telemetry.

It is proposed that foul water will outfall from the site via the existing 150mm diameter combined outfall to Pilgrim's Lane. A Pre-planning enquiry has been submitted to Thames Water to confirm the capacity of the downstream sewer network. No issues are foreseen as there is no change in use.

Eight

Maintenance Requirements

All SuDS will be maintained by the building management company for the lifetime of the development in accordance with the SuDS Manual as summarised below. Maintenance requirements for the blue roof will be supplied by the specialist manufacturer.

Permeable Paving

Regular inspection and maintenance is important for the effective operation of pervious pavements. Maintenance responsibility for a pervious pavement and its surrounding area should be placed with an appropriate responsible organisation. The facility should be inspected regularly, preferably during and after heavy rainfall to check effective operation and to identify any areas of ponding.

Pervious surfaces need to be regularly cleaned of silt and other sediments to preserve their infiltration capability. Experience in the UK is limited, but advice issued with permeable precast concrete paving has suggested a minimum of three surface sweepings per year. Manufacturers' recommendations should always be followed.

A brush and suction cleaner, which can be a lorry-mounted device or a smaller precinct sweeper, should be used and the sweeping regime should be as follows:

- End of winter (April) – to collect winter debris.
- Mid-summer (July/August) – to collect dust, flower and grass-type deposits.
- After autumn leaf fall (November).

Care should be taken in adjusting vacuuming equipment to avoid removal of jointing material. Any lost material should be replaced.

Operation and maintenance requirements for permeable paving are described below.

Table 6 Permeable Paving Maintenance Requirements

Maintenance Schedule	Required Action	Frequency
Regular Maintenance	Brushing and vacuuming.	Three times/year at end of winter, mid-summer, after autumn leaf fall, or as required based on site-specific observations of clogging or manufacturers' recommendations.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weed.	As required.
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.	As required.
	Rehabilitation of surface and upper sub-structure.	As required (if infiltration performance is reduced as a result of 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.	3-monthly, 48 h after large storms.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

Geocellular / Modular Systems

Regular inspection and maintenance is required to ensure the effective long-term operation of below ground modular storage systems. Maintenance responsibility for systems should be placed with a responsible organization. Maintenance requirements for modular systems are described in the table below. Maintenance plans and schedules should be developed during the design phase. Specific maintenance needs of the system should be monitored, and maintenance schedules adjusted to suit requirements.

Table 7 Geocellular/Modular Systems Maintenance Requirements

Maintenance Schedule	Required Actions	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Where rainfall infiltrates into blocks from above, check surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary.	Monthly (and after large storms)
	Remove sediment from pre-treatment structures	Annually, or as required
Remedial actions	Repair/rehabilitation of 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 and after large storms

Gullies / Linear channels

Inspection and removal of debris from silt trap once a year; preferably after leaf fall in the autumn.

Drainage pipes, manholes and silt traps

Inspect manholes & silt traps for build-up of silt and general debris once a year; preferably after leaf fall in the autumn. If silt/debris is building up, then clean with jetting lorry / gully sucker and inspect pipe – repeat cleaning if required. If the pipes to be jetted are plastic then a high flow, low pressure setting should be used so that the pipes are not damaged.

Unusual / unresolved problems

If the drainage system is still holding water following cleaning with a jetter, or the jetting of the system removes excessive amounts of debris this may indicate greater issues within the system. A CCTV survey is likely to be required and further advice should be sought from a drainage engineer.

NOTE: Manhole covers can be heavy and suitable lifting equipment / procedures should be used. Where possible, personnel should not enter manholes to carry out maintenance.

Nine

Conclusion

In summary, following the advice and guidance provided by the London Borough of Camden, a SuDS strategy has been produced for the planning application associated with 12 Pilgrim's Lane, Camden.

The SuDS Hierarchy has been followed in order to employ the most suitable and practicable SuDS techniques to improve surface water run off management within the site. Areas of permeable paving have been proposed, which will have a positive impact on water quality and contribute to the attenuation strategy for the site. A below ground geocellular tank is has also been proposed to attenuate surface water from the roof.

The proposed development will restrict surface water run off to the public sewer to a peak discharge of 2l/s for the red line boundary. This provides a betterment on existing of over 78% for the 1 in 100-year event + 40% climate change event.

It is proposed that foul and surface water will outfall from the site via the existing 150mm diameter combined outfall to Pilgrim's Lane.

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Sub-Appendices

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A Sub-Appendix
Topographic Survey

Omitted to avoid duplication

Sub-Appendix

B Thames Water Asset Records and Correspondence

Asset location search

Property Searches

Elliott Wood Partnership
55 Whitfield Street
LONDON
W1T 4AH

Search address supplied 12
Pilgrims Lane
London
NW3 1SN

Your reference 12 Pilgrim's Lane

Our reference ALS/ALS Standard/2022_4634370

Search date 28 April 2022

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: 12, Pilgrims Lane, London, NW3 1SN

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 searchprovides 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

Asset location search

Thames Water Property Searches

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

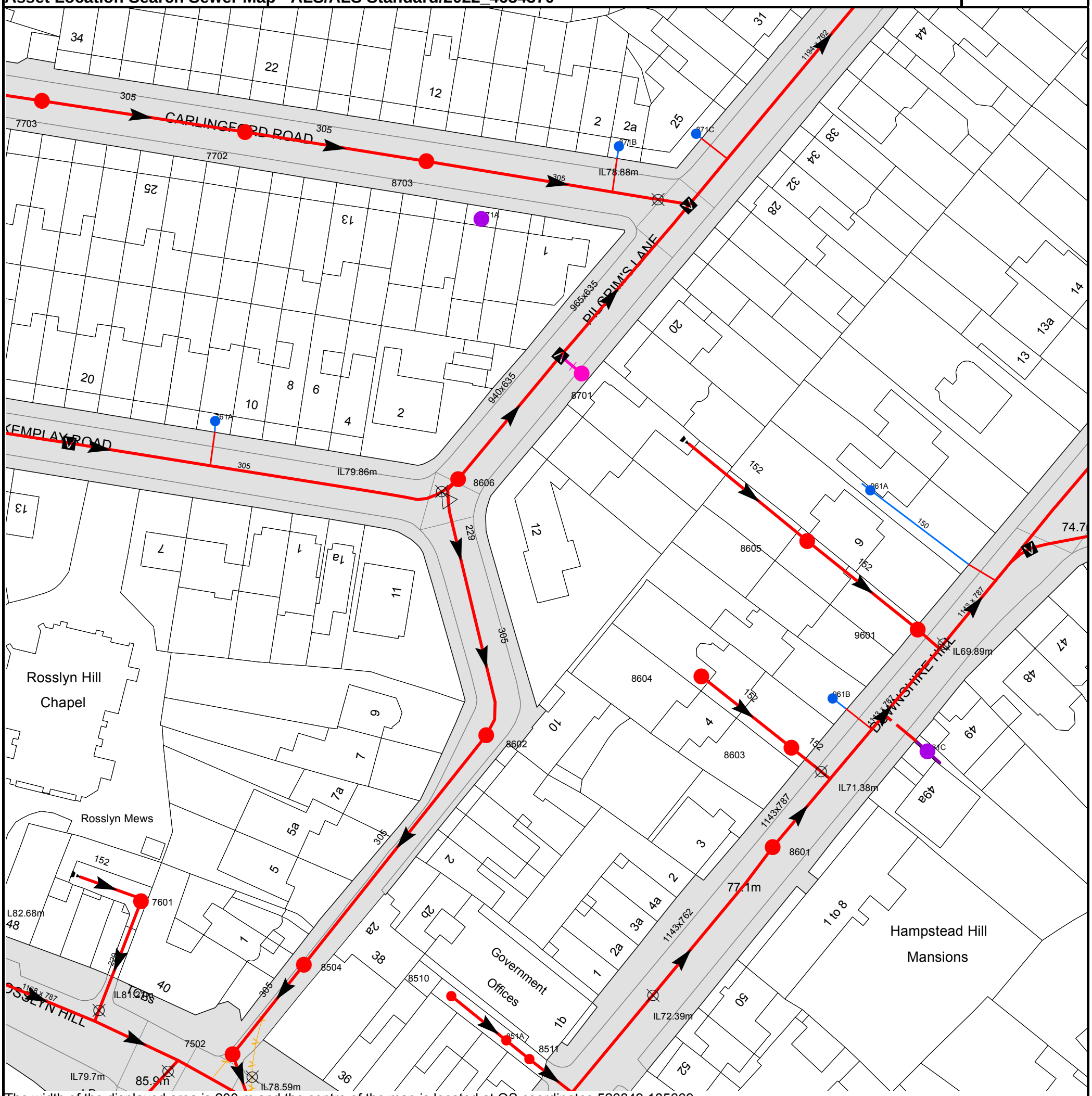
Clean Water queries

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

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4634370



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526849,185669

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

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
8602	81.66	79.62
851A	n/a	n/a
8511	n/a	n/a
8701	n/a	n/a
871B	n/a	n/a
871C	n/a	n/a
8604	76.28	75.87
8601	76.83	71.48
8603	76.27	74.59
8605	77.22	75.79
961B	n/a	n/a
961A	n/a	n/a
9601	75.48	73.59
961C	n/a	n/a
7502	85.03	78.75
8510	n/a	n/a
8504	83.95	79.05
7601	87.09	86.02
8606	83.06	79.91
761A	n/a	n/a
871A	n/a	n/a
8703	85.06	81.88
7702	86.83	83.6
7703	89.01	85.67

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

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

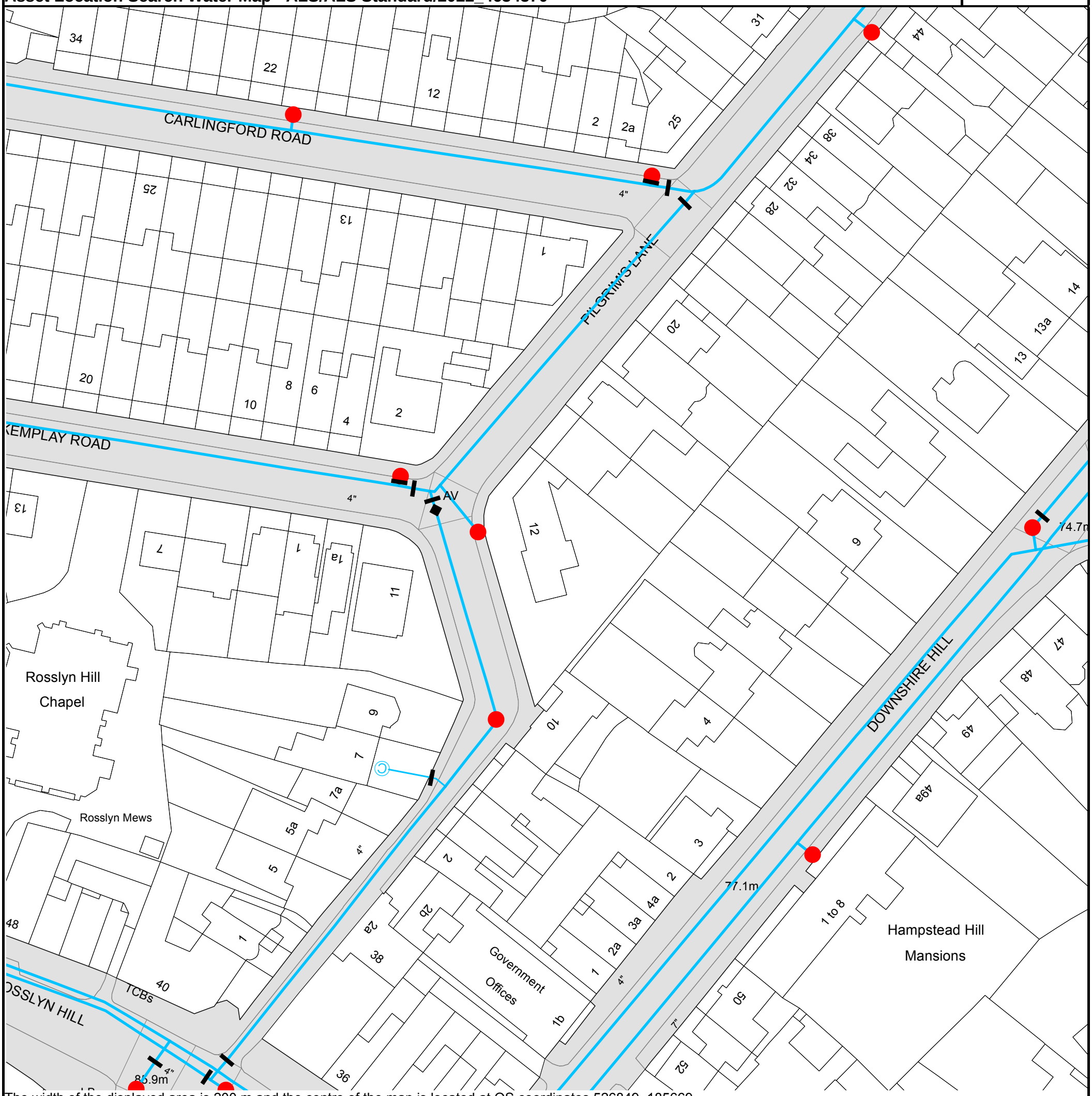
Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

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.
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.

Asset Location Search Water Map - ALS/ALS Standard/2022_4634370



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526849, 185669.

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 - 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' 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: Indiates 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.

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 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at 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 not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 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**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS	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	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

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

55 Whitfield Street
London W1T 4AH
020 7499 5888 | DDI: 020 3982 7926
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Discover our new co-working
space for the built environment
at The Building Society

TIME TO DO MORE
Let's not go back to 'normal'. It's time for us all to do more to engineer a better, healthier society. Watch our video here on giving back to the industry and join the discussion #EngineeringaBetterSociety

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From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 28 June 2022 09:59
To: Keri Trimmer <k.trimmer@elliottwood.co.uk>
Subject: 12 Pilgrims Lane NW3 1SN

You don't need to apply for a build over agreement

Dear Keri Trimmer

Thank you for your email dated 21st June 2022, regarding **12 Pilgrims Lane, London, NW3 1SN**. We've reviewed your drawing and are satisfied that no further action is required, as the proposed work won't be within three metres of a public sewer or one metre of a lateral drain.

This means you can go ahead with the work, without the need to enter into an agreement with us.

However, please note that if you find a shared drainage pipe within three metres of your proposed building once you've started work, you need to tell us immediately so that we can review any new information.

If you've any further questions, please contact our helpdesk on 0800 009 3921, selecting Option 1, or email us at developer.services@thameswater.co.uk.

Regards

Karla Denton
Pre App Build Over Team, (Previously LA Team)
Part H4 Consultations, Buildovers, Developer Services Wastewater
Clearwater Court, Vastern Road, Reading, RG1 8DB
Helpdesk 0800 009 3921, **email** developer.services@thameswater.co.uk
Apply to build within 3m or connect to a public sewer online - www.thameswater.co.uk/buildover

Original Text

From: Keri Trimmer <k.trimmer@elliottwood.co.uk>

To: BUILDOVERS@THAMESWATER.CO.UK

CC: Rishi Bodhani <Rishi.Bodhani@stature.london>; <alex@alex2.com>;DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>

Sent: 21.06.22 16:37:55

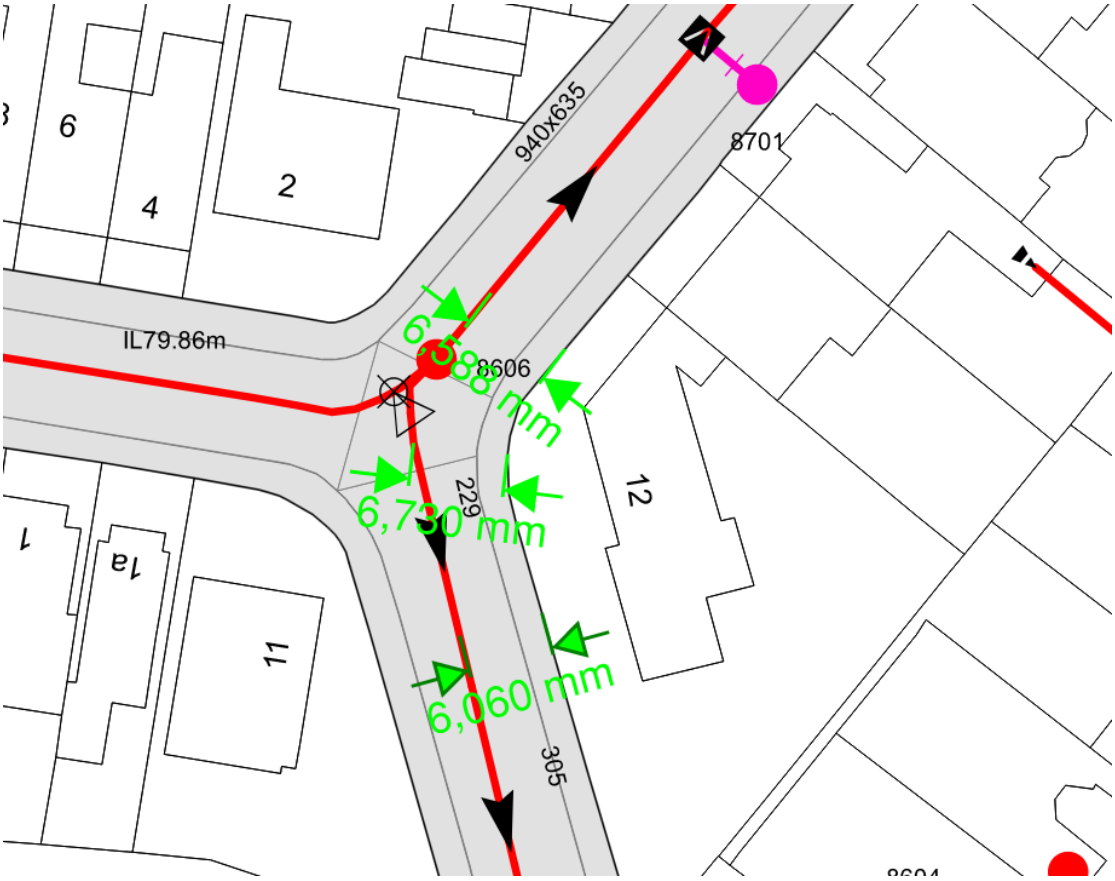
Subject: TW Build-Over: 12 PILGRIMS LANE LONDON NW3 1SN

Dear Sir / Madam,

We are the civil and structural engineers working on a development at the above address and have recently received the below email from the Thames Water build-over team.

We would like to confirm that the combined sewers beneath Pilgrims Lane are over 6m away from the development boundary, therefore a build-near or build-over application should not be required. We have also had a CCTV drainage survey undertaken which shows that all drainage on site is private, with no third-party sewers passing through the site footprint, the CCTV survey report is attached FYI. We will be reviewing the drainage strategy for the site in due course and will submit any relevant S106 applications during detailed design.

In the interim, could you please confirm that we do not need a sewer build-near or build-over agreement as part of any works on site.



Kind Regards

Keri Trimmer
MEng CEng MICE
Associate

elliottwood

Engineering a better society

55 Whitfield Street
London W1T 4AH
020 7499 5888 | DDI: 020 3982 7926
Lines operational as usual

Website
Twitter
Instagram
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From: BUILDOVERS@THAMESWATER.CO.UK <BUILDOVERS@THAMESWATER.CO.UK>
Sent: 17 June 2022 12:03
To: Rishi Bodhani <Rishi.Bodhani@stature.london>
Subject: Building over or within 3 metres of a sewer

Building over or near sewers.

Site location: 12 PILGRIMS LANE LONDON NW3 1SN

Dear Mr BODHANI,

Thank you for your enquiry.

If you're planning a new building, a conservatory, a garage or any other extension to your home, it's important you let us know. We need to make sure your work doesn't accidentally affect a sewer, or limit our access if we have to repair it. I've provided some information below about build over agreements, which I hope you find helpful.

Types of build over agreements

If you're building over or near a domestic sewer with a diameter of **160mm or less**, you can potentially apply for a **self-certified build over agreement**. We may grant this if you're able to confirm that your plans pose little risk to the pipe. This free service is only available online, and

requires you to complete a questionnaire at www.thameswater.co.uk/buildover.

If your answers don't meet our requirements, we'll redirect you to apply for an **approved build over agreement**, for which you'd need to pay. You'll need to apply for this full agreement if you're unsure of any of the answers, or if you want to build over or near a sewer with a diameter **above 160mm**.

If you're applying for an **approved build over agreement**, in addition to contact information, you'll need to provide the following:

- A drawing showing the cross-sectional foundation plan, including clearance distances and size of the sewer being built over
- A drawing showing the location of the sewer relative to the existing property and proposed work
- A copy of the drawings submitted for Building Regulations approval
- Credit or debit card details, in order to pay the required deposit and charges

Ownership of sewers

The start of the drain is the responsibility of the property owner until it crosses the boundary into land owned by someone else. At that point it becomes a 'public lateral drain'. Once a second property connects into the public lateral drain, it becomes a 'public sewer'. We're responsible for all public sewers and lateral drains in our region. You can view typical examples of the different types of drains and sewers on page 2 of our guidance booklet attached.

How to apply

You can apply online on our website . Alternatively download the application form from our website which then can be emailed to us at developer.services@thameswater.co.uk or posted to us at Developer Services, Clearwater Court, Vastern Road, Reading RG1 8DB.

Next steps

If you apply for a self-certified build over agreement, you'll find out whether you qualify as soon as you submit the completed questionnaire online.

If you apply for an approved build over agreement, we'll review your application and contact you within three weeks providing we have all relevant plans and payment.

If you'd like to speak to me about this, please call me on 0800 009 3921 between 8am and 5pm, Monday to Friday.

Yours sincerely,

Jordan

Customer Service Advisor
Developer Services