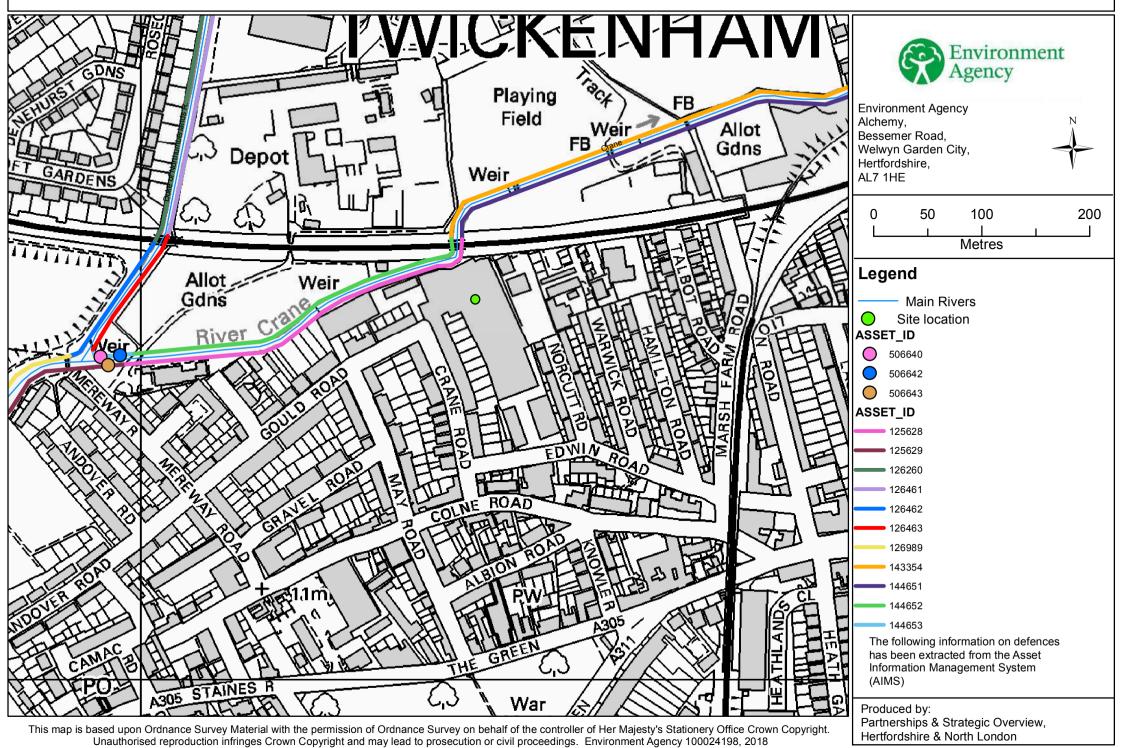
Structures and Defences centred on: Greggs Bakery, Twickenham - 21/11/2018 - HNL107059JH



Environment Agency ref: HNL107059JH

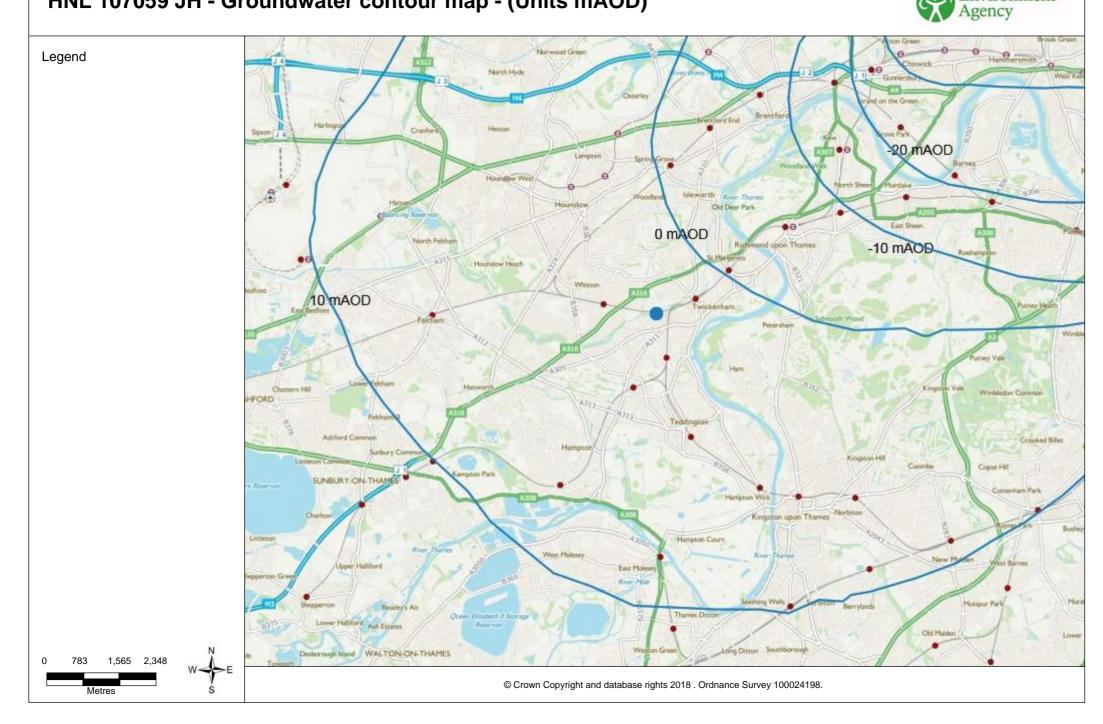
The following information on defences has been extracted from the Asset Information Management System (AIMS)

Defences

Asset ID	Asset Type	Asset Protection	Asset Comment	Asset Description	Design Standard of protection (years)	Downstream Crest Level	Upstream Crest Level	Condition of Defences (1=Good, 5 = Poor)
126260	high_ground	fluvial	Combination of poured concrete and timber bank protection	Bank protection.	200	10.69	10.21	3
126461	high_ground	fluvial	Concrete bank protection with section of timber lining	Bank protection.	200	11.6	11.38	3
143354	high_ground	fluvial	Cast insitu concrete lined channel with 1.5m high walls and lined channel bed.	Lined channel.	10	8.22	9.5	3
144651	high_ground	fluvial	Cast insitu concrete lined channel with 1.5m high walls and lined channel bed.	Lined channel.	20	8.27	9.8	3
125629	high_ground	fluvial	Combination of cast insitu concrete channel lining, concrete capped sheet steel piling and timber toe- boarding	Bank protection.	2	10.98	12.09	3
126462	high_ground	fluvial	Timber bank protection.	Bank protection.	200	10.21	10.71	3
144653	high_ground	fluvial	Cast insitu concrete channel lining	Lined channel.	200	9.86	10.85	3
126463	high_ground	fluvial	Timber bank protection	Bank protection.	200	11.38	10.71	3
125628	high_ground	fluvial	Cast insitu concrete channel lining	Lined channel.	2	9.79	10.98	3
144652	high_ground	fluvial	Cast insitu concrete channel lining	Lined channel.	2	9.5	11.17	3
126989	high_ground	fluvial	Horizontal timber toe- boarding with section of concrete lining at the centre of the defence.	Bank protection.	75	10.71	12.38	3

Structures Asset ID	Asset Type	Asset Protection	Asset Comment	Asset Description	Condition of Structures (1=Good, 5 = Poor)
506640	control_gate	fluvial	A bypass penstock is used to control flow through the bypass pipe during maintenance of the weir gate. 1m x 1m size. O&M Manual 36/3.	tsed the g Mereway Road Weir by- pass penstock⊡ 3 &M ated /ater pipe	
506643	control_gate	fluvial	The control well is located adjacent to the weir. Water flows through an inlet pipe from the upstream of the structure in to the control well. This causes a float inside the well to be displaced. Excessive water on the upstream side of the weir causes the float to rise and the weir to tilt open until normal water levels are resumed. Incorporated into this design is a penstock to allow the draining of the well for maintenance purposes. O&M Manual 36/3.□	Mereway Road Weir Control Well penstock⊟	3
506642	screen	fluvial	1.2m by 1.6m (20mm diameter galvanised mild steel bars at 200mm centres each way). It has a hinge plate and galvanised steel hasp and staple for padlocking. O&M Manual 36/3.	Mereway Road Weir by- pass pipe trash screen⊡	3

HNL 107059 JH - Groundwater contour map - (Units mAOD)



Environment

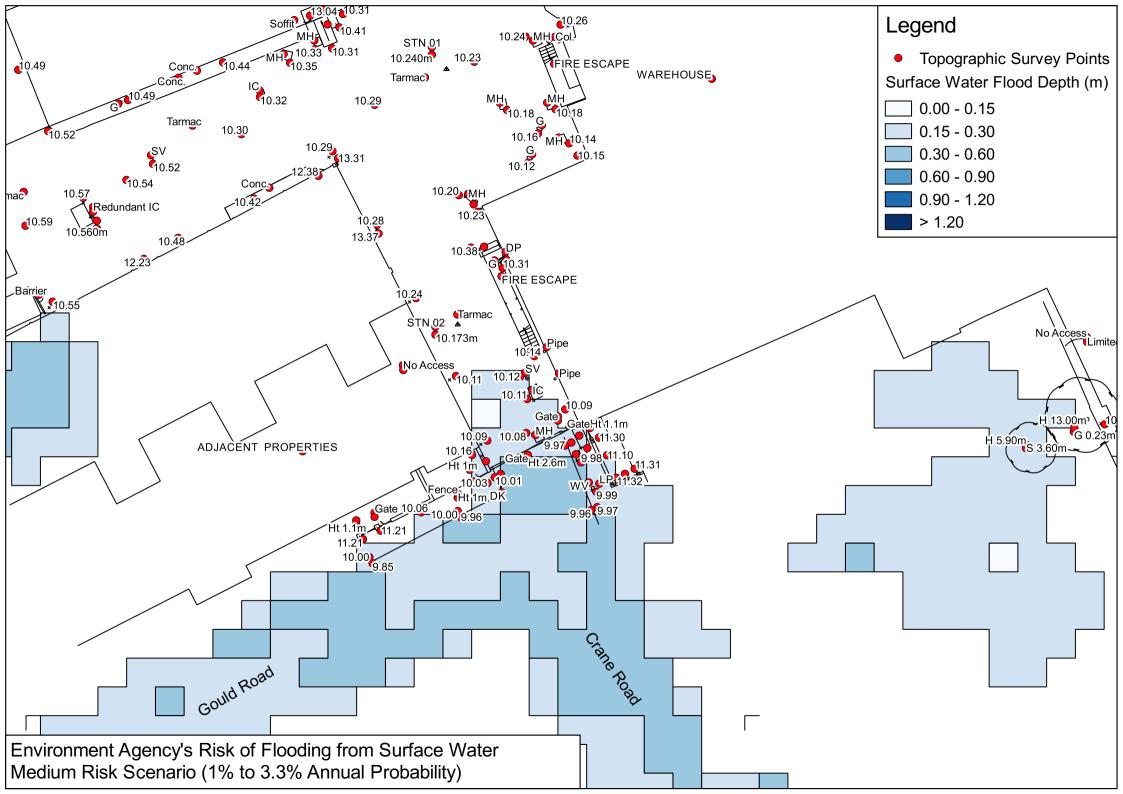


D. Existing and Proposed Offsets from the River Crane



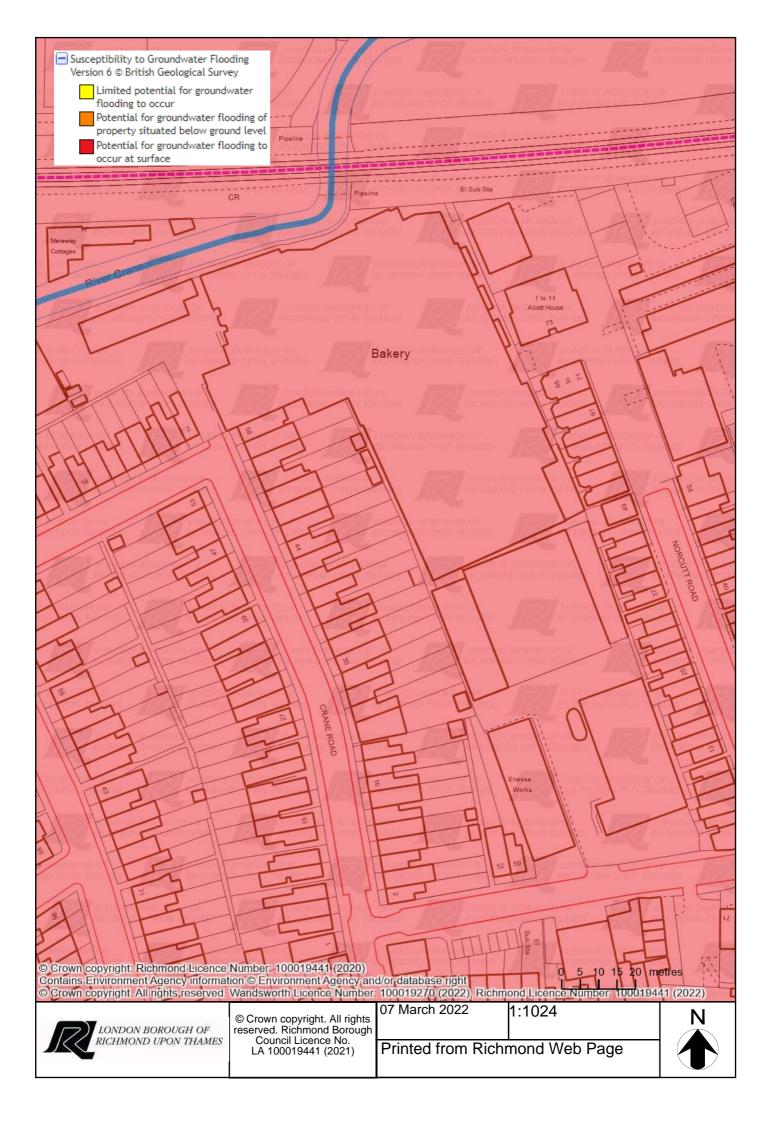


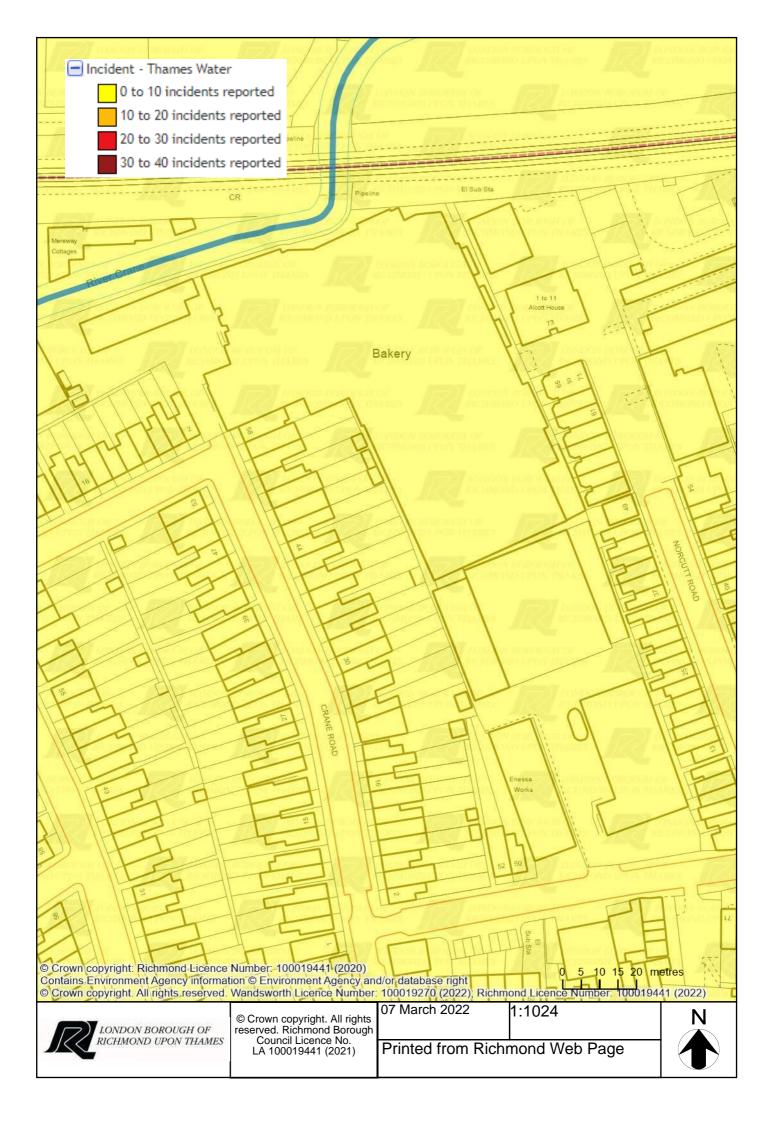
E. Environment Agency's Risk of Flooding from Surface Water – Medium Risk Scenario





F. London Borough of Richmond upon Thames Strategic Flood Risk Assessment Mapping







G. Thames Water Consultation

Asset location search



Waterman Infrastructure & Environment Pickfords Wharf Pickfords Wharf

LONDON SE1 9DG

Search address supplied

Greggs Gould Road Twickenham TW2 6RT

Our reference ALS/ALS Standard/2018_3900038

Search date

30 October 2018

Keeping you up-to-date

Notification of Price Changes

From 1 September 2018 Thames Water Property Searches will be increasing the price of its Asset Location Search in line with RPI at 3.23%.

For further details on the price increase please visit our website: www.thameswater-propertysearches.co.uk Please note that any orders received with a higher payment prior to the 1 September 2018 will be non-refundable.



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: Greggs, Gould Road, Twickenham, TW2 6RT

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 0845 070 9148, or use the address below:

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

Email: <u>searches@thameswater.co.uk</u> Web: <u>www.thameswater-propertysearches.co.uk</u>

Asset location search



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.

<u>Thames Water Utilities Ltd</u>, Property Searches, PO Box 3189, Slough SL1 4WW, DX 151280 Slough 13 T 0845 070 9148 E <u>searches@thameswater.co.uk</u> I <u>www.thameswater-propertysearches.co.uk</u>





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

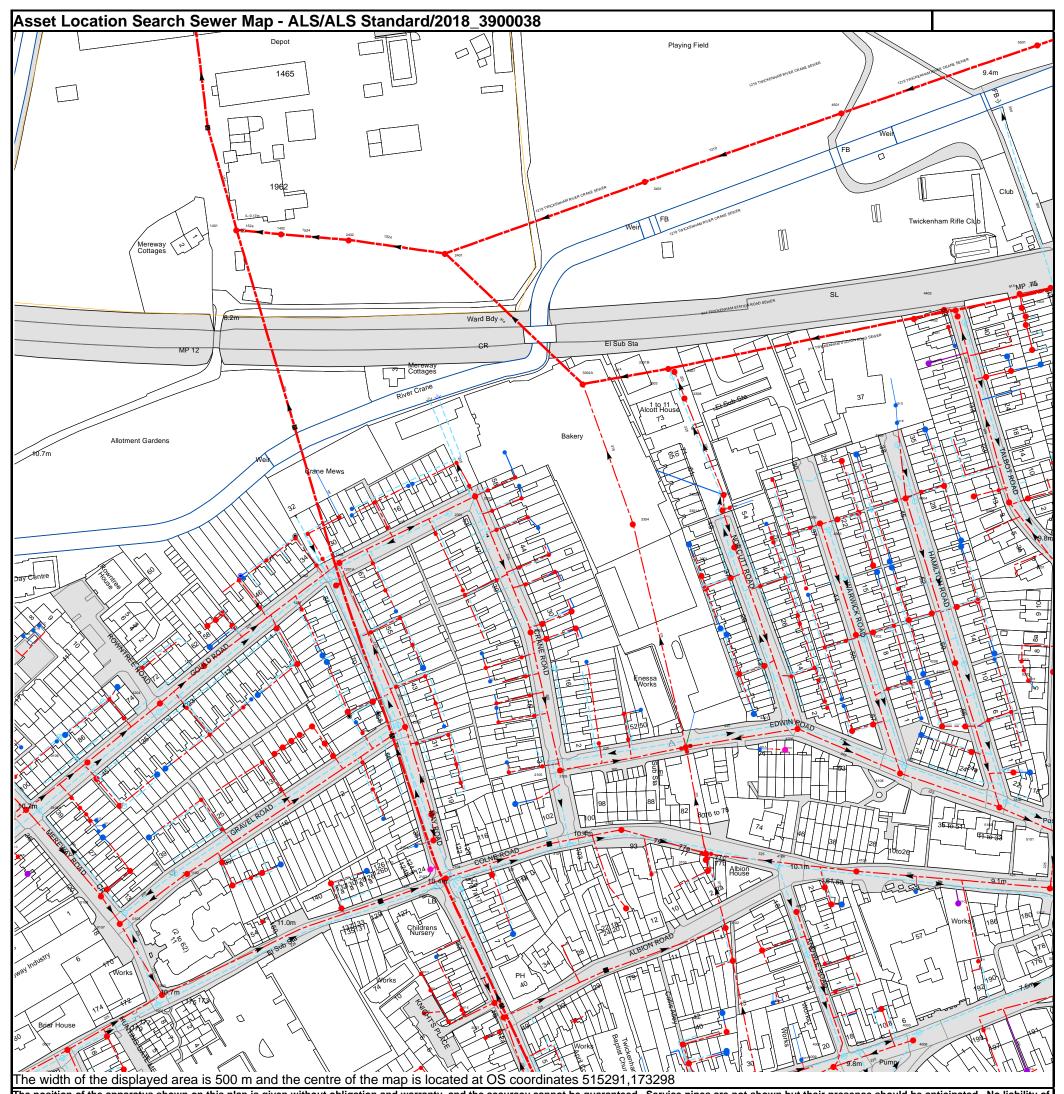
Tel: 0800 009 3921 Email: developer.services@thameswater.co.uk

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

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

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13 T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

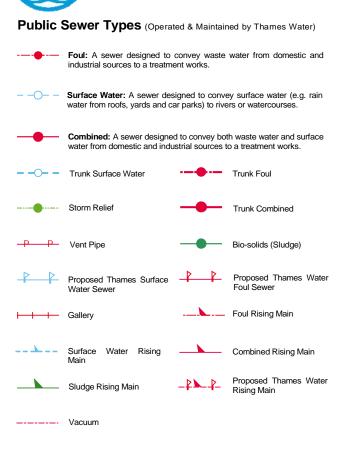
Manh	ole Reference	Manhole Cover Level	Manhole Invert Level
53TZ		n/a	n/a
53VP		n/a	n/a
53VQ		n/a	n/a
431A		n/a	n/a
53TX		n/a	n/a
53TQ		n/a	n/a
43RS		n/a	n/a
44ZY		n/a	n/a
54YQ		n/a	n/a
4401		n/a	n/a
44ZX		n/a	n/a
4402		n/a	n/a
54YX		n/a	n/a
4403		9.3	.33
44ZW		n/a	n/a
54YP		n/a	n/a
54ZS		n/a	n/a
5402		9.45	7.66
54ZR		n/a	n/a
4501		8.59	.14
5501		8.5	.2
23WT		n/a	n/a
23XT		n/a	n/a
23ZX		n/a	n/a
2302		n/a	n/a
23VP		n/a	n/a
23VV 23ZY		n/a n/a	n/a
232 Y 23XQ		n/a n/a	n/a n/a
23XQ 23WW		n/a n/a	n/a n/a
23WW 23WZ		n/a n/a	n/a n/a
23VVZ 23VQ		n/a n/a	n/a
23VQ 23WX		n/a	n/a
23VVA 23VS		n/a	n/a
3308		n/a	n/a
3302A		10.03	.2
3303		10.06	7.01
3307		10.08	6.96
3301B		10.04	.29
2401		10.89	.03
2402		10.51	02
1402		10.38	02
1401		9.66	n/a
3401		8.98	.12
22BB		n/a	n/a
22QR		n/a	n/a
12AQ		n/a	n/a
1202		n/a	n/a
12SR		n/a	n/a
32YX		n/a	n/a
1201A		n/a	n/a
22AX		n/a	n/a
12SP		n/a	n/a
22YQ		n/a	n/a
1206		n/a	n/a
121A		n/a	n/a
12ZY		n/a	n/a
22AW		n/a	n/a
33ZT		n/a	n/a
13ZT		n/a	n/a
13ZX		n/a	n/a
23YV		n/a	n/a
23ZR		n/a	n/a
23ZT		n/a	n/a
23XS		n/a	n/a
3304		n/a	n/a
13ZQ		n/a	n/a
23ZS		n/a	n/a
23XW		n/a	n/a
2301		n/a	n/a
23ZW		n/a	n/a
32YT		n/a	n/a
32QW		n/a	n/a
32RT		n/a	n/a
3301A		n/a	n/a
32RQ		n/a	n/a
3302B		n/a	n/a
3310		n/a	n/a
3309 22)/T		n/a	n/a
32VT		n/a	n/a
32QV		n/a	n/a
331A		n/a n/a	n/a
331A 32RS		n/a n/a n/a	n/a n/a
331A 32RS 3201		n/a n/a n/a	n/a n/a n/a
331A 32RS 3201 3203		n/a n/a n/a n/a	n/a n/a n/a
331A 32RS 3201 3203 32RZ		n/a n/a n/a n/a n/a	n/a n/a n/a n/a
331A 32RS 3201 3203 32RZ 32SQ		n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a
331A 32RS 3201 3203 32RZ 32SQ 43WY		n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a
331A 32RS 3201 3203 32RZ 32SQ 43WY 431B		n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a
331A 32RS 3201 3203 32RZ 32SQ 43WY		n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
42IR	n/a	n/a
42OZ	n/a	n/a
43SW	n/a	n/a
43SP	n/a	n/a
42GT	0	0
42AF	0	0
42BT	n/a	n/a
42PS 42SV	n/a n/a	n/a
43SV 4306	n/a n/a	n/a n/a
4306 42PW	n/a n/a	n/a n/a
42PV 42PP	n/a	n/a
4303	n/a	n/a
43TY	n/a	n/a
43TW	n/a	n/a
42PV	n/a	n/a
4207	n/a	n/a
43WT	n/a	n/a
43TS	n/a	n/a
43WR	n/a	n/a
4202	n/a	n/a
43VY	n/a	n/a
42BV	n/a	n/a
42RS	n/a	n/a
42RQ	n/a	n/a
42YN	n/a	n/a
42XS	n/a	n/a
42QY	n/a	n/a
42RT	n/a	n/a
431D	n/a	n/a
43WQ	n/a	n/a
431E	n/a	n/a
4305	n/a	n/a
421A	n/a	n/a
4307	n/a	n/a
42WX	n/a	n/a
42XQ	n/a	n/a
4304	n/a	n/a
43XW	n/a	n/a
43XZ 42XP	n/a	n/a
42XF 43XX	n/a n/a	n/a
43AA 43YR	n/a n/a	n/a n/a
42ZP	n/a	n/a
43XT	n/a	n/a
43YT	n/a	n/a
53WV	n/a	n/a
52XQ	n/a	n/a
52XR	n/a	n/a
52XP	n/a	n/a
52YW	n/a	n/a
53WR	n/a	n/a
53WT	n/a	n/a
5302	n/a	n/a
53YS	n/a	n/a
531D	n/a	n/a
531C	n/a	n/a
5201	n/a	n/a
22UV	n/a	n/a
12YX	n/a	n/a
22IY	n/a	n/a
12PV	n/a	n/a
22YZ	n/a	n/a
22BH	n/a	n/a
2203	n/a	n/a
0014/1/		
22WY	n/a	n/a
12VQ	n/a	n/a
12VQ 12PX	n/a n/a	n/a n/a
12VQ 12PX 32ZX	n/a n/a n/a	n/a n/a n/a
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12VQ 12PX 32ZX 12TV 12QR	n/a n/a n/a n/a	n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QV	n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a
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12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW	n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a
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12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
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12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12YV 12BP	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12YV 12BP 22QS	n/a n/a n/a n/a n/a n/a n/a n/a n/a 0 n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12YV 12BP 22QS 22YR	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12YV 12BP 22QS 22YR 22YR	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 12BP 22QS 22YR 22YR 22PZ 1207	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22QS 22YR 22QS 22YR 22PZ 1207 0102A	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 12BP 22QS 22PZ 1207 0102A 01TS	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22QS 22YR 22PZ 1207 0102A 01TS 01XQ	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 12BP 22QS 22YR 22PZ 1207 0102A 01TS 01XQ 01TW	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12YV 12BP 22QS 22YR 22QS 22YR 22PZ 1207 0102A 01TS 01XQ 01TW 0106	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a
12VQ 12PX 32ZX 12TV 12QR 12QR 12QV 22BD 12QT 22YW 12QS 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 22YT 32ZR 12PY 12BP 22QS 22YR 22PZ 1207 0102A 01TS 01XQ 01TW	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a	n/a n/a n/a n/a n/a n/a n/a n/a n/a n/a

D2VQnananaD2VXnana <tr< th=""><th>Manhole Reference</th><th>Manhole Cover Level</th><th>Manhole Invert Level</th></tr<>	Manhole Reference	Manhole Cover Level	Manhole Invert Level
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DWPn/an/aD2NAn/an/aD21An/an/aD21Cn/an/aD21A <td></td> <td></td> <td></td>			
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32VRn/an/a42A1n/an/a42AJn/an/a42AJn/an/a42AJn/an/a42PYn/an/a42PSn/an/a42PSn/an/a42WQn/an/a42WQn/an/a42HTn/an/a42RWn/an/a42RWn/an/a42AVn/an/a42AVn/an/a32VPn/an/a42ANn/an/a32TRn/an/a32TRn/an/a32TRn/an/a42ARn/an/a42ARn/an/a42ARn/an/a42ARn/an/a42ARn/an/a40Tn/an/a40Tn/an/a411Dn/an/a411An/an/a411An/an/a411An/an/a411An/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411Dn/an/a411An/an/a411B <td></td> <td></td> <td></td>			
42AIn/an/a42SWn/an/a42AJn/an/a42PYn/an/a42PSn/an/a42TSn/an/a42TGn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42NYn/an/a42NYn/an/a32VPn/an/a32TRn/an/a42AHn/an/a32TRn/an/a42ARn/an/a42ARn/an/a32TQn/an/a42ARn/an/a401An/an/a401An/an/a401An/an/a401An/an/a411An/an/a411An/an/a411An/an/a411An/an/a411Dn/an/a4110n/an/a4111n/an/a4112n/an/a4113n/an/a4114n/an/a4115n/an/a4116n/an/a4117n/an/a4118n/an/a4119n/an/a4110 </td <td></td> <td></td> <td></td>			
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122.Jn/an/a42PYn/an/a42TSn/an/a42TGn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42TTn/an/a42AVn/an/a32VPn/an/a32TRn/an/a32TRn/an/a32TRn/an/a32TRn/an/a32TRn/an/a32TRn/an/a32TRn/an/a32TRn/an/a30ZRn/an/a30ZRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TRn/an/a31TAn/an/a31TAn/an/a31TAn/an/a31TAn/an/a31TA<			
42PYnanana42TSnanana42TTnanana42TTnanana42TBnanana42RWnanana42RWnanana42RWnanana42RWnanana42RWnanana42NTnanana4110nanana4111nanana4112nanana4113nanana <tr< td=""><td></td><td></td><td></td></tr<>			
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42TTn/an/a421Bn/an/a42RWn/an/a42RWn/an/a42RWn/an/a42RWn/an/a32Pn/an/a32PPn/an/a32TRn/an/a32TRn/an/a42AWn/an/a32TRn/an/a42AHn/an/a42TNn/an/a32TQn/an/a30ZRn/an/a401Bn/an/a401Bn/an/a401Bn/an/a411Bn/an/a11Rn/an/a31QZn/an/a31Q2n/an/a4110n/an/a4110n/an/a412Wn/an/a412Wn/an/a3102n/an/a4132n/an/a4142Wn/an/a4142Wn/an/a415n/an/a3162n/an/a317Wn/an/a418n/an/a4199n/an/a3199n/an/a3199n/an/a3200n/an/a3191n/an/a3192n/an/a3193n/an/a3194n/an/a3194n/an/a3194 <td>42WQ</td> <td>n/a</td> <td>n/a</td>	42WQ	n/a	n/a
421Bn/an/a42RWn/an/a42RKn/an/a42AKn/an/a42WTn/an/a42WTn/an/a42WTn/an/a42WTn/an/a42AWn/an/a42AWn/an/a42ARn/an/a42ARn/an/a32TQn/an/a32TQn/an/a30ZRn/an/a401Bn/an/a401An/an/a401An/an/a401An/an/a401An/an/a411Bn/an/a112Vn/an/a312Vn/an/a4107n/an/a112Vn/an/a112Vn/an/a112Vn/an/a112Vn/an/a112Vn/an/a112Vn/an/a112Vn/an/a114n/an/a115n/an/a116n/an/a117n/an/a118n/an/a119n/an/a1100n/an/a111n/an/a111n/an/a111n/an/a111n/an/a111n/an/a111n/an/a111n/a <td>42TT</td> <td>n/a</td> <td>n/a</td>	42TT	n/a	n/a
42AKn/an/a42WTn/an/a42WTn/an/a42WTn/an/a42AWn/an/a42AWn/an/a42AWn/an/a42AWn/an/a42AHn/an/a42TNn/an/a32TQn/an/a32TQn/an/a40THn/an/a40TTn/an/a40TTn/an/a40TTn/an/a40TAn/an/a40TAn/an/a40TAn/an/a40TAn/an/a40TAn/an/a40TAn/an/a40TAn/an/a411Bn/an/a11YRn/an/a11YRn/an/a11YRn/an/a11YRn/an/a11YRn/an/a11YRn/an/a11YYn/an/a110n/an/a1110n/an/a1111n/an/a1112n/an/a1114n/an/a1115n/an/a1116n/an/a1117n/an/a1118n/an/a1119n/an/a1110n/an/a1110n/an/a1111n/an/a1111 <td>421B</td> <td>n/a</td> <td>n/a</td>	421B	n/a	n/a
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42AWn/an/a32TRn/an/a32TRn/an/a42AHn/an/a42TNn/an/a42TQn/an/a42ARn/an/a30ZRn/an/a401An/an/a401Bn/an/a401Bn/an/a411Bn/an/a117Cn/an/a31YRn/an/a118n/an/a117Cn/an/a3117Rn/an/a118n/an/a119Cn/an/a110Cn/an/a1110n/an/a1110n/an/a1110n/an/a1110n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1111n/an/a1112n/an/a1113n/an/a1114n/an/a1115n/an/a1114n/an/a1115n/an/a1115n/an/a1114n/an/a1115n/an/a1115n/an/a1116 <td></td> <td></td> <td></td>			
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40YT n/a n/a 401B n/a n/a 401A n/a n/a 411B n/a n/a 31YR n/a n/a 411A n/a n/a 11/A n/a n/a 4107 n/a n/a 312V n/a n/a 3102 n/a n/a 4110 n/a n/a 4110 n/a n/a 4112W n/a n/a 411D n/a n/a 411D n/a n/a 411D n/a n/a 411D n/a n/a 411A n/a n/a 311A n/a n/a 4109 n/a n/a 3109 n/a			
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The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omissi	uaranteed. Service pipes are i

ALS Sewer Map Key



Sewer Fittings

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

- Air Valve Dam Chase Fitting
- ≥ Meter

Π

0 Vent Column

Operational Controls

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

X Control Valve Ф Drop Pipe Ξ Ancillary Weir

Outfall

Inlet

Undefined End

End Items

いし

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.

Other Symbols

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

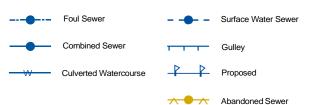
- ****/ Public/Private Pumping Station
- * Change of characteristic indicator (C.O.C.I.)
- Ø Invert Level
- < Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement **Operational Site** :::::: Chamber Tunnel Conduit Bridge

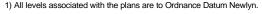
Other Sewer Types (Not Operated or Maintained by Thames Water)



Notes:

hames

Water



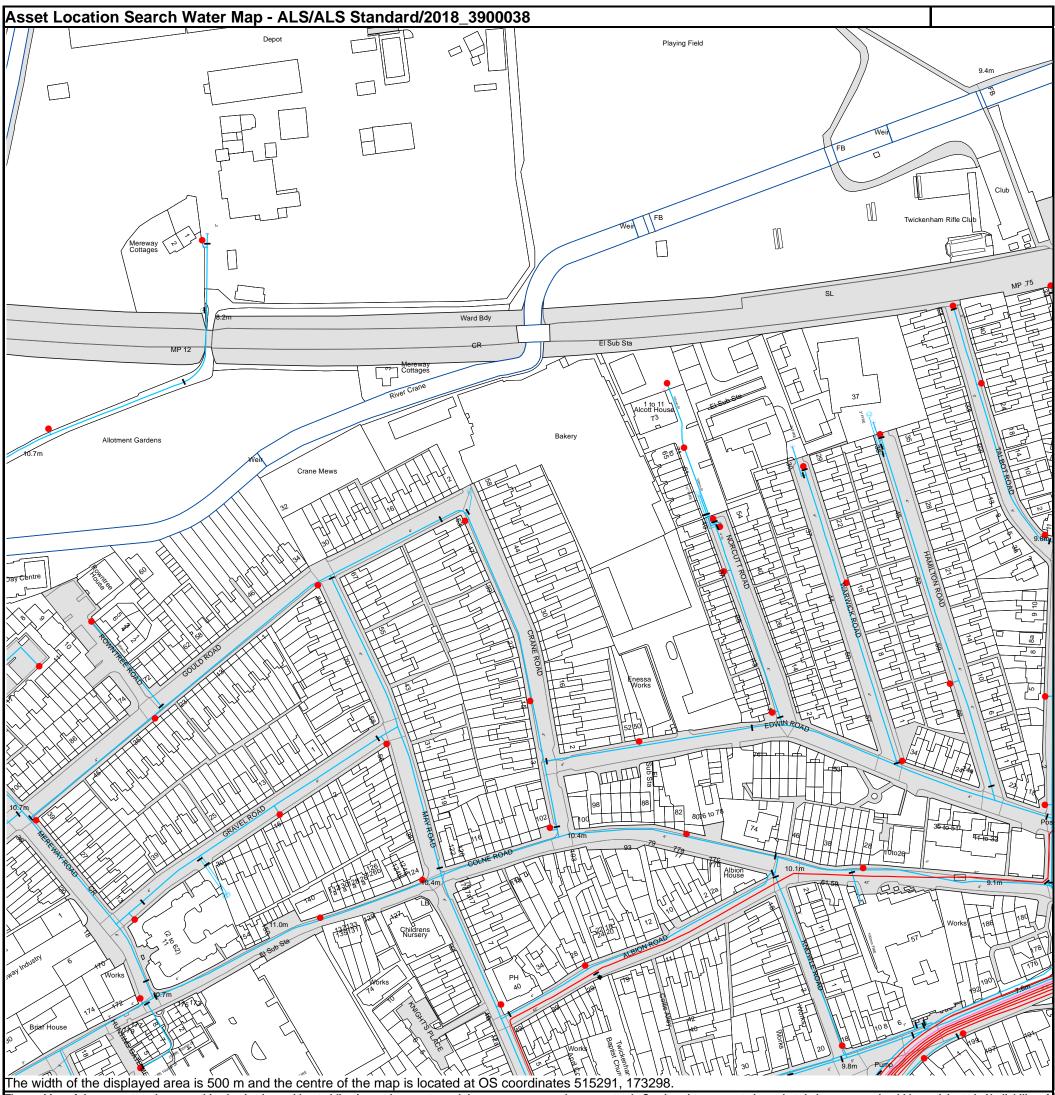
2) All measurements on the plans are metric.

- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

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

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13 T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk



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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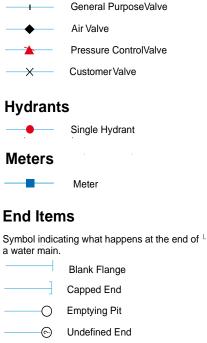
ALS Water Map Key

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.
- STRE
 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')	

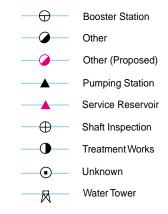
Thames Water Utilities Ltd, Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13 T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk



Valves

- Manifold
- Customer Supply
- Fire Supply





Other Symbols

Data Logger

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.

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0845 070 9148 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

Ways to pay your bill

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



Search Code

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Thames Water Property Searches, Clearwater Court, Vastern Road, Reading RG1 8DB, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who
 rely on the information included in property search reports undertaken by subscribers on residential
 and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practise and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award compensation of up to £5,000 to you if he finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details

The Property Ombudsman scheme Milford House 43-55 Milford Street Salisbury Wiltshire SP1 2BP Tel: 01722 333306 Fax: 01722 332296 Email: <u>admin@tpos.co.uk</u>

You can get more information about the PCCB from www.propertycodes.org.uk

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE





Waterman Infrastructure & Environment

Search address supplied

Greggs Gould Road Twickenham TW2 6RT

Your reference	IE12357 Greggs Bakery Twickenham	
Our reference	SFH/SFH Standard/2018_3900040	
Received date	30 October 2018	



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







Search address supplied: Greggs, Gould Road, Twickenham, TW2 6RT

This search is recommended to check for any sewer flooding in a specific address or area

- TWUL, trading as Property Searches, are responsible in respect of the following:-
- (i) any negligent or incorrect entry in the records searched;
- (ii) any negligent or incorrect interpretation of the records searched;
- (iii) and any negligent or incorrect recording of that interpretation in the search report
- (iv) compensation payments



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







History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

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



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H. Soakaway Test Results

SOAKAWAY TEST RESULTS

BRE DIGEST 365 - SOIL INFILTRATION RATE

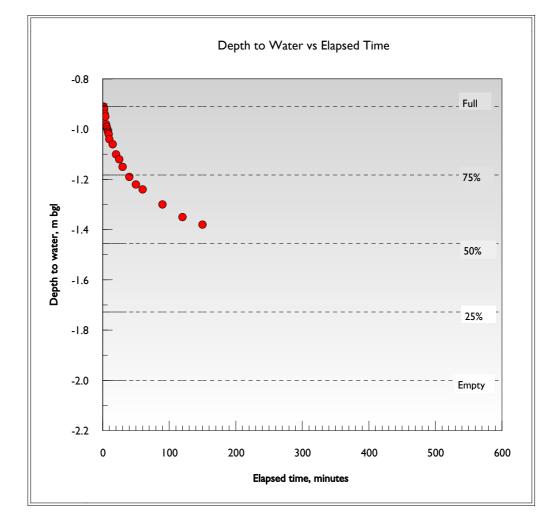
Project: GREGGS, GOULD ROAD, TWICKENHAM

Client: London Square

Agent: Waterman Structures

Project No: 4998 Sheet No: 1/2

SA	2	Description of stratum under test	Depth to water prior to
Test No.			test, m below g.l.
Depth, m	2.00		
Length, m	1.00	Firm orange brown CLAY and KEMPTON PARK GRAVEL	pit dry
Width, m	0.50		



-T25))(T75-	(V75-V25)/A50	f =
·	m³	0.27	V75-V25 =
	m²	2.14	A50 =
extrapolated	min	460	T75-T25 =
extrapolated	m/s	<u>4.62E-006</u>	f =

Elapsed	Depth to	
Time	Water	
min	m	
0.0	0.91	
1.0	0.91	
2.0	0.91	
3.0	0.94	
3.0 4.0	0.94	
4.0 5.0	0.93	
6.0	0.98	
7.0	1.00	
8.0	1.00	
9.0	1.01	
10.0	1.02	
15.0	1.04	
20.0	1.10	
25.0	1.12	
30.0	1.15	
40.0	1.19	
50.0	1.22	
60.0	1.24	
90.0	1.30	
120.0	1.35	
150.0	1.38	

SOAKAWAY TEST RESULTS

BRE DIGEST 365 - SOIL INFILTRATION RATE

Project: GREGGS, GOULD ROAD, TWICKENHAM

Client: London Square

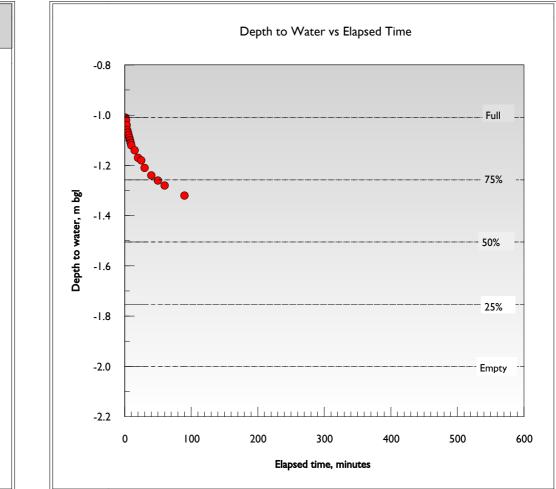
Elapsed

Agent: Waterman Structures

Depth to

Project No: 4998 Sheet No: 2/2

SA Test No.	2 2	Description of stratum under test	Depth to water prior to test, m below g.l.
Depth, m	2.00		
Length, m	1.00	Firm orange brown CLAY and KEMPTON PARK GRAVEL	pit dry
Width, m	0.50		



f =	(V75-V25)/A50(T75-T25)		
V75-V25 =	0.25	m³	-
A50 =	1.99	m²	
T75-T25 =	465	min	extrapolated
f =	<u>4.47E-006</u>	m/s	extrapolated

Time	Water
min	m
0.0	1.01
1.0	1.01
2.0	1.02
3.0	1.04
4.0	1.06
5.0	1.07
6.0	1.08
7.0	1.09
8.0	1.10
9.0	1.11
10.0	1.12
15.0	1.14
20.0	1.17
25.0	1.18
30.0	1.21
40.0	1.24
50.0	1.26
60.0	1.28
90.0	1.32



I. Proposed Drainage Layout



12357-WIE-ZZ-GF-M2-C-92002-Pr drainage_updated_scheme 1, A1-Wat-BS-S, A1-Wat-S, REF - OS Map



J. Proposed Permeable Area





Κ. Surface Water Calculations

> Appendices Greggs Bakery, Twickenham (Scheme 1) Project Number: WIE12357 Document Reference: WIE12357-100-R-1-5-2-FRA



CALCULATIONS

Company:	WIE	Office: London
Sheet No:	1 of 3	Project No: WIE12357
Ву	M Stuart	Date 05.04.22
Checked:	C Henderson	Date 05.04.22

Project Title: Calculations Title:

Greggs Bakery, Twickenham - Scheme 1 Surface Water Management - Summary Sheet

LOCATION					CAL	CULAT	IONS	6						OPTIC	SNC
	Surface water at the	Site will	be m	anade	ed in	accord	ance	with the	Londo	n Plan re	auire	ments.	i.e.		
	surface water discha														
	the impacts of clima									0		Ū			
	Existing surface w	ater disc	hard	e reai	me (M100	60)·								
			, nai g	cicgi											
		Aroc	ı (ha)		Ca	culatio	- mo	thad		iachargo	Pata				
	Site Area		.130							ischarge 145.3					
						Illingfor	a (Pa	age∠)		145.	5 I/S				
	(calculated w	ith PIMP	of 1	00 %))										
	Existing Site Chara	acteristi	CS												
	Existing soft lan)							=		0.000			
	Area positively o	drained								=		1.130) ha		
	Proposed Site Cha	racteris	tics												
	Proposed soft la	ndscapi	ng							=		0.176	6 ha		
	Area positively o	drained								=		0.954	l ha		
					_										
	Proposed surface	water di	schar	ne re	aime										
			Jonar	gere	giine										
	Discharge rate f	or Croor	field	2100	rata					=		8 7	7 l/s		
	Discharge rate i	of Greef	meiu		rate					-		0.1	1/5		
	Intial attenuation e	stimate			_										
	Total attenuation	n require	d on-	site fo	r 8.7	l/s rest	rictio	n		=		650) m ³		
	SuDS Details														
	Area									=		3982	2 m2		
	Area for attenua	tion (allo	wing	for 10	% los	ss for u	tilitie	s trench	es)	=		3584	1 m2		
	Depth									=		0.61	m		
	Voids									=		0.3	3 m		
	Volume									=		656	ð m ³		
	Area for infiltrati	on (allow	/ing fc	or 5m o	offse	t from s	truct	ures)		=			5 m ²		
													+		



CALCULATIONS

Company:	WIE	Office: London
Sheet No:	2 of 3	Project No: WIE12357
Ву	M Stuart	Date 05.04.22
Checked:	C Henderson	Date 05.04.22

Project Title: Calculations Title:

Greggs Bakery, Twickenham - Scheme 1 Surface Water Management (M100_60)

LOCATION					CAL	CULATIO	NS						OP	TION	s
	Calculations based on: Design and Analysis of urban storm drainage. The Wallingford Procedure, Volume 1 Principles methods and practice.														
	User Inp	ut Data													
	Total site									1.130	ha				
	SAAR (Fi	rom FEH)								627					
	· · ·	ntensity (F	rom FEH)							46.4					
	PIMP (%	imperviou	s)							100	%				
	Soil Type									0.40					
	Very Low	Runoff (w	ell drained	sandy, l	oamy	or earthy	peat soils	5)		0.15					
	Low Rund	off (Very p	ermeable s	oils (e.g	. grav	/el, sand)				0.30					
			e sands, sil		edime	entary clay	/s)			0.40					
			y or loamy							0.45					
	Very High	n Runoff (S	Soils of the	wet upla	nds)					0.50					
													_		
-ig. 9.7	UCWI (Fi	rom Figure	e 9.7 of Wa	llingford	Meth	iod)				58					
- 10			\												-
Eqn. 13		_	e) = 2.78 C						•	-					
	Where:	Qp (Pe	ak Dischar	ge)	1 = 1	rainfall inte	ensity		A =	Total A	rea				
		rainfall Int	noity (i)												-
From FEH		rainfall Inte 1100_60 is	,	46.4 mr	n								_		-
	IV	100_00 is).	40.4 111	11										-
Eqn 7.20	Cv = PR/	100													-
Eqn 7.3			MP) + (25.0) SOIL) -	+ (0 0	78 UCWI) - 20 7						_		-
_qn 7.0	-	•	entage of o		•				100	%					-
Page 52			IMP can n						40						-
-90 02			alue of PIM						100						
		Soil:	0.40			57.67			-						
	PR =								76	6.70					
	Thus Cv								C).77					
Sec 7.10	-		l for simula	tion and	desig	gn)				1.3					
	Qp for 1 i	in 100 yea	r 60 minut	e duratio	on =		145.3	l/s	or	128.6	l/s/ha				



CALCULATIONS

Company:	WIE	Office: London
Sheet No:	3 of 3	Project No: WIE12357
Ву	M Stuart	Date 05.04.22
Checked:	C Henderson	Date 05.04.22

Project Title: Calculations Title:

Greggs Bakery, Twickenham - Scheme 1 Surface Water Management (IoH124)

LOCATION		CALCULATIONS												_0	PTION	1S							
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		area of loH 124																		ch			
		Watern	nan G	Froup												E	age	1	1				
		Pickfo	ords	Wharf																			
		Clink															2	~					
		Londor															Mic	ĩ					
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							IH	124	Mean	Annu	al F	'100d											
									In	put													
					Retur	n Pe	riod (years	 50 	100		Soi Urba	1	0.40									
		SAAR (mm) 601 Region Number Region 6																					
	Results 1/s QBAR Rural 142.3 QBAR Urban 142.3																						
								×4		Q100 years 454.0													
								QI	00 ye	ars 4 ear 1	154.0												
								Q1	00 ye Q1 y Q2 ye Q5 ye	ars 4 ear 1 ars 1 ars 1	154.0 .21.0 .25.4 .82.2												
								01	00 ye 01 ye 02 ye 05 ye 010 ye 020 ye	ars 4 ear 1 ars 1 ars 1 ars 2 ars 2	154.0 21.0 25.4 82.2 30.6 185.1												
								01	00 ye 01 ye 02 ye 05 ye 010 ye 020 ye 020 ye	ars 4 ear 1 ars 1 ars 1 ars 2 ars 2 ars 3	154.0 121.0 125.4 182.2 130.6 185.1 105.7												
									00 ye 01 ye 02 ye 05 ye 010 ye 020 ye 020 ye 020 ye 030 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3	154.0 21.0 25.4 82.2 130.6 185.1 105.7 122.5 172.9												
									00 ye 01 y 02 ye 05 ye 210 ye 220 ye 225 ye 230 ye 250 ye 00 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4	154.0 21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 872.9 154.0												
								01	00 ye 01 ye 02 ye 05 ye 010 ye 020 ye 020 ye 020 ye 030 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5	21.0 25.4 82.2 30.6 85.1 05.7 22.5 72.9 154.0 33.7												
								000000000000000000000000000000000000000	00 ye 01 ye 02 ye 05 ye 010 ye 020 ye 020 ye 020 ye 020 ye 030 ye 00 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
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								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 ear 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 par 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 par 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 par 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 par 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
								000000000000000000000000000000000000000	00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 par 1 ars 1 ars 2 ars 2 ars 3 ars 3 ars 3 ars 4 ars 5 ars 5	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3												
		Qbar (1	1 in 2	2.333)			I/s/50		00 ye 01 ye 05 ye 20 ye 20 ye 225 ye 230 ye 250 ye 200 ye 200 ye 250 ye	ars 4 ear 1 hars 1 hars 1 hars 2 ars 3 ars 3 ars 3 ars 3 ars 4 ars 5 5 ars 7	21.0 25.4 82.2 30.6 85.1 85.1 85.7 822.5 72.9 54.0 33.7 59.3	a			2.7	l/s							
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Date 04/04/2022 17:	01		Desi	aned h	y csch3			Micro
		1.00		-	-			Drainago
File Porus pavement	_w_soa	kay		ked by				,
Innovyze			Sour	ce Con	trol 20	20.1.3		
C	of Do	1+	for 10	0	Dotum	Domio	d (140) Q.)
Summary	OI RE	SUILS	TOT IC	JU year	Return	Perio	a (+40	<u>16)</u>
		Half D	rain Tir	ne : 507	/ minutes	•		
Storm	Max	Max	Max		Max	Max	Max	Status
Event		-			ntrol Σ (
	(m)	(m)	(1/s)) (1/s)	(1/s)	(m³)	
15 min Summer	9 612 0	1 252		2.1	8.7	10.8	270.7	ОК
30 min Summer				2.1	8.7 8.7	10.8		U K Flood Risk
60 min Summer				2.1	8.7	10.8		Flood Risk Flood Risk
120 min Summer				2.1	8.7	10.8		Flood Risk
180 min Summer				2.1	8.7	10.8		Flood Risk
240 min Summer				2.1	8.7	10.8		Flood Risk
360 min Summer				2.1	8.7			Flood Risk Flood Risk
480 min Summer						10.8		Flood Risk Flood Risk
				2.1	8.7	10.8		Flood Risk Flood Risk
600 min Summer				2.1	8.7	10.8		
720 min Summer				2.1	8.7	10.8		Flood Risk
960 min Summer				2.1	8.7	10.8		Flood Risk
1440 min Summer				2.1	8.7	10.8		Flood Risk
2160 min Summer				2.1	8.7	10.8		O K
2880 min Summer				2.1	8.7	10.8	235.4	O K
4320 min Summer	9.525 (0.135		2.1	8.7	10.8	145.6	O K
5760 min Summer	9.487 (0.097		2.1	8.4	10.5	104.0	O K
7200 min Summer	9.471 (0.081		2.1	7.0	9.1	86.8	O K
8640 min Summer	9.459 (0.069		2.1	6.0	8.1	74.5	O K
10080 min Summer	9.451 (0.061		2.1	5.3	7.4	65.8	O K
15 min Winter	9.673 (0.283		2.1	8.7	10.8	303.9	O K
	Storm		Rain	Flooded	l Dischar	ge Time	-Peak	
	Event		(mm/hr)	Volume	Volume	e (mi	lns)	
				(m³)	(m³)			
<u>-</u>	15 min S	ummer	155.890	0.0) 278	.3	19	
	30 min S	ummer	101.072	0.0) 361	.1	33	
	60 min S	ummer	62.436	0.0) 446	.2	62	
12	20 min S	ummer	39.506	0.0	564	.8	122	
18	30 min S	ummer	29.656	0.0	636	.0	182	
24	40 min S	ummer	23.946	0.0		.8	242	
30	60 min S	ummer	17.419	0.0) 747	.3	360	
48	30 min S	ummer	13.748	0.0	786	.4	416	
60)0 min S	ummer	11.382	0.0) 813	.9	474	
72	20 min S	ummer	9.727	0.0) 834	.6	534	
	60 min S		7.552	0.0			662	
	40 min S		5.259	0.0			924	
	60 min S		3.651	0.0			1316	
	30 min S		2.824	0.0			1676	
	20 min S 20 min S		1.985	0.0			2376	
	50 min S 60 min S		1.559	0.0			3000	
	00 min S 00 min S		1.303	0.0			3744	
	40 min S		1.132	0.0			4416	
	30 min S 30 min S		1.132	0.0			4410 5152	
	50 min 3 15 min W			0.0			18	
-	LU III II W	THCET	100.000	0.0	, ,11	• •	10	

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Waterman Group							Page 2
Pickfords Wharf							
Clink Street							
London, SE1 9DG							A March
•	2.1			1.0			MICLO
Date 04/04/2022 17:0			-	y csch3			Drainage
File Porus pavement	_w_soakag.	Chec	ked by				Brainiage
Innovyze		Sour	ce Cont	crol 202	20.1.3		
Summary	of Results	s for 10	0 year	Return	Perio	d (+40	<u>18)</u>
Storm	Max Max	Max	M	lax	Max	Max	Status
Event	Level Depth					Volume	
	(m) (m)	(1/s)	(1	./s) (1/s)	(m³)	
30 min Winter	9 752 0 362		2.1	8.7	10.8	389 4	Flood Risk
60 min Winter			2.1	8.7	10.8		Flood Risk
120 min Winter			2.1	8.7	10.8		Flood Risk
180 min Winter			2.1	8.7			Flood Risk
240 min Winter			2.1	8.7	10.8		Flood Risk
360 min Winter			2.1	8.7	10.8		Flood Risk
480 min Winter			2.1	8.7	10.8		Flood Risk
600 min Winter			2.1	8.7	10.8		Flood Risk
720 min Winter			2.1	8.7	10.8		Flood Risk
960 min Winter			2.1	8.7	10.8		Flood Risk
1440 min Winter			2.1	8.7	10.8		Flood Risk
2160 min Winter			2.1	8.7	10.8		O K
2880 min Winter			2.1	8.7			0 K
					10.8		
4320 min Winter			2.1	8.4		103.9	
5760 min Winter			2.1	6.4		78.6	ОК
7200 min Winter			2.1	5.1		62.8	
8640 min Winter			2.0	4.3	6.3		
10080 min Winter	9.434 0.044		1.8	3.8	5.7	47.3	0 K
	Storm	Rain	Flooded	Discharg	ge Time	-Peak	
	Event	(mm/hr)	Volume	Volume	(mi	.ns)	
			(m³)	(m³)			
3	0 min Winter	101.072	0.0	404.	4	33	
6	0 min Winter	62.436	0.0	499.	8	62	
12	0 min Winter	39.506	0.0	632.	6	120	
	0 min Winter		0.0	712.	4	178	
24	0 min Winter	23.946	0.0	767.	1	236	
36	0 min Winter	17.419	0.0	837.	0	348	
48	0 min Winter	13.748	0.0	880.	8	458	
60	0 min Winter	11.382	0.0	911.	6	554	
72	0 min Winter	9.727	0.0	934.	8	572	
96	0 min Winter	7.552	0.0	967.	8	720	
	0 min Winter		0.0	1010.		1010	
144			0.0	1052.		1408	
	0 min Winter	3.651					
216			0.0	1085.	6	1760	
216 288	0 min Winter	2.824	0.0	1085. 1144.		1760 2332	
216 288 432	0 min Winter 0 min Winter 0 min Winter	2.824 1.985	0.0	1144.	7	2332	
216 288 432 576	0 min Winter 0 min Winter 0 min Winter 0 min Winter	2.824 1.985 1.559	0.0	1144. 1198.	7	2332 3056	
216 288 432 576 720	0 min Winter 0 min Winter 0 min Winter 0 min Winter 0 min Winter	2.824 1.985 1.559 1.303	0.0 0.0 0.0	1144. 1198. 1252.	7 4 4	2332 3056 3752	
216 288 432 576 720 864	0 min Winter 0 min Winter 0 min Winter 0 min Winter	2.824 1.985 1.559 1.303 1.132	0.0 0.0 0.0	1144. 1198. 1252.	7 4 4 0	2332 3056	

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Waterman Group		Page 3
Pickfords Wharf		
Clink Street		A second second
London, SE1 9DG		Micco
Date 04/04/2022 17:01	Designed by csch3	Micro
File Porus pavement w soakag	Checked by	Drainage
Innovyze	Source Control 2020.1.3	
	504100 0010101 2020.1.5	
Ra	infall Details	
Rainfall Mode	el FEH	
Return Period (years		
FEH Rainfall Versio		
	on GB 515318 173345 TQ 15318 73345	
Data Typ Summer Storr		
Winter Storr		
Cv (Summe:		
Cv (Winte:	0.840	
Shortest Storm (min:		
Longest Storm (mins		
Climate Change	8 +40	
<u> </u>	<u>me Area Diagram</u>	
Tota	al Area (ha) 0.954	
	ime (mins) Area om: To: (ha)	
	0 0.054	
	0 4 0.954	
©198	32-2020 Innovyze	

Waterman Group				Page 4
Pickfords Wharf				
Clink Street				
London, SE1 9DG				Mirro
Date 04/04/2022 17:01	Designe	ed by csch3		Drainago
File Porus pavement_w_soakag				Diamage
Innovyze	Source	Control 2020	.1.3	
	Model De			
		er Level (m) 10.	000	
Cel	lular Stora	ge Structure		
Infiltration Coeffic Infiltration Coeffic	cient Base (m/ cient Side (m/	hr) 0.00000	Porosity 0.	30
Depth (m) Area (m ²) Inf				(m²) 925.0
0.000 3584.0	925.0	0.600 358	4.0	U.C2C
	Pump Outflo	w Control		
	Invert Level	(m) 9.390		
	Depth (m) F	Low (1/s)		
	0.100	8.7000		

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L. Foul Water Calculations

Appendices Greggs Bakery, Twickenham (Scheme 1) Project Number: WIE12357 Document Reference: WIE12357-100-R-1-5-2-FRA



 Project Title:
 Former Greggs Bakery

 Calculations Title:
 Existing Foul Flow Estimate

 Sheet No:
 1 of 2
 Project No:
 WIE12357

 By:
 C Henderson
 Date:
 05.04.22

 Checked:
 P O'Flaherty
 Date:
 05.04.22

		Dry Weather Flow	Rate (per day)	Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential						2.12	24	
Existing property =	160 litres/person/day	368.0 litres per	unit	Thames Water Guidelines (2016)	0 existing units			0.0
New property =	125 litres/person/day	287.5 litres per	unit	Thames Water Guidelines (2016)	0 proposed units			0.0
Occupancy =	2.3 persons							
Hotel		500.0 litres per	room	British Water (2013)	0 rooms	3	24	0.0
Student Accommodation		200.0 litres per	bed	Thames Water Guidelines (2016)	0 beds	3	24	0.0
Offices		750.0 litres per	100m ²	Jones (1992)	265.4 m ²	3	10	0.2
Retail		400.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
Cinema		10.0 litres per	seat	Jones (1992)	0 seats*	3	8	0.0
Health Club/Sports Centre		50.0 litres per	customer	British Water (2013)	0 customers**	3	16	0.0
Day School		90.0 litres per	pupil	British Water (2013)	0 pupils	3	10	0.0
Boarding School		175.0 litres per	pupil	British Water (2013)	0 pupils	3	24	0.0
Hospital		625.0 litres per	bed	Jones (1992)	0 beds	3	24	0.0
Nursing Home		350.0 litres per	bed	British Water (2013)	0 beds	3	24	0.0
Restaurant		30.0 litres per	cover	British Water (2013)	0 covers	3	8	0.0
Pub/Club		15.0 litres per	customer	Butler and Davies (2004)	0 customers***	3	12	0.0
Warehouse		150.0 litres per	100m ²	Jones (1992)	7111.8 m ²	3	12	0.7
Manufacturing		550.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
Commercial		300.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
SUB TOTAL								0.9
Infiltration percentage	10%	6						0.1
TOTAL								1.0

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m^2 $4 \text{ m}^2 \text{ per person}$

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m^2

0 m²

4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area =

4 m² per person



 Project Title:
 Former Greggs Bakery

 Calculations Title:
 Proposed Foul Flow Estimate

Sheet No:	2 of 2	Project No:	WIE12357
By:	C Henderson	Date:	05.04.22
Checked:	P O'Flaherty	Date:	05.04.22

		Dry Weather Flow Rate (per day)		Source	Number of	Factor	Profile (hours)	Peak Flow Rate (litres/second)
Residential						2.12	24	
Existing property =	160 litres/person/day	400.0 litres per	unit	Thames Water Guidelines (2016)	0 existing units			0.0
New property =	125 litres/person/day	312.5 litres per	unit	Thames Water Guidelines (2016)	116 proposed units			0.9
Occupancy =	2.5 persons							
Hotel		500.0 litres per	room	British Water (2013)	0 rooms	3	24	0.0
Student Accommodation		200.0 litres per	bed	Thames Water Guidelines (2016)	0 beds	3	24	0.0
Offices		750.0 litres per	100m ²	Jones (1992)	0 m ²	3	10	0.0
Retail		400.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
Cinema		10.0 litres per	seat	Jones (1992)	0 seats*	3	8	0.0
Health Club/Sports Centre		50.0 litres per	customer	British Water (2013)	0 customers**	3	16	0.0
Day School		90.0 litres per	pupil	British Water (2013)	0 pupils	3	10	0.0
Boarding School		175.0 litres per	pupil	British Water (2013)	0 pupils	3	24	0.0
Hospital		625.0 litres per	bed	Jones (1992)	0 beds	3	24	0.0
Nursing Home		350.0 litres per	bed	British Water (2013)	0 beds	3	24	0.0
Restaurant		30.0 litres per	cover	British Water (2013)	0 covers	3	8	0.0
Pub/Club		15.0 litres per	customer	Butler and Davies (2004)	0 customers***	3	12	0.0
Warehouse		150.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
Manufacturing		550.0 litres per	100m ²	Jones (1992)	0 m ²	3	12	0.0
Commercial		300.0 litres per	100m ²	Jones (1992)	175 m ²	3	12	0.0
SUB TOTAL								0.9
Infiltration percentage	109	6						0.1
TOTAL								1.0

* Foul flow rate needs to be calculated based on number of seats. An allowance of 4m² has been made for each seat.

Floor area = 0 m^2 $4 \text{ m}^2 \text{ per person}$

** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area = 0 m^2

0 m²

4 m² per person

*** Foul flow rate needs to be calculated based on number of customers. An allowance of 4m² has been made for each customer.

Floor area =

4 m² per person



UK and Ireland Office Locations

