

Appendix B – Thames Water Asset Records

Asset location search



Property Searches

Groundwise Searches Ltd
Suite 8 Chichester House
45 Chichester Road
SOUTHEND ON SEA
SS1 2JU

Search address supplied Thames Side West
London
E16 1GB

Your reference 20616DM

Our reference ALS/ALS Standard/2017_3685831

Search date 9 November 2017

Keeping you up-to-date

Knowledge of features below the surface is essential in every development. The benefits of this not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility for any commercial or residential project.

An asset location search provides information on the location of known Thames Water clean and/or wastewater assets, including details of pipe sizes, direction of flow and depth. Please note that information on cover and invert levels will only be provided where the data is available.



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



0845 070 9148



Search address supplied: Thames Side West, London, E16 1GB

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, 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:

TQ3980NE
TQ4080SW
TQ3980SE
TQ3980NW

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:

TQ3980NE
TQ4080SW



TQ3980SE
TQ3980NW

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

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

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

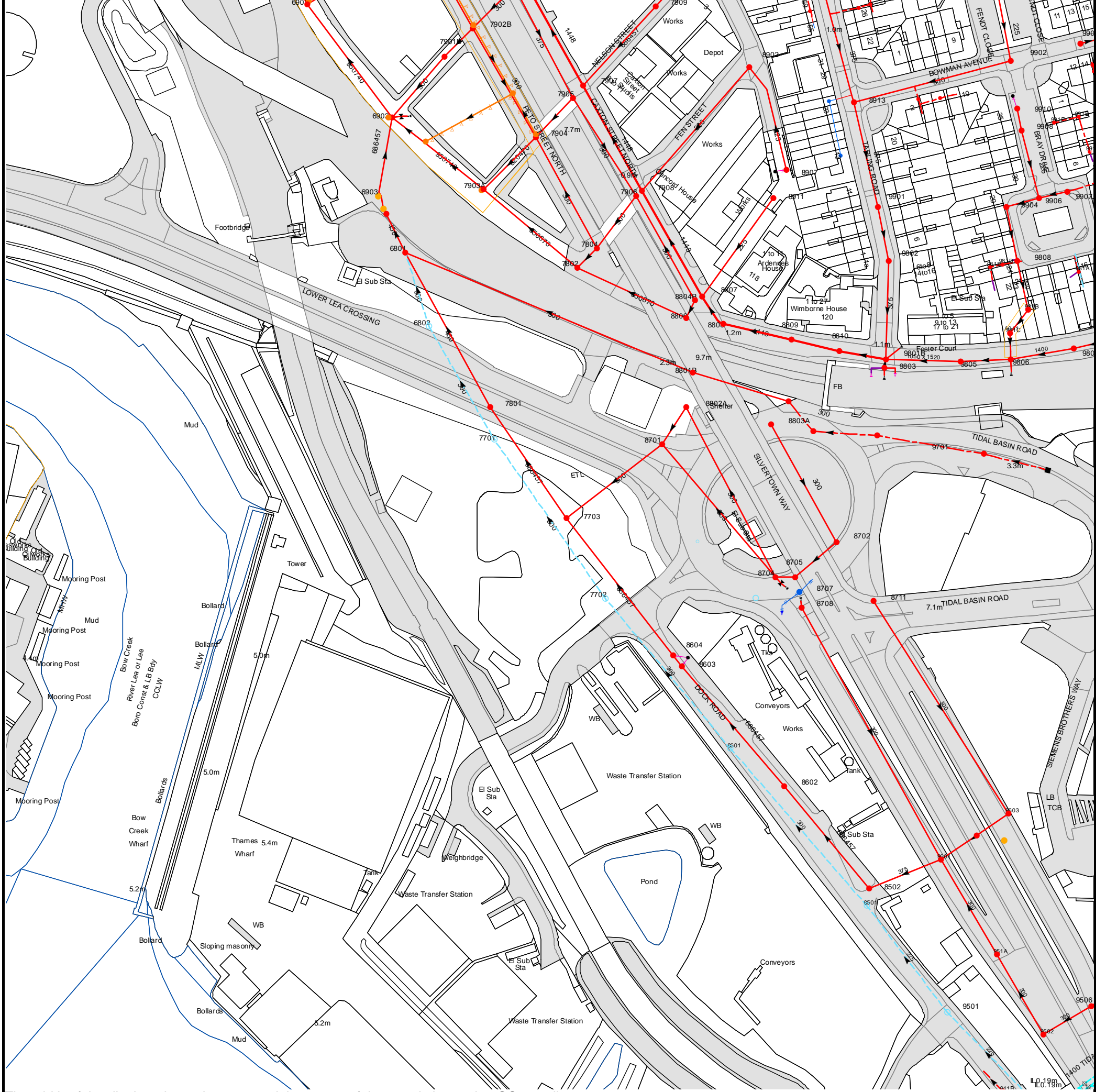
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

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

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

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



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 539750,180750

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

Manhole Reference	Manhole Cover Level	Manhole Invert Level
n/a	n/a	n/a
6902	1.51	-1.91
7901B	1.16	-1.28
7902B	1.14	-1.17
n/a	n/a	n/a
n/a	n/a	n/a
7905	.88	-1.19
7907	.88	-2.03
7909	.97	-1.48
991F	n/a	n/a
991E	n/a	n/a
9910	1.04	-.58
8913	.96	-1.05
891D	n/a	n/a
991I	n/a	n/a
991J	n/a	n/a
8902	.94	-1.51
9902	.98	-.53
891E	n/a	n/a
891B	n/a	n/a
891A	n/a	n/a
991G	n/a	n/a
991H	n/a	n/a
9903	1.01	-.48
6802	1.86	-1.07
8808	1.2	-2.1
8806	1.26	-1.74
8804B	1.05	-1.04
8807	1.09	-1.96
7802	1.18	-1.86
6801	1.54	-1.5
7804	1.12	-1.43
6903	1.55	-1.77
7906	.78	-1.47
7908	.78	-1.96
n/a	n/a	n/a
7903A	1.26	-1.75
n/a	n/a	n/a
7904	1.02	-1.65
n/a	n/a	n/a
n/a	n/a	n/a
981A	n/a	n/a
991D	n/a	n/a
8911	.93	-1.29
8907	.77	-.78
8809	1.03	-2.03
891C	n/a	n/a
9901	1	-1.1
9802	1.07	-1.33
981E	n/a	n/a
981D	n/a	n/a
9904	1.16	-1.12
981C	n/a	n/a
9808	1.26	-1.14
9908	1.11	-.62
981B	n/a	n/a
9906	1.15	-.82
9907	1.18	-.46
9807	1.19	-.19
8702	1.14	-.44
871A	n/a	n/a
7703	1.53	-1.69
9701	2.9	.13
8701	1.54	-1.05
7701	1.68	-.52
871C	n/a	n/a
881B	n/a	n/a
8803A	2.11	.46
8802A	1.92	-.69
7801	3.22	-.05
881A	n/a	n/a
8801B	2.19	-.88
9803	1.24	.21
9805	1.47	-1.99
9801B	1.08	-2.04
9806	1.66	-1.98
8810	1	-2.03
9502	1.41	-.97
9501	3.18	1.77
9506	1.25	-.85
951A	n/a	n/a
8501	1.78	.36
8502	1.61	-1.57
9601	1.3	-1.36
961A	n/a	n/a
9603	1.28	-1.09
8602	1.54	-1.66
8601	1.58	.01
8603	1.36	-1.74
8604	1.39	-1.68
8708	1.31	-.51

Manhole Reference	Manhole Cover Level	Manhole Invert Level
8711	.78	-.56
7702	1.68	-.26
871B	n/a	n/a
8707	1.29	-.81
8704	1.3	-.77
8705	1.36	-.72
6901	1.78	-1.91

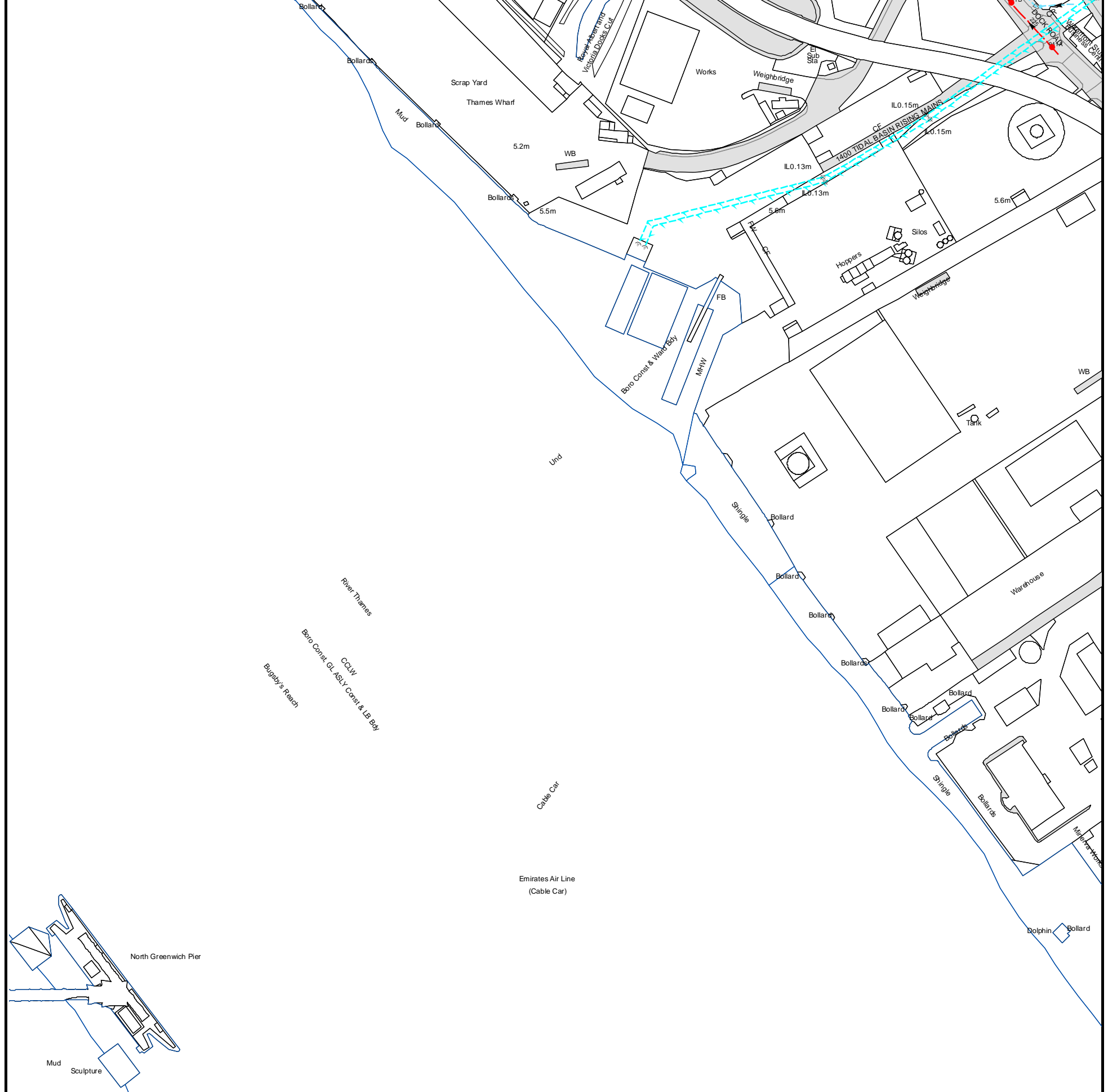
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Manhole Reference	Manhole Cover Level	Manhole Invert Level
0403	3.12	.1
041A	n/a	n/a
3403	n/a	4.22
1401	n/a	n/a
0407	4.03	1.47
0402	3.97	1.37
0401	5.58	-14.48
4314	n/a	1.82
3304	n/a	3.4
4304	n/a	3.07
4403	n/a	n/a
3308	n/a	3.92
4305	n/a	n/a
331B	n/a	n/a
331A	n/a	n/a
341A	n/a	n/a
3401	n/a	4.36
4404	n/a	2
3402	n/a	4.2
4407	n/a	3.9
4401	n/a	4.4
4402	n/a	4
0301	2.14	.06
0303	2.12	.04
1307	2.05	.25
131G	n/a	n/a
131E	n/a	n/a
131F	n/a	n/a
131C	n/a	n/a
1305	1.97	.17
131A	n/a	n/a
131B	n/a	n/a
1322	n/a	n/a
1320	n/a	n/a
1301	1.77	.05
1314	n/a	1.29
1313	n/a	.56
1304	1.86	.14
131D	n/a	n/a
1312	n/a	1.36
1321	n/a	n/a
1319	n/a	n/a
1317	n/a	n/a
1308	n/a	n/a
1318	n/a	2.94
1309	n/a	3.06
1310	n/a	n/a
1311	n/a	2.62
1303	1.62	.02
2320	1.76	.08
2318	n/a	1.91
2201	1.65	.04
2317	n/a	n/a
2319	n/a	2.46
2316	n/a	1.77
2315	n/a	3.14
2402	n/a	3.78
2312	n/a	3.3
2313	n/a	3.77
2314	n/a	n/a
2401	n/a	4.35
2310	n/a	3.42
2309	n/a	3.58
2308	n/a	3.77
2307	n/a	4.16
2304	n/a	n/a
2311	n/a	n/a
2305	n/a	1.42
2303	n/a	1.66
2204	1.68	-.05
2301	4.26	-13.15
2306	n/a	n/a
2202	1.64	.01
221A	n/a	n/a
3314	n/a	n/a
3315	n/a	3.84
3318	n/a	4.05
3316	n/a	n/a
3404	n/a	3.44
3317	n/a	n/a
3201	1.64	-.15
3310	n/a	n/a
3309	n/a	n/a
3312	n/a	3.51
3313	n/a	3.28
3215	n/a	1.92
3216	n/a	n/a
3307	n/a	3.62
3306	n/a	n/a
3303	n/a	3.25
3302	n/a	1.94

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3311	n/a	n/a
331C	n/a	n/a
3214	n/a	1.72
3213	n/a	2.8
3305	n/a	3.21
3301	n/a	1.66
4212	n/a	n/a
4211	n/a	n/a
4312	n/a	n/a
4313	n/a	3.14
4214	n/a	.71
4213	n/a	.82
4204	n/a	1.09
4317	n/a	.22
4325	n/a	1.72
4316	n/a	n/a
4315	n/a	1.4
4322	n/a	2.78
4318	n/a	2.98
4208	n/a	.95
4311	n/a	n/a
4310	n/a	1.14
4319	n/a	n/a
4323	n/a	n/a
4320	n/a	n/a
4201	1.77	-12.66
4321	n/a	n/a
4205	n/a	n/a
4209	n/a	1.27
4216	n/a	n/a
4206	n/a	n/a
4307	n/a	2.75
4306	n/a	3.07
4308	n/a	2.86
4309	n/a	3
4301	n/a	1.46
4303	n/a	2.34
4302	n/a	n/a
4218	n/a	n/a
421B	n/a	n/a
421A	n/a	n/a
4120	n/a	n/a
4119	n/a	n/a
4108	1.79	-.78
4109	2.34	-.38
4122	n/a	n/a
4121	n/a	n/a
4117	n/a	n/a
4118	n/a	n/a
4116	n/a	n/a
4115	n/a	n/a
4101	1.67	-.25
3102	1.54	n/a
4217	n/a	n/a
3207	n/a	n/a
4203	2	.39
3206	1.65	-.23
3211	2.53	.68
3203	1.66	-.14
4215	n/a	.6
4001	1.56	.35
4002	1.61	.32

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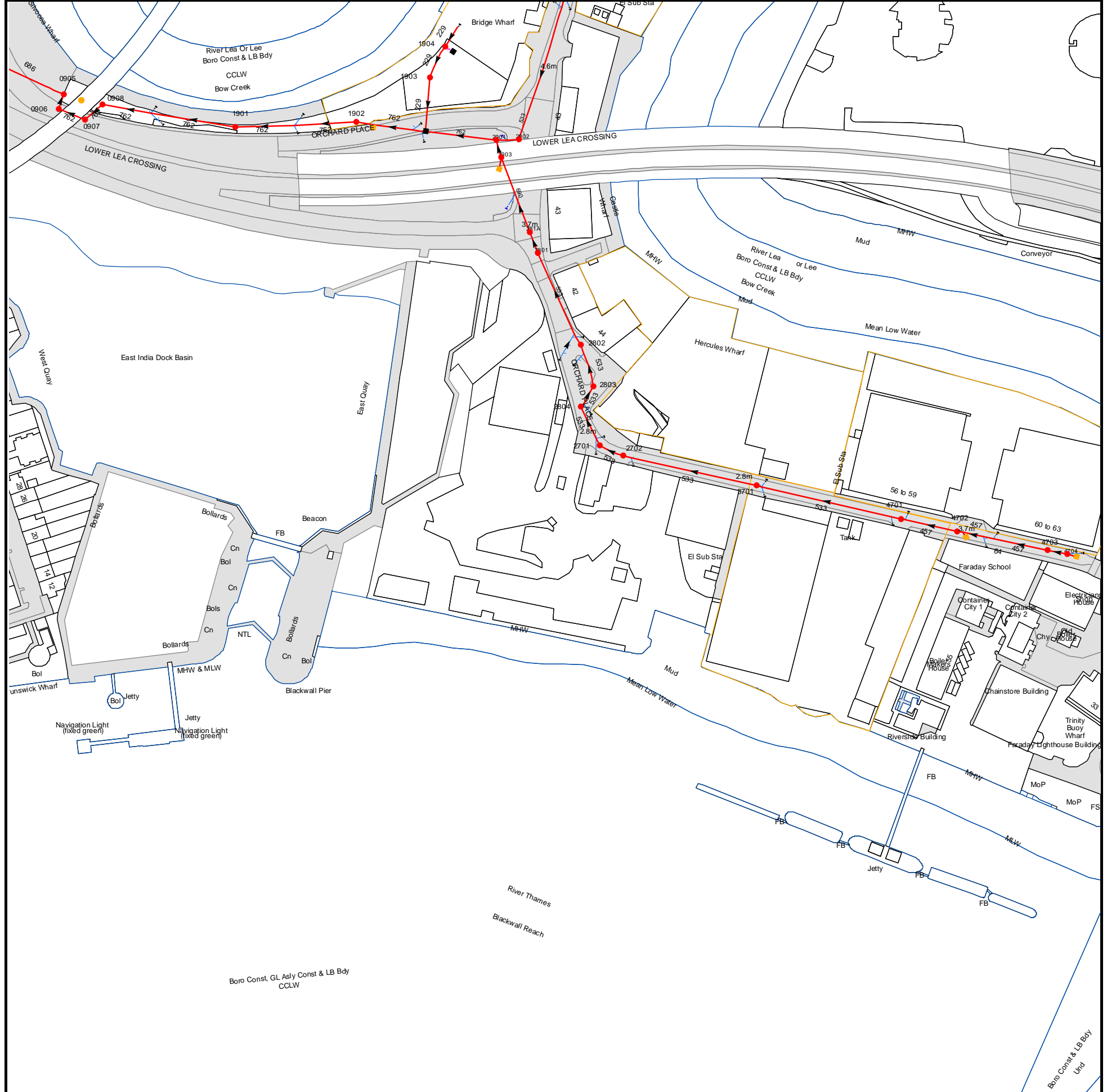


The width of the displayed area is 500m and the centre of the map is located at OS coordinates 539750,180250
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Manhole Reference	Manhole Cover Level	Manhole Invert Level
941A	n/a	n/a
941B	n/a	n/a

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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 539250,180750

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
4704	n/a	n/a
4703	n/a	n/a
4702	n/a	n/a
4701	n/a	n/a
3701	n/a	n/a
2702	n/a	n/a
2701	n/a	n/a
2804	n/a	n/a
2803	n/a	n/a
0908	n/a	n/a
1901	4.88	.28
1902	4.83	.43
1903	5.5	1.18
1904	5.42	1.33
2901	4.36	.53
2903	4.46	.06
2902	4.37	.66
281A	n/a	n/a
2801	3.44	.91
2802	2.59	.84
0906	n/a	n/a
0905	n/a	n/a
0907	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.








ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

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





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
-  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.

-  Control Valve
-  Drop Pipe
-  Ancillary
-  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.

-  Outfall
-  Undefined End
-  Inlet






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.)
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

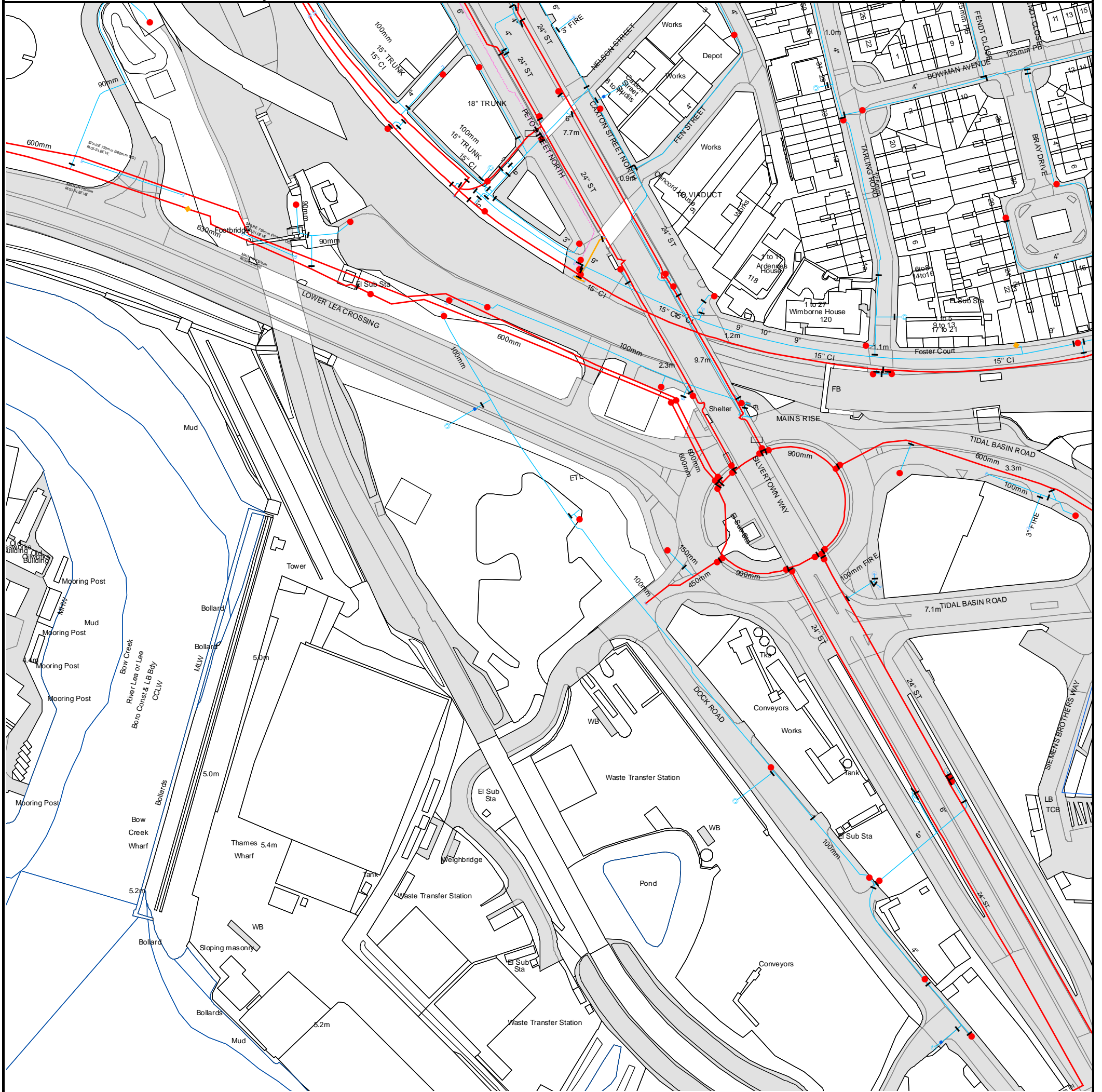
-  Agreement
-  Operational Site
-  Chamber
-  Tunnel
-  Conduit Bridge

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

-  Foul Sewer
-  Surface Water Sewer
-  Combined Sewer
-  Gully
-  Culverted Watercourse
-  Proposed
-  Abandoned Sewer

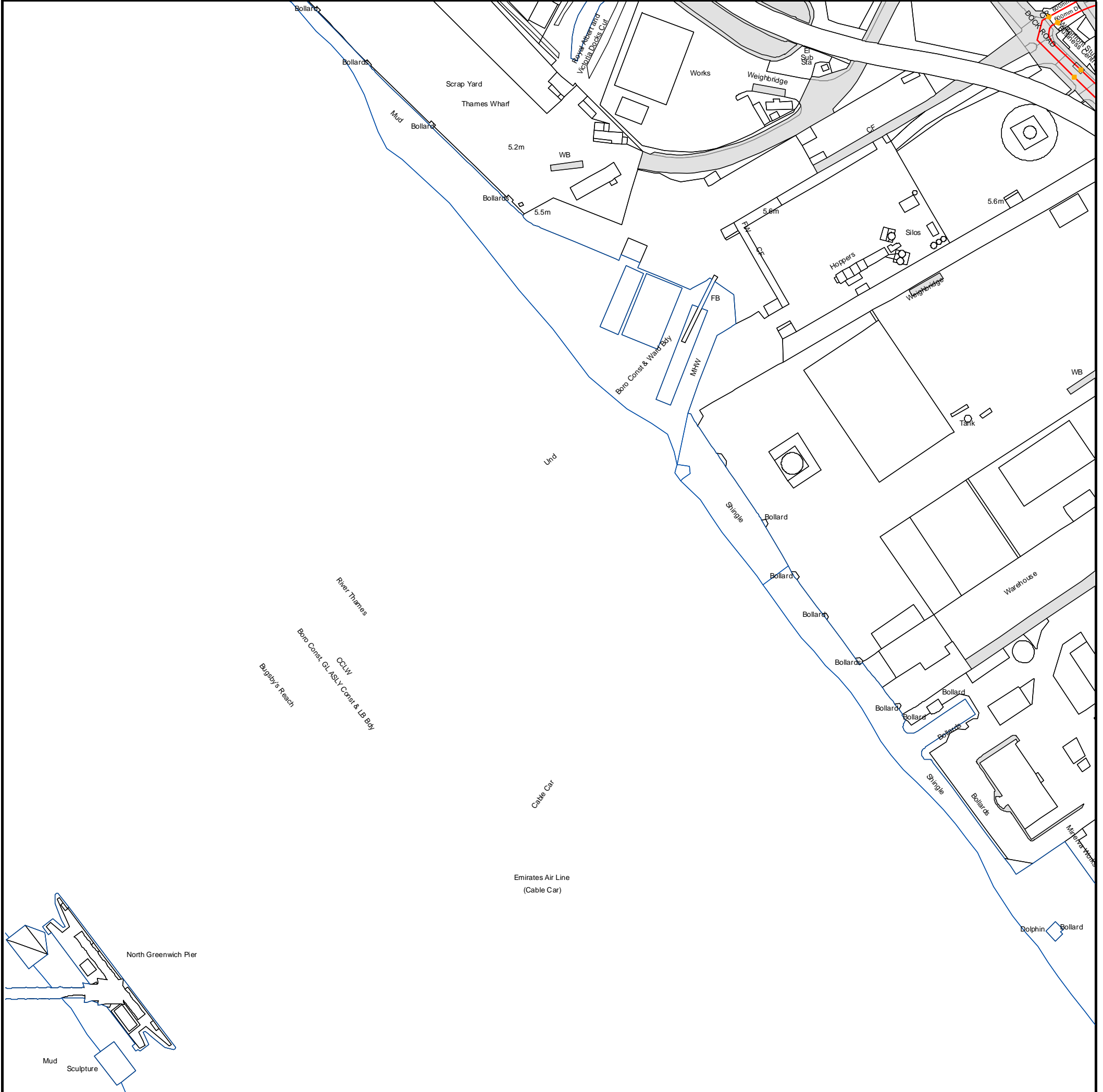
Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 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 millimetres. 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.



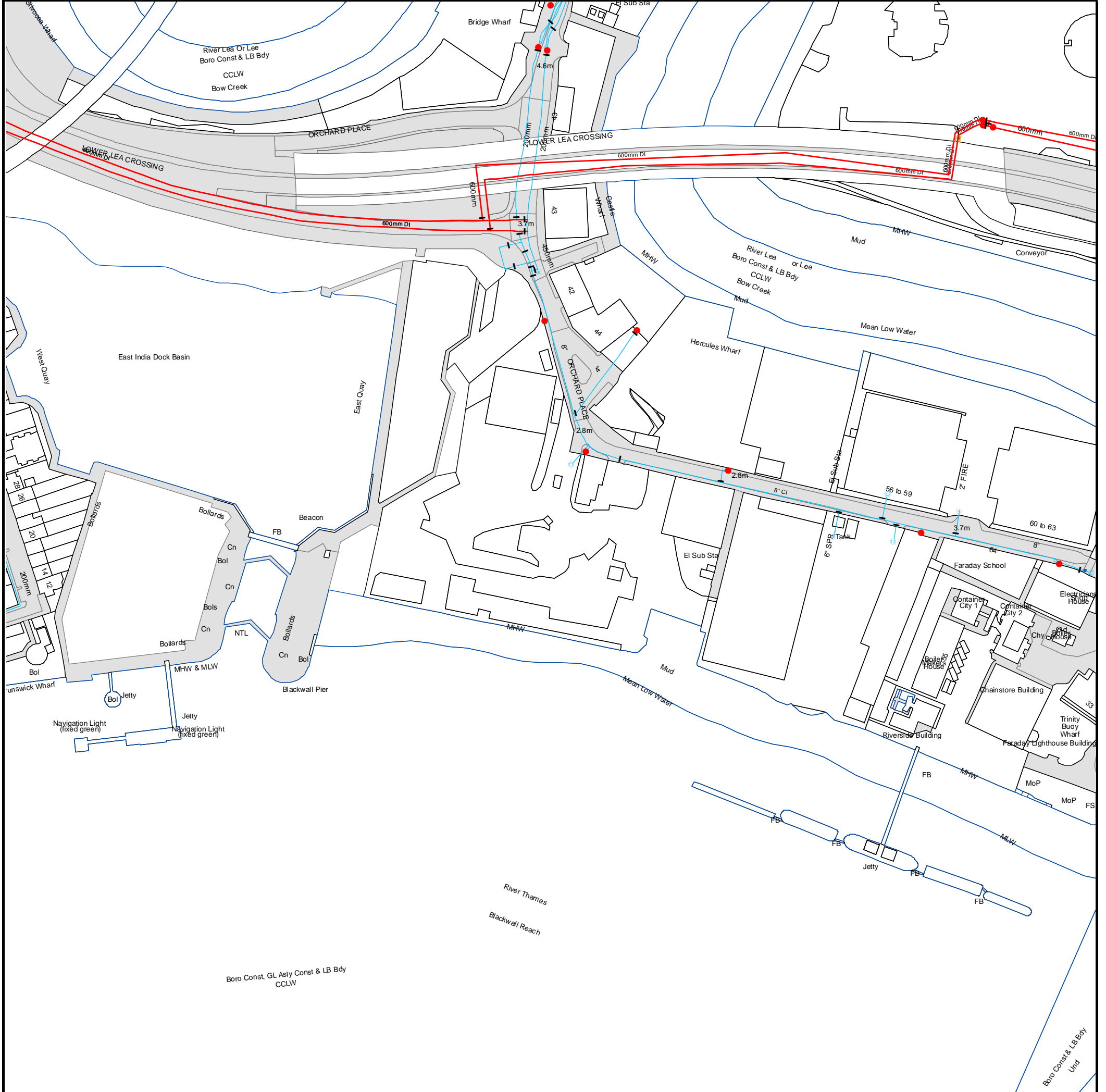
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ALS Water Map Key


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.

- 
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

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

- 
Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

- 
Private Main: Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

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
<p>Call 0845 070 9148 quoting your invoice number starting CBA or ADS / OSS</p>	<p>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</p>	<p>By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number</p>	<p>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</p>

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: admin@tpos.co.uk

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

Appendix C – Existing Surface Water Calculations

Meinhardt UK Ltd		Page 2
283-288 High Holborn London WC1V 7HP	Thameside West	
Date 19/07/2018 File 180719 - THAMESIDE WEST...	Designed by PMG Checked by EP	
XP Solutions	Network 2017.1.2	

20 year Return Period Summary of Critical Results by Maximum Level (Rank 1)
for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 0
Number of Online Controls 0 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details


Rainfall Model FSR Ratio R 0.450
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 20, 30, 100
Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	20	+0%	20/15 Summer	100/15 Summer			9.205
1.001	2	15 Winter	20	+0%	20/15 Summer				9.090
1.002	3	15 Winter	20	+0%	20/15 Summer				8.648
1.003	4	15 Winter	20	+0%	20/15 Summer				8.434
1.004	5	15 Winter	20	+0%	20/15 Summer				7.969
1.005	6	15 Winter	20	+0%	20/15 Summer				7.726

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)		
1.000	1	0.480	0.000	0.78	37.0	SURCHARGED	2
1.001	2	0.585	0.000	1.43	67.8	SURCHARGED	
1.002	3	0.361	0.000	1.05	101.2	SURCHARGED	
1.003	4	0.337	0.000	1.38	136.6	SURCHARGED	
1.004	5	0.111	0.000	1.00	172.4	SURCHARGED	
1.005	6	0.107	0.000	1.32	208.7	SURCHARGED	

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283-288 High Holborn London WC1V 7HP	Thameside West	
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XP Solutions	Network 2017.1.2	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 0
Number of Online Controls 0 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details


Rainfall Model FSR Ratio R 0.450
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 20, 30, 100
Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Water Level (m)
1.000	1	15 Winter	30	+0%	20/15 Summer	100/15 Summer		9.439
1.001	2	15 Winter	30	+0%	20/15 Summer			9.311
1.002	3	15 Winter	30	+0%	20/15 Summer			8.820
1.003	4	15 Winter	30	+0%	20/15 Summer			8.579
1.004	5	15 Winter	30	+0%	20/15 Summer			8.052
1.005	6	15 Winter	30	+0%	20/15 Summer			7.775

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Flow (l/s)		
1.000	1	0.714	0.000	0.83	39.4	SURCHARGED	2
1.001	2	0.806	0.000	1.55	73.4	SURCHARGED	
1.002	3	0.533	0.000	1.12	108.1	SURCHARGED	
1.003	4	0.482	0.000	1.46	144.7	SURCHARGED	
1.004	5	0.194	0.000	1.07	184.9	SURCHARGED	
1.005	6	0.156	0.000	1.42	225.4	SURCHARGED	

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283-288 High Holborn London WC1V 7HP	Thameside West	
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 0
Number of Online Controls 0 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.450
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.840


Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status ON
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 20, 30, 100
Climate Change (%) 0, 0, 0, 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	1	15 Winter	100	+0%	20/15 Summer	100/15 Summer			10.003
1.001	2	15 Winter	100	+0%	20/15 Summer				9.957
1.002	3	15 Winter	100	+0%	20/15 Summer				9.453
1.003	4	15 Winter	100	+0%	20/15 Summer				9.134
1.004	5	15 Winter	100	+0%	20/15 Summer				8.375
1.005	6	15 Winter	100	+0%	20/15 Summer				7.961

PN	US/MH Name	Surcharged Flooded		Pipe		Status	Level Exceeded
		Depth (m)	Volume (m ³)	Flow / Cap. (l/s)	Overflow (l/s)		
1.000	1	1.278	3.009	1.30	61.6	FLOOD	2
1.001	2	1.452	0.000	1.86	88.3	FLOOD RISK	
1.002	3	1.166	0.000	1.29	124.2	SURCHARGED	
1.003	4	1.037	0.000	1.76	174.2	SURCHARGED	
1.004	5	0.517	0.000	1.31	226.1	SURCHARGED	
1.005	6	0.342	0.000	1.76	279.6	SURCHARGED	

Appendix D – Proposed Surface Water Calculations

Meinhardt UK Ltd		Page 1
283-288 High Holborn London WC1V 7HP	Thameside West Phase 1	
Date 28/06/2019 File 2303---PHASE 1 DRAINAGE	Designed by JS Checked by EP	
XP Solutions	Network 2018.1.1	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.450 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water	Surcharged
									Level (m)	Depth (m)
1.000	1	60 Winter	1	+0%					8.742	-0.150
1.001	1	1440 Winter	1	+0%					8.586	-0.118
1.002	2	15 Winter	1	+0%	100/15 Winter				1.085	-0.119
2.000	4	60 Winter	1	+0%					8.638	-0.150
2.001	4	1440 Winter	1	+0%					8.484	-0.116
1.003	2	15 Winter	1	+0%	30/60 Winter				0.983	-0.117
1.004	3	120 Winter	1	+0%	30/60 Winter				0.929	-0.196
1.005	3	120 Winter	1	+0%	30/15 Winter				0.969	-0.136
3.000	9	60 Winter	1	+0%					8.820	-0.150
3.001	10	1440 Winter	1	+0%	100/120 Winter				8.690	-0.092
3.002	4	15 Winter	1	+0%	100/15 Summer				1.193	-0.164
4.000	10	60 Winter	1	+0%					8.599	-0.150
4.001	10	1440 Winter	1	+0%	100/120 Summer				8.478	-0.083
3.003	5	15 Winter	1	+0%	30/15 Summer				1.000	-0.136
5.000	11	60 Winter	1	+0%					8.388	-0.150
5.001	11	1440 Winter	1	+0%	100/360 Winter				8.249	-0.101
1.006	4	120 Winter	1	+0%	1/30 Winter				0.968	0.043

PN	US/MH Name	Flooded		Pipe		Level Exceeded
		Volume (m ³)	Flow / Cap. (l/s)	Flow (l/s)	Status	
1.000	1	0.000	0.00	0.0	OK*	
1.001	1	0.000	0.00	0.0	OK	
1.002	2	0.000	0.09	1.2	OK	
2.000	4	0.000	0.00	0.0	OK*	
2.001	4	0.000	0.00	0.0	OK	
1.003	2	0.000	0.11	1.2	OK	
1.004	3	0.000	0.03	0.8	OK	
1.005	3	0.000	0.09	3.4	OK	

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1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Cap.	Flow / (l/s)	Flow (l/s)		
3.000	9	0.000	0.00		0.0	OK*	
3.001	10	0.000	0.00		0.1	OK	
3.002	4	0.000	0.16		6.6	OK	
4.000	10	0.000	0.00		0.0	OK*	
4.001	10	0.000	0.00		0.1	OK	
3.003	5	0.000	0.32		12.9	OK	
5.000	11	0.000	0.00		0.0	OK*	
5.001	11	0.000	0.00		0.1	OK	
1.006	4	0.000	0.04		2.8	SURCHARGED	

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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.450 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	60 Winter	30	+0%					8.742	-0.150
1.001	1	1440 Winter	30	+0%					8.624	-0.080
1.002	2	120 Winter	30	+0%	100/15 Winter				1.156	-0.048
2.000	4	60 Winter	30	+0%					8.638	-0.150
2.001	4	1440 Winter	30	+0%					8.523	-0.077
1.003	2	120 Winter	30	+0%	30/60 Winter				1.155	0.055
1.004	3	120 Winter	30	+0%	30/60 Winter				1.155	0.030
1.005	3	240 Winter	30	+0%	30/15 Winter				1.163	0.058
3.000	9	60 Winter	30	+0%					8.820	-0.150
3.001	10	1440 Winter	30	+0%	100/120 Winter				8.756	-0.026
3.002	4	15 Winter	30	+0%	100/15 Summer				1.246	-0.111
4.000	10	60 Winter	30	+0%					8.599	-0.150
4.001	10	1440 Winter	30	+0%	100/120 Summer				8.556	-0.005
3.003	5	60 Winter	30	+0%	30/15 Summer				1.229	0.093
5.000	11	60 Winter	30	+0%					8.388	-0.150
5.001	11	1440 Winter	30	+0%	100/360 Winter				8.305	-0.045
1.006	4	60 Winter	30	+0%	1/30 Winter				1.202	0.277

PN	US/MH Name	Flooded Volume (m ³)	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Level Exceeded
1.000	1	0.000	0.00	0.0	OK*
1.001	1	0.000	0.00	0.1	OK
1.002	2	0.000	0.08	1.1	OK
2.000	4	0.000	0.00	0.0	OK*
2.001	4	0.000	0.00	0.1	OK
1.003	2	0.000	0.11	1.2	SURCHARGED
1.004	3	0.000	0.09	2.5	SURCHARGED
1.005	3	0.000	0.11	4.3	SURCHARGED

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Phase 1



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30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
3.000	9	0.000	0.00	0.0		OK*	
3.001	10	0.000	0.00	0.1		OK	
3.002	4	0.000	0.51	20.2		OK	
4.000	10	0.000	0.00	0.0		OK*	
4.001	10	0.000	0.00	0.1		OK	
3.003	5	0.000	0.41	16.2	SURCHARGED		
5.000	11	0.000	0.00	0.0		OK*	
5.001	11	0.000	0.00	0.1		OK	
1.006	4	0.000	0.04	2.8	SURCHARGED		

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283-288 High Holborn London WC1V 7HP	Thameside West Phase 1	
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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 6 Number of Storage Structures 7 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 20.000 Cv (Summer) 0.750
Region England and Wales Ratio R 0.450 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0
Analysis Timestep 2.5 Second Increment (Extended)
DTS Status ON
DVD Status OFF
Inertia Status OFF

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	1	60 Winter	100	+40%					8.742	-0.150
1.001	1	1440 Winter	100	+40%					8.681	-0.023
1.002	2	240 Winter	100	+40%	100/15 Winter				1.549	0.345
2.000	4	60 Winter	100	+40%					8.638	-0.150
2.001	4	1440 Winter	100	+40%					8.583	-0.017
1.003	2	240 Winter	100	+40%	30/60 Winter				1.549	0.449
1.004	3	240 Winter	100	+40%	30/60 Winter				1.548	0.423
1.005	3	240 Winter	100	+40%	30/15 Winter				1.552	0.447
3.000	9	1440 Winter	100	+40%					8.859	-0.111
3.001	10	1440 Winter	100	+40%	100/120 Winter				8.859	0.077
3.002	4	15 Winter	100	+40%	100/15 Summer				1.868	0.511
4.000	10	1440 Winter	100	+40%					8.675	-0.074
4.001	10	1440 Winter	100	+40%	100/120 Summer				8.675	0.114
3.003	5	15 Winter	100	+40%	30/15 Summer				1.747	0.611
5.000	11	1440 Winter	100	+40%					8.394	-0.144
5.001	11	1440 Winter	100	+40%	100/360 Winter				8.392	0.042
1.006	4	240 Winter	100	+40%	1/30 Winter				1.549	0.624

PN	US/MH Name	Flooded Volume (m ³)	Flow / Cap. (l/s)	Pipe Flow (l/s)	Level Exceeded
1.000	1	0.000	0.00	0.0	OK*
1.001	1	0.000	0.00	0.1	OK
1.002	2	0.000	0.08	1.1	SURCHARGED
2.000	4	0.000	0.00	0.0	OK*
2.001	4	0.000	0.00	0.1	OK
1.003	2	0.000	0.09	1.0	SURCHARGED
1.004	3	0.000	0.09	2.5	SURCHARGED
1.005	3	0.000	0.08	3.3	SURCHARGED

283-288 High Holborn
London
WC1V 7HP

Thameside West
Phase 1



Date 28/06/2019
File 2303---PHASE 1 DRAINAGE

Designed by JS
Checked by EP

XP Solutions

Network 2018.1.1

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded		Pipe		Status	Level Exceeded
		Volume (m ³)	Flow / Overflow Cap. (l/s)	Flow (l/s)			
3.000	9	0.000	0.00	0.0		OK*	
3.001	10	0.000	0.00	0.1		SURCHARGED	
3.002	4	0.000	0.76	30.2		SURCHARGED	
4.000	10	0.000	0.00	0.0		OK*	
4.001	10	0.000	0.00	0.2		SURCHARGED	
3.003	5	0.000	1.50	59.7		SURCHARGED	
5.000	11	0.000	0.00	0.0		OK*	
5.001	11	0.000	0.00	0.1		SURCHARGED	
1.006	4	0.000	0.04	2.9		SURCHARGED	

Appendix E – Proposed Foul Water Calculations



		Project Title		Project No.	
		Thameside West - Phase 1		2303	
		Part of Development		Calculation Sheet No:	
Proposed Foul Flows		1			
Drawing ref:		Check By:		Date	
				Calcs By: EP	
				Date 06/03/2020	

Development Type		1 bedroom	Water usage	210 l/day	Refer to table 1
Number of units		1	Water demand	210 l/day	Water usage * units
			Average Flow Rate	0.00 l/s	Water demand per second

Development Type		1 bedroom	Water usage	210 l/day	Refer to table 1
Number of units		184	Water demand	38640 l/day	Water usage * units
			Average Flow Rate	0.45 l/s	Water demand per second

Development Type		2 bedrooms	Water usage	130 l/day	Refer to table 1
Number of units		157	Water demand	20410 l/day	Water usage * units
			Average Flow Rate	0.24 l/s	Water demand per second

Development Type		3+ bedrooms	Water usage	100 l/day	Refer to table 1
Number of units		59	Water demand	5900 l/day	Water usage * units
			Average Flow Rate	0.07 l/s	Water demand per second

Industrial Units

Sewers for Adoption 7th Edition (design flow rate of 0.6l/s per hectare + 0.7l/s per hectare)

Average Flow Rate	0.57 l/s	Water demand per second
Total Average Flow Rate	1.33 l/s	Water demand per second
Total Peak Flow Rate	7.96 l/s	6 times average flow rate

Type of Building	Litres	Criteria/Unit
Dwellings		
1 bedroom	210	Bedroom
2 bedrooms	130	Bedroom
3+ bedrooms	100	Bedroom
Student en-suite	100	Bedroom
Student, communal	90	Bed Space
Nurses Home	120	Bed Space
Childrens Home	135	Bed Space
Elderly Sheltered	120	Bedroom
Elderly Care Home	135	Bed Space
Prison	150	Bedroom
Hotels		
Budget	135	Bedroom
Travel Inn/Lodge	150	Bedroom
4-5 Star Luxury	200	Bedroom

Table 1: Extract from Table 2 Plumbing Engineering Services Design Guide, 2002

Appendix F – London Borough of Newham Proforma

1. Project & Site Details	Project / Site Name (including sub-catchment / stage / phase where appropriate)	Thameside West, Unit 1
	Address & post code	Land on the corner of North Woolwich road and Bell Lane, E16 1YZ
	OS Grid ref. (Easting, Northing)	E 540112 N 180337
	LPA reference (if applicable)	
	Brief description of proposed work	Construction of proposed multi storey Residential Blocks
	Total site Area	7500 m ²
	Total existing impervious area	7500 m ²
	Total proposed impervious area	7500 m ²
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	Not located within CDA as per Newham's Surface Water Management Plan
	Existing drainage connection type and location	Assumed connection to combined Thames Water sewer (tbc by survey)
	Designer Name	Jack Stokes
	Designer Position	Project Engineer
	Designer Company	Meinhardt UK

2. Proposed Discharge Arrangements	2a. Infiltration Feasibility		
	Superficial geology classification	Alluvium - Clay, Silt, Sand and Peat.	
	Bedrock geology classification	London Clay formation - Clay, Silt & Sand.	
	Site infiltration rate	tbc by SI	
	Depth to groundwater level	tbc by SI	
	Is infiltration feasible?	No, due to underlying London Clay	
	2b. Drainage Hierarchy		
		<i>Feasible (Y/N)</i>	<i>Proposed (Y/N)</i>
	1 store rainwater for later use	N	N
	2 use infiltration techniques, such as porous surfaces in non-clay areas	N	N
	3 attenuate rainwater in ponds or open water features for gradual release	N	N
	4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
	5 discharge rainwater direct to a watercourse	N	N
	6 discharge rainwater to a surface water sewer/drain	N	N
7 discharge rainwater to the combined sewer.	Y	Y	
2c. Proposed Discharge Details			
Proposed discharge location	Sewer in adjacent North Woolwich Rd		
Has the owner/regulator of the discharge location been consulted?	Yes, see Meinhardt drainage strategy		

3a. Discharge Rates & Required Storage				
	Greenfield (GF) runoff rate (l/s)	Existing discharge rate (l/s)	Required storage for GF rate (m ³)	Proposed discharge rate (l/s)
Qbar	2.9			
1 in 1	2.45	92.8	840	2.9
1 in 30	6.64	225.4	840	2.9
1 in 100	9.21	279.6	840	2.9
1 in 100 + CC			840	2.9
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Vortex Flow Control		
3c. Proposed SuDS Measures				
	Catchment area (m ²)	Plan area (m ²)	Storage vol. (m ³)	
Rainwater harvesting	0		0	
Infiltration systems	0		0	
Green roofs	0	0	0	
Blue roofs	5000	2280	656	
Filter strips	0	0	0	
Filter drains	0	0	0	
Bioretention / tree pits	0	0	0	
Pervious pavements	0	0	0	
Swales	0	0	0	
Basins/ponds	0	0	0	
Attenuation tanks	2500		184	
Total	7500	2280	840	

4a. Discharge & Drainage Strategy		Page/section of drainage report
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results		Section 2.1.3 Proposed Surface Water Drainage Strategy
Drainage hierarchy (2b)		As above
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location		Section 2.1.2
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations		Section 2.1.4 and Appendix D
Proposed SuDS measures & specifications (3b)		Section 3
4b. Other Supporting Details		Page/section of drainage report
Detailed Development Layout		Appendix A
Detailed drainage design drawings, including exceedance flow routes		Appendix A
Detailed landscaping plans		Appendix A
Maintenance strategy		Section 3
Demonstration of how the proposed SuDS measures improve:		
a) water quality of the runoff?		Section 3
b) biodiversity?		Section 3
c) amenity?		Section 3



Meinhardt (UK) Ltd
10 Aldersgate Street
London
EC1A 4HJ
T: +44 (0) 20 7831 7969
www.meinhardt.co.uk

FOR FURTHER INFORMATION ON THE PROPOSALS, PLEASE VISIT:
WWW.THAMESIDEWEST-PLANS.CO.UK