

Figure 1 - Location Plan

2.2 Topography and Geology

The overall topography of the area is falling away to the towards the River Thames, approximately 1km to the south. Belsize Crescent itself forms a relatively steep hill as the topography increases in towards Hampsted to the north.

The Thames is the closest watercourse to the proposed development. The lost River Westbourne is located approximately 300m to the east of the site, east of the rail lines. This tributary will not have an impact on the proposed development. The site is situated outside of Groundwater Source Protection Zones (SPZ), as shown in **Figure 2**.



Figure 2 - Groundwater Source Protection Zones (source: MagicMap)

British Geological Survey (BGS) maps for the area show the site is underlain by the London Clay Formation.

The closest historical borehole records in Glenilla Road held by the BGS indicate the London Clay extending to a depth of approximately 90m below ground level. The borehole logs do not record striking groundwater at any level.

Appendix B includes information from BGS.

3.0 Proposed Development

The redevelopment works are to include, lowering of the lower ground floor level, construction of a store room under the front garden, an internal lift to all floors, and an external platform lift to the lower ground floor.

It is not proposed to increase the hardstanding area of the site.

For the architectural proposals please refer to the planning drawings submitted with the application.

Architectural plans are provided in Appendix A.

4.0 Flood Risk Assessment

To determine the risk of flooding for the development site, the Environment Agency (EA)'s website was referenced as well as flood maps published by LBC, including information contained in the Strategic Flood Risk Assessment (SFRA) and the Surface Water Management Plan (SWMP).

4.1 Flood Risk from Rivers and/or Sea

As shown in **Figure 3**, the site is situated in Flood Zone 1 which confirms that it is at low risk of flooding from rivers and the sea. Flood Zone 1 is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%). Therefore, flood risk from rivers or sea is considered low.

As the site lies in the Flood Zone 1, all developments are appropriate and therefore the sequential and exception tests are not required.

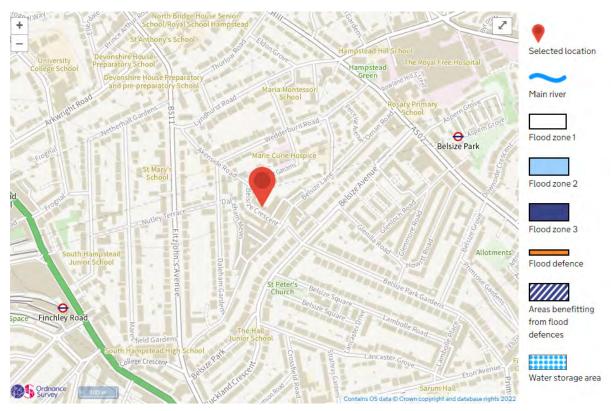


Figure 3 - EA Flood Risk from River and/or Sea

4.2 Flood Risk from Surface Water and Overland Flow

The SFRA 'Updated Flood Maps for Surface Water Flooding' in **Figure 4** shows that the site is located in a Critical Drainage Area (CDA).

Both **Figure 4** and the EA surface water flood map in **Figure 5** confirm that the site is at low risk of surface water flooding, with no historical records of flooding in Belsize Crescent.

Furthermore, the SFRA 'Hazard: 1 in 1000-year flood event' map shows that the site is situated in an area of Low Hazard as shown in **Figure 6.**

There are no proposed changes to the extents of hardstanding or levels of the external areas to the property.

Therefore, the surface water flood risk of the proposed development is considered low.

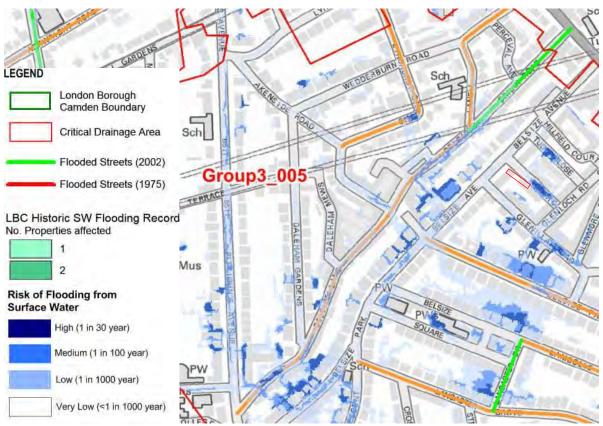


Figure 4 - Flood Risk from Surface Water (SFRA Extract)



Extent of flooding from surface water

High Medium Low Very Low Location you selected

Figure 5 - Flood Risk from Surface Water (extract from EA website)

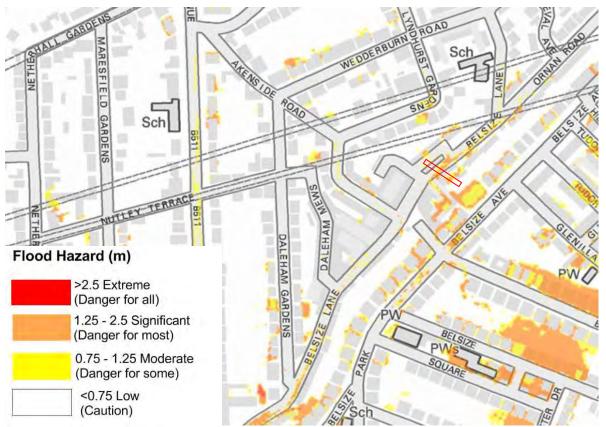


Figure 6 - Hazard: 1 in 1000-year flood event (SFRA Extract)

4.3 Flood Risk from Sewers

The SFRA contains maps for both internal and external sewer flooding. This is based on a water-company held register of properties which have experienced sewer flooding due to hydraulic overload, or properties which are 'at risk' of sewer flooding more frequently than once in 20 years.

Figure 7 shows that the site is situated outside of any areas with historical flooding events affecting any properties due to internal sewer flooding. **Figure 8** shows that the site is situated in an area where there is only 1 instance of recorded historical flooding events affecting any properties due to exterior sewer flooding.



Figure 7 – Internal Sewer Flooding (SFRA Extract)

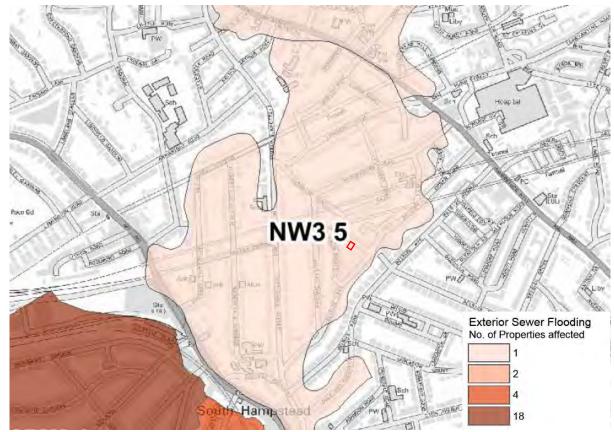


Figure 8 – Exterior Sewer Flooding (SFRA Extract)

The development proposes to lower the rear groundfloor of the property internally. Foul and surface water drainage relating to the development from this area is proposed to be drained via the existing gravity outfall to the public sewers, as will the drainage for the existing retained areas.

The most likely reason for sewer flooding onsite is due to capacity issues during heavy rainfalls within the public sewerage network. It is proposed to retrofit a non-return valve to the existing outfall connection to the public sewer to protect the site drainage system from any surcharges in the public sewer.

The proposed redevelopment will not increase discharge rates to the public sewer, therefore the likelihood of the existing network becoming surcharged and causing sewer or surface water flooding as a result of the development is considered to be low.

Therefore, the flood risk from sewers is considered low.

4.4 Flood Risk from Groundwater Flooding

The SFRA contains a map showing historical records of groundwater flooding and areas of increased potential for elevated groundwater as shown in **Figure 9.** This shows that the site is not in or near an area of permeable superficial deposits, or of groundwater flooding incidents.

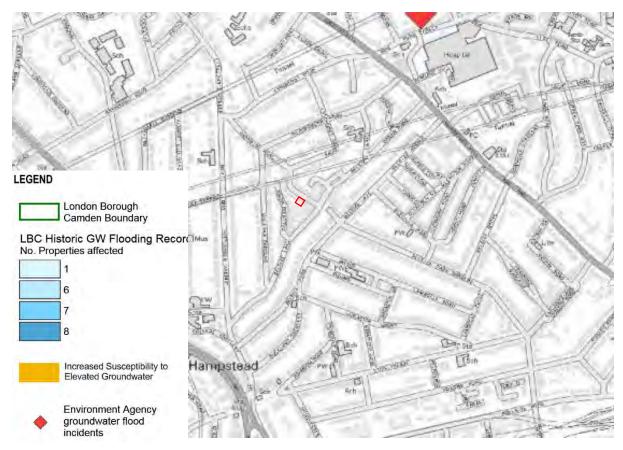


Figure 9 - Groundwater flood risk (SFRA Extract)

However it is still proposed waterproofing of the proposed lowered ground floor structure is implemented in line with BS 8102. The resulting risk of flooding from groundwater is considered to be low.

4.5 Summary

The site is situated in a Critical Drainage Area. Detailed surface water flood mapping shows the site is at low risk of surface water flooding.

Data available from the BGS, LB Camden SFRA, and from site investigations show that the site is at low risk of groundwater flooding. However it is recommended that waterproofing measures are implemented at basement level in line with BS EN 8102, with a detailed waterproofing strategy to be undertaken by specialists.

The site is considered to be at low risk from all other sources of flooding.

5.0 Existing Drainage Infrastructure

5.1 Public Sewer Network

A Thames Water (TW) asset search is provided in Appendix C, with an extract provided in Figure 10.

As shown below, a combined sewer is located in Belsize Crescent which has a diameter of 965x635mm and runs southwest and northeast to join onto a combined sewer branch in Belsize Lane. The invert level of the sewer adjacent to the site is approximately 69.33m AOD

It considered that the proposed works at 13 Belsize Crescent will impede on the asset, nor the asset impede on the construction, due the significant depth of this combined trunk sewer.

It is anticipated that the property discharges via a combined connection to the combined sewer in Belsize Crescent. It is proposed to re-use the existing connection to the TW Asset.

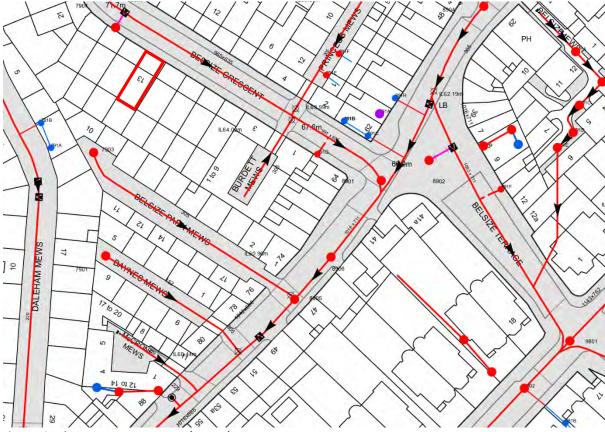


Figure 10 - Thames Water Asset Map (Extract)

5.2 Private Sewer Network

It is assumed the site is served by pipes that discharge the surface and the foul water runoff to the combined sewer under Belsize Crescent.

A CCTV drainage survey will be undertaken at the site to confirm the arrangement and condition of the existing below-ground drainage.

6.0 Proposed Drainage Arrangements

It is intended to re-use the existing combined outfalls to the public sewer for proposed foul and surface water drainage.

The development proposes to lower the rear groundfloor of the property internally. Drainage from this area is proposed to be drained via the existing gravity outfall to the public sewers, as will the drainage for the existing retained areas.

This will be designed in accordance with Building Regulations Part H.

It is proposed to retrofit a non-return valve to the existing outfall connection to the public sewer to protect the site drainage system from any surcharges in the public sewer.

7.0 Conclusion

This FRA and SuDS Strategy report has been prepared in accordance with local and national planning policy and guidance documents including LBC's SFRA, the London Plan (2021) and the NPPF (2019). The proposed development complies with local and national planning policy on flood risk and sustainable drainage.

This report confirmed that the development site is at low risk from all sources of flooding.

APPENDIX BBGS INFORMATION

Synergy Borehole Log



Anten Contrated Suppl

Client : ISO Energy Ltd.

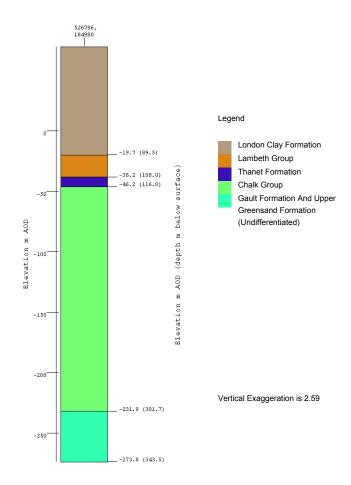
Site 32 Glenilla Road TQ27116 84876

		From (m)	To (m)		Date Start (revised of Date Finish	depths/positioning)
	Geology 1 Hardcore/made ground	0m	1.5m		Method	Mud
British de angul al Surve	Geology 2 London Clay	Britt 1:5m igical S	90m		Bags of grout used Type of grout	
	Geology 3 various coloured clay	90m	105m		Bags of sand used Type of sand	25 (x6) Silica
	Geology 4 Running sands	105m	110m		Drill Rig Used	602
ы	Geology 5					
British Geological Survey	Geology 6	British Geological S	irvey	Notes:	Casing left behind to when excavating the	protect loops
	Groundwater at (m)	N/A				
	Loss of flush at (m)	N/A				
British Gaolog (al Survey	Total Depth drilled Hole Dia.	110m British Geological Survey 6 inch			British Geologica	
	Driller Name: Signed			Date :	24/6/21	



3D geological model synthetic log

Synthetic borehole log derived from the BGS London and Thames Valley model



Further information about the model: Mathers, S J, Burke, H F, Terrington, R L, Thorpe, S, Dearden, R A, Williamson, J P, Ford, J R. 2014. A geological model of London and the Thames Valley, southeast England. Proceedings of the Geologists' Association, 125 (4). 373-382.

This synthetic log is derived from a model with a 50 m grid resolution and should not be used as a replacement for site investigation.

The 3D geological model is a generalisation of reality constrained by the data available at the time of the model construction. It is an interpretation only and actual ground conditions encountered may be different from those shown. Users should consult additional information provided and users of the model outputs do so at their own risk

For comprehensive information on the geology and hydrogeology at this point, please use our BGS GeoReport Service at

https://shop.bgs.ac.uk/Shop/Department/GeoReports

Gridded surfaces from geological models are available to licence. Further information about available data can be found on the GeoIndex BGS Lithoframe layer, the BGS Lithoframe webpage, or by contacting our enquiries service.

APPENDIX C THAMES WATER ASSET MAP

Asset location search



alex Chart House 16Chart Street LONDON N1 6DD

Search address supplied 13 Belsize Crescent

NW3 5QU

Your reference 1004

Our reference ALS/ALS/24/2022_4728112

Search date 3 October 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





Search address supplied: 13 Belsize Crescent, NW3 5QU

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



Waste Water Services

Please provide a copy extract from the public sewer map.

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

TQ2684NE TQ2685SE TQ2784NW TQ2785SW

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.

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

TQ2684NE TQ2685SE



TQ2784NW TQ2785SW

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

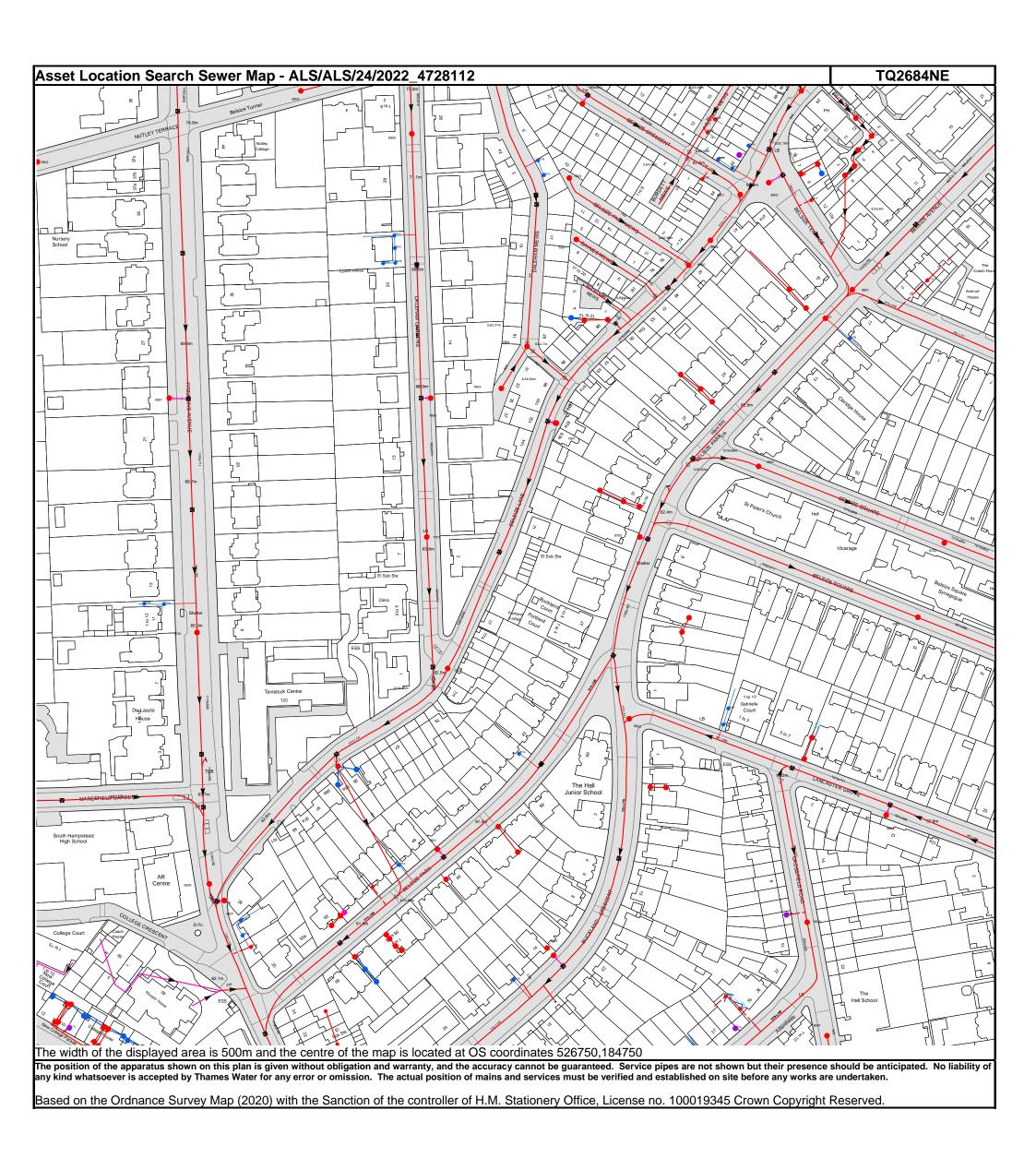
Clean Water queries

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



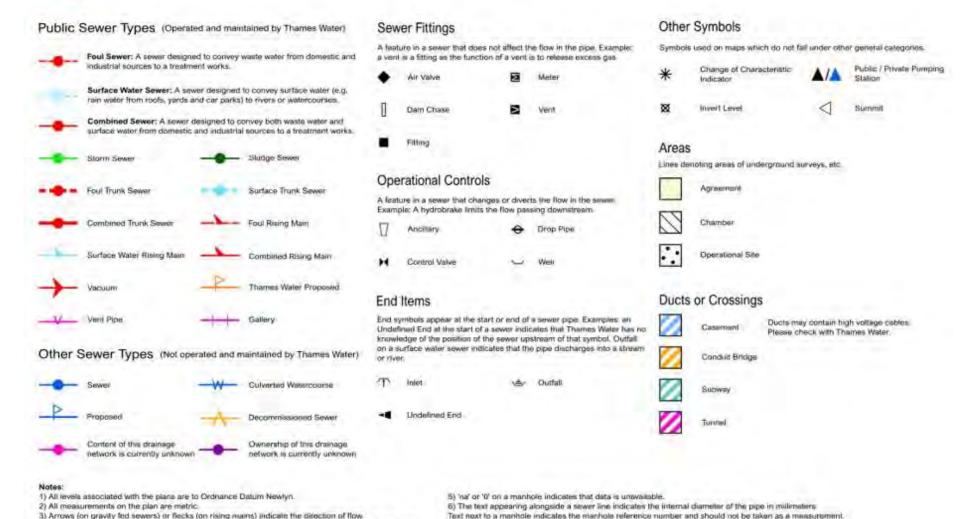
Manhole Reference	Manhole Cover Level	Manhole Invert Level
861A 8801	n/a 62.18	n/a
851D	n/a	55.43 n/a
88BF	n/a	n/a
86AB	n/a	n/a
88BG	n/a	n/a
96AF 96AE	n/a n/a	n/a n/a
9802	n/a	n/a
981B	n/a	n/a
9801	63.04	58.88
9601	n/a	n/a
9702 981A	60.11 n/a	54.16 n/a
9703	60.69	54.89
9501	57.16	52.81
851A	n/a	n/a
851B	n/a	n/a
85BA 851C	n/a n/a	n/a n/a
751A	n/a	n/a
7501	n/a	n/a
65CG	n/a	n/a
75BI	n/a	n/a
65CH	n/a	n/a
8503 65DE	58.09 n/a	52.29 n/a
65DF	n/a n/a	n/a n/a
65CD	n/a	n/a
65CE	n/a	n/a
65CB	n/a	n/a
651B	n/a	n/a
65CI 651D	n/a n/a	n/a n/a
65CJ	n/a	n/a
65BA	n/a	n/a
55CH	n/a	n/a
55CF	n/a	n/a
55CJ 55CI	n/a	n/a
55CG	n/a n/a	n/a n/a
551A	n/a	n/a
55CE	n/a	n/a
55CB	n/a	n/a
55CD	n/a	n/a
55BJ 55CA	n/a n/a	n/a n/a
55BG	n/a	n/a
571B	n/a	n/a
571A	n/a	n/a
5701	64.86	60.58
5509	63.22	58.03
5501 651C	n/a n/a	n/a n/a
66AI	n/a	n/a
66BA	n/a	n/a
65BB	n/a	n/a
65BC	n/a	n/a
66AJ 651A	n/a	n/a
651E	n/a n/a	n/a n/a
7601	n/a	n/a
75AI	n/a	n/a
7605	62.39	54.49
76CB	n/a	n/a
75BC 761A	n/a n/a	n/a n/a
8602	60.58	52.1
86BD	n/a	n/a
86BC	n/a	n/a
87BB	n/a	n/a
87AJ	n/a	n/a
8906 861B	64.86 n/a	n/a n/a
891C	n/a	n/a
891A	n/a	n/a
8901	65.86	61.75
891H	n/a	n/a
8902	n/a	n/a
8902 89FC	n/a n/a	n/a
8902 89FC 8904	n/a n/a 67.5	n/a 63.1
8902 89FC	n/a n/a	n/a
8902 89FC 8904 991F 99DF 99DG	n/a n/a 67.5 n/a n/a n/a	n/a 63.1 n/a n/a n/a
8902 89FC 8904 991F 99DF 99DG 991E	n/a n/a 67.5 n/a n/a n/a	n/a 63.1 n/a n/a n/a n/a
8902 89FC 8904 991F 99DF 99DG 991E 991D	n/a n/a 67.5 n/a n/a n/a n/a	n/a 63.1 n/a n/a n/a n/a n/a
8902 89FC 8904 991F 99DF 99DG 991E 991D	n/a n/a 67.5 n/a n/a n/a n/a n/a	n/a 63.1 n/a n/a n/a n/a n/a n/a n/a n/a
8902 89FC 8904 991F 99DF 99DG 991E 991D 991A	n/a n/a 67.5 n/a n/a n/a n/a n/a n/a n/a n/a	n/a 63.1 n/a n/a n/a n/a n/a n/a n/a n/a n/a
8902 89FC 8904 991F 99DF 99DG 991E 991D	n/a n/a 67.5 n/a n/a n/a n/a n/a	n/a 63.1 n/a n/a n/a n/a n/a n/a n/a n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
891E	n/a	n/a
891F	n/a	n/a
7904	n/a	n/a
6903	75.62	71.38
5801	n/a	n/a
691A	n/a	n/a
691D	n/a	n/a
691C	n/a	n/a
691B	n/a	n/a
7701	64.11	59.55
7802	n/a	n/a
7803	65.02	63.93
7804	65.37	n/a
791B	n/a	n/a
791A	n/a	n/a
7801	n/a	n/a
78BB	n/a	n/a
7903	67.07	65.75
78BG	n/a	n/a
7901	65.73	64.96
78BH	n/a	n/a
77BF	n/a	n/a
78BI	n/a	n/a
87CA	n/a	n/a
87CB	n/a	n/a
8702	n/a	n/a
88CE	n/a	n/a
8905	n/a	n/a
88CF	n/a	n/a
891G	n/a	n/a
88CG	n/a	n/a
891B	n/a	n/a
5902	73.36	69.41
55BF	n/a	n/a
55BH	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.

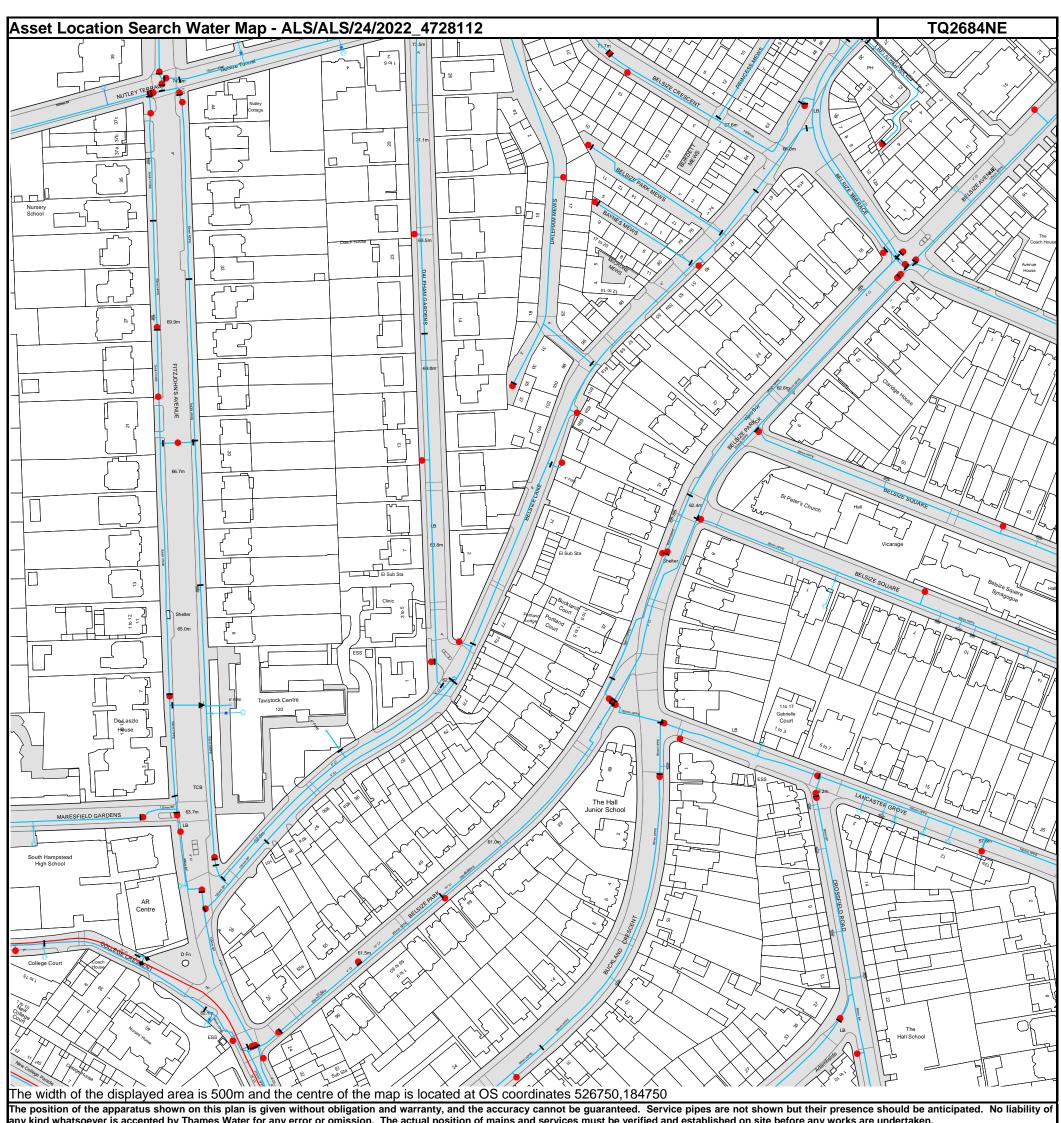


Asset Location Search - Sewer Key



If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Most private pipes are not shown on our plans, as in the past, this information has not been recorded.



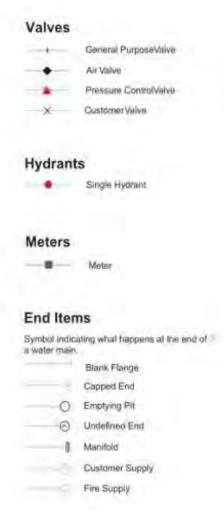
any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

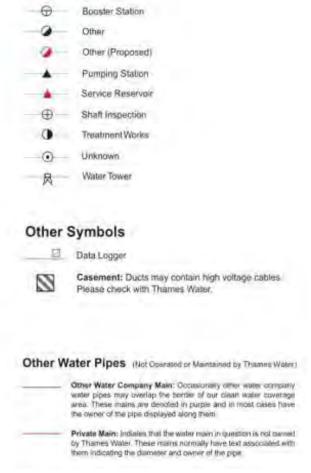
Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.



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 Allimm (\$2) 200 (mm (3)) 300mm = 000mm (12"-24") 1100mm (3.63) entitions and bioger (24" plus). (4) mm003)





Operational Sites

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.
- 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.

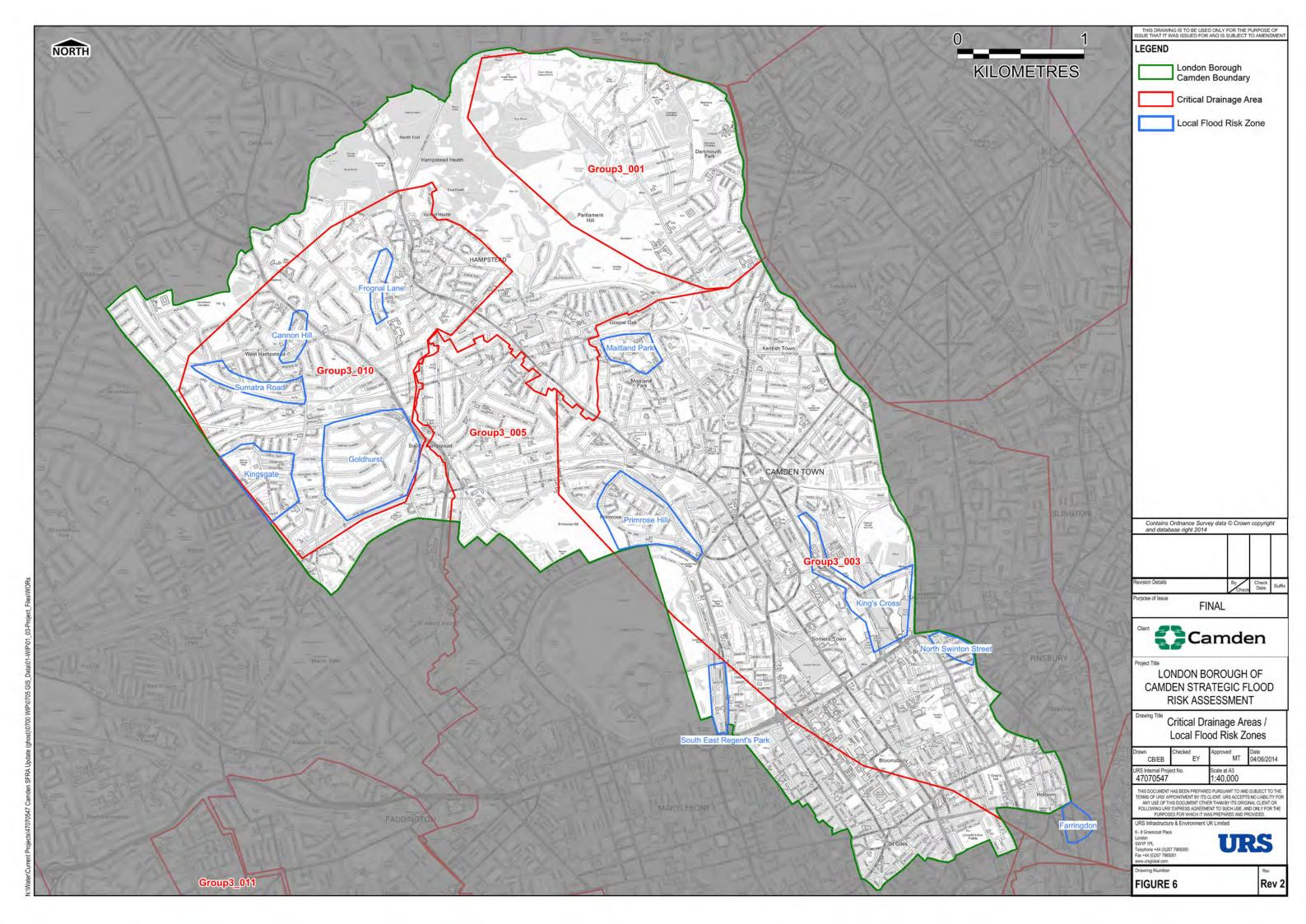
If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

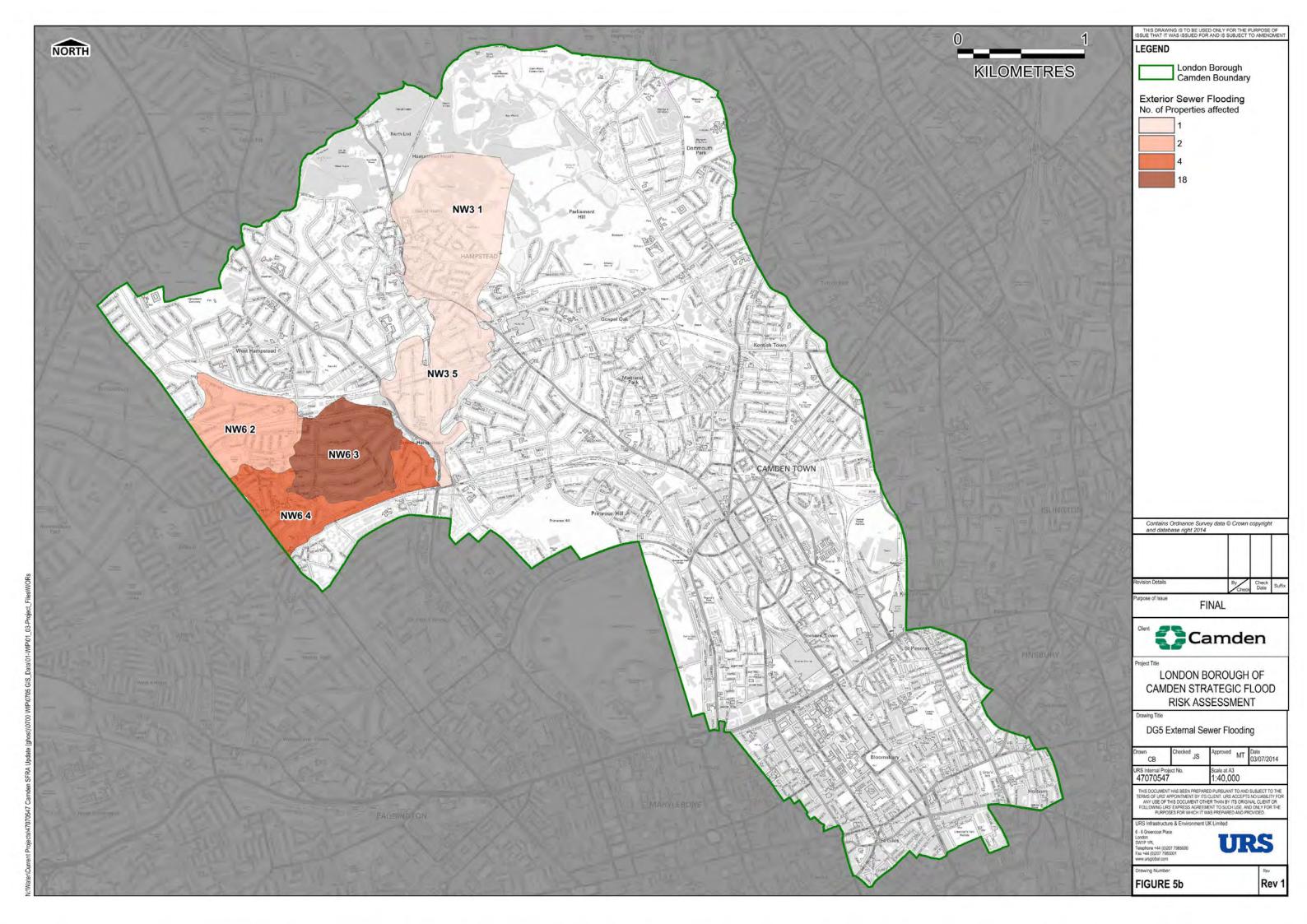
Ways to pay your bill

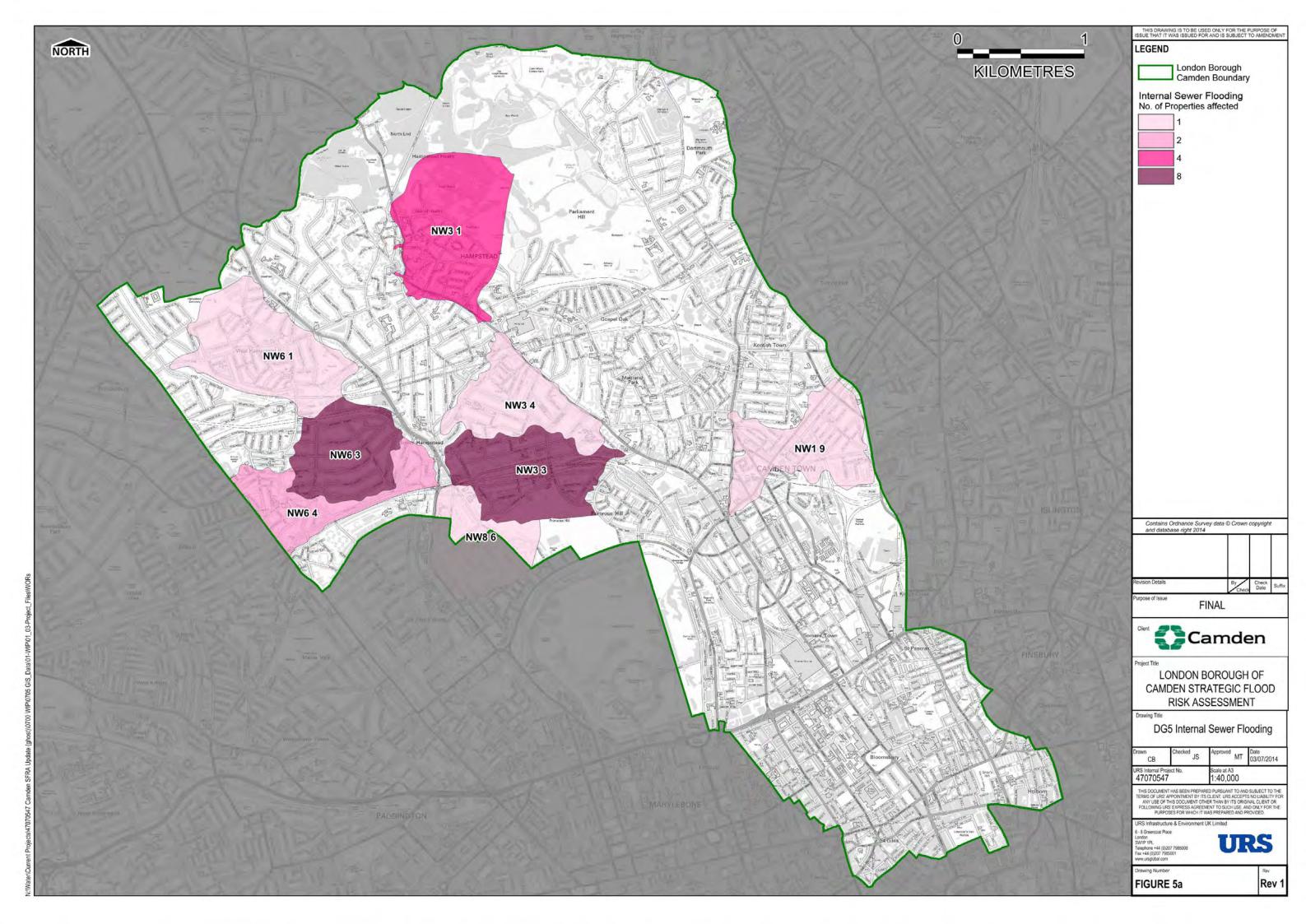
Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0800 009 4540 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater. co.uk	By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

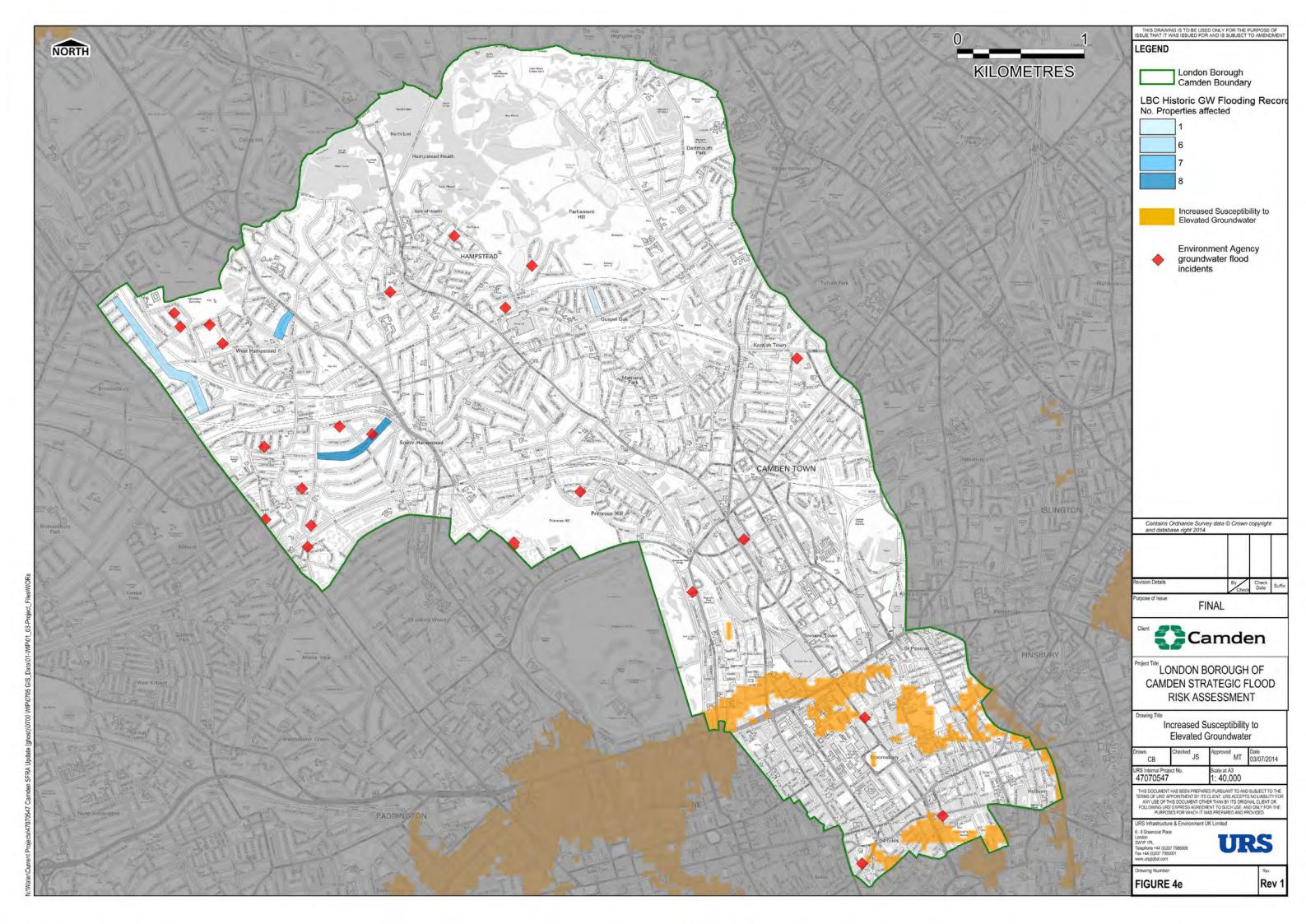
Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

APPENDIX DLBC SFRA MAPPING

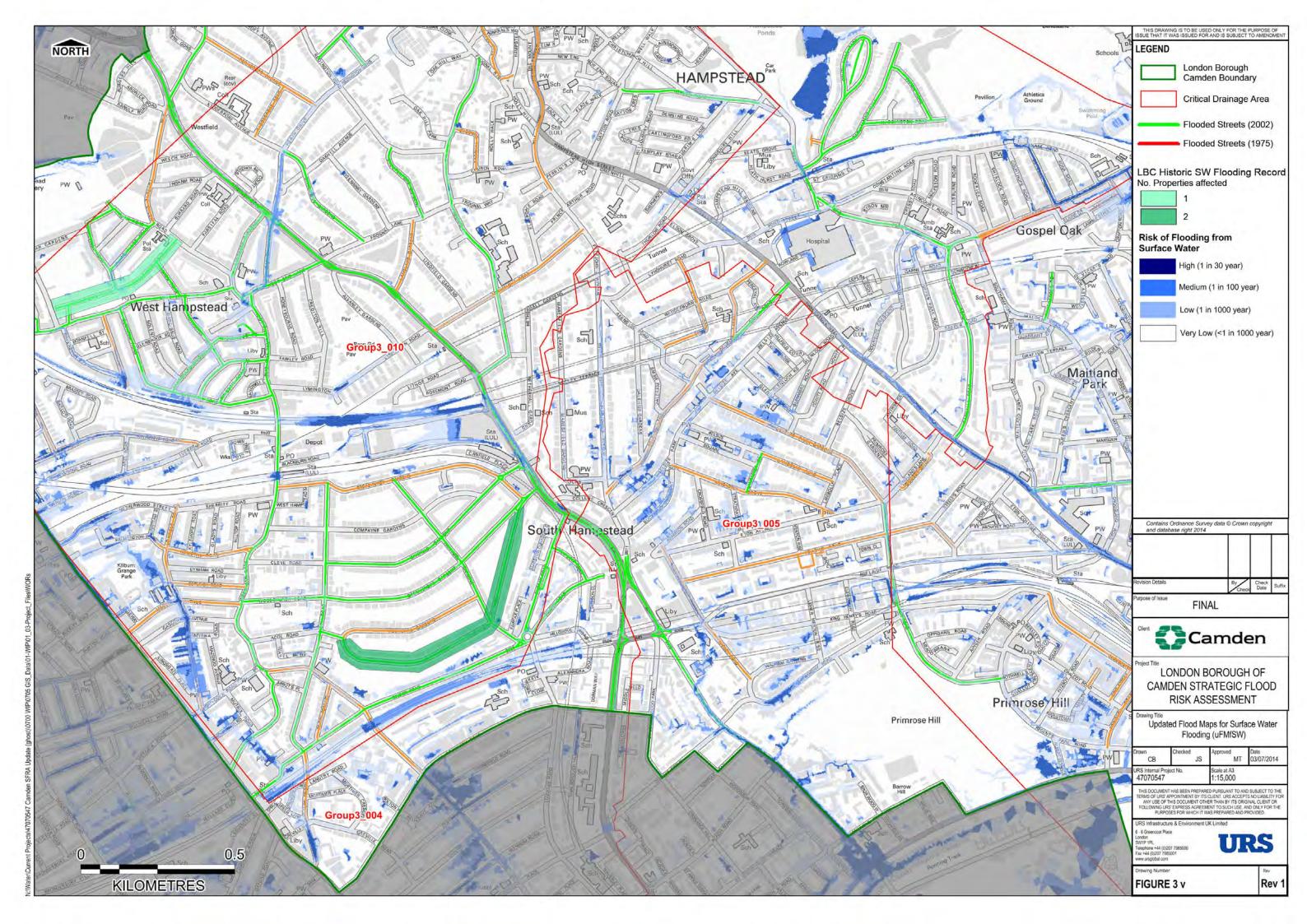


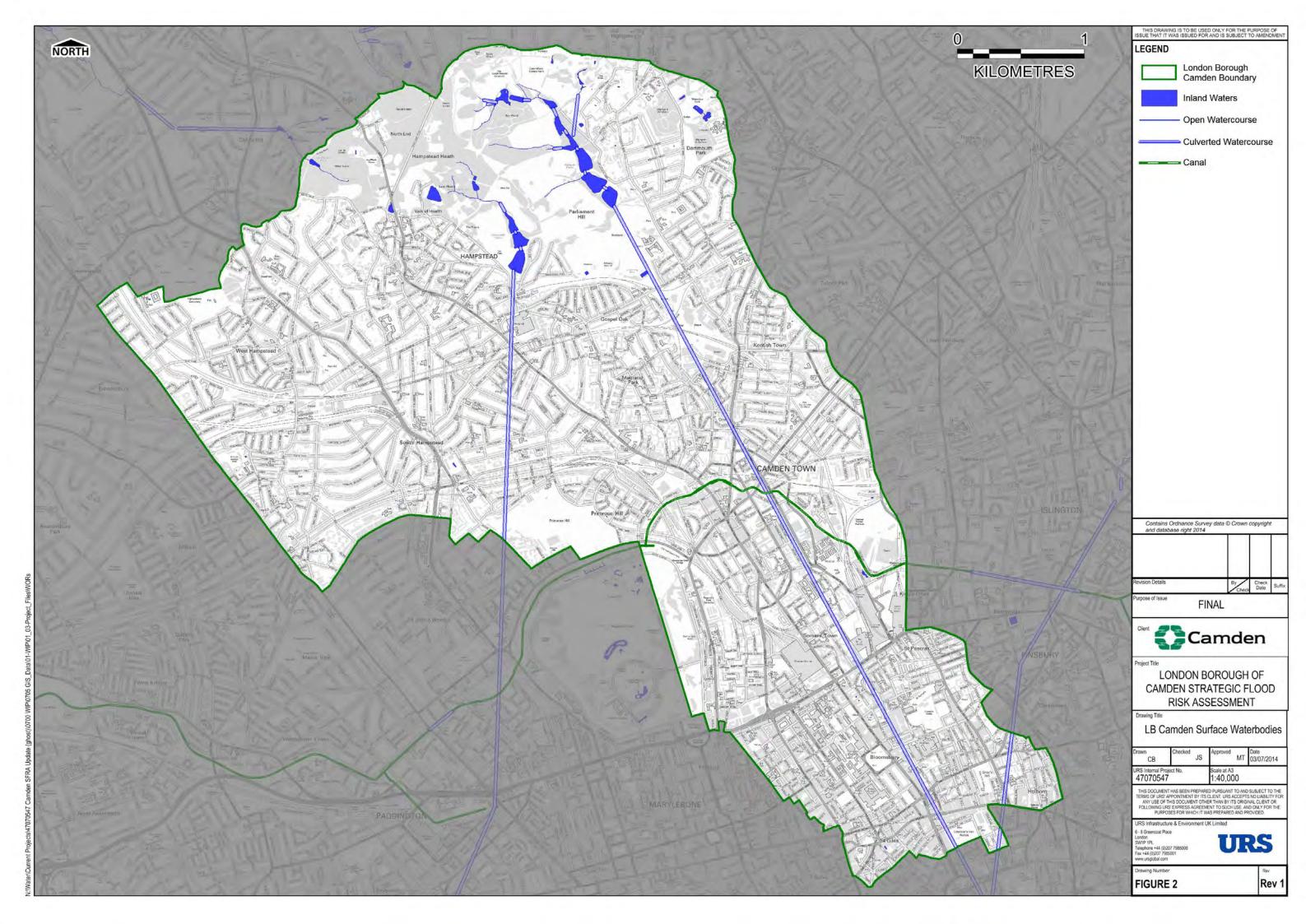














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