

NR22 6XJ

THE
CHOCOLATE
FACTORY



Flood Risk Assessment

Batch No: 001

Date: 02/18

MADE BY FURNESS PARTNERSHIP



Flood Risk Assessment

The Chocolate Factory, Clarendon Road
Wood Green, London N22 6XJ

Client

Furness & Partnership
20 Britton Street
London
EC1M 5TX
Ref: 6079
Date: November 2016

Consulting Engineers

GTA Civils Ltd
66a Church Walk
Burgess Hill
West Sussex RH15 9AS
Tel: 01444 871444
Fax: 01444 871401

Index

Executive Summary

1	Introduction	3
2	Existing Site and Current Flood Conditions	4
3	Proposed Development, 'The Sequential Test' & Mitigation	7
4	Drainage Strategy	9
5	Conclusions	11

Schedule of Appendices

A	Site Location Map & Photos
B	Topographic Survey & Sewer Records
C	Environment Agency Flood & Groundwater Maps
D	Proposed Scheme Drawings Including Drainage Strategy
E	Micro Drainage Calculations
F	Haringey Drainage Proforma

Issue	Issue date	Compiled	Checked
Preliminary Issue	07 November 2016	JP	MR
First Issue	08 November 2016	JP	MR
Second Issue	05 May 2017	JP	MR
Third Issue	06 October 2017	JP	MR
Fourth Issue	09 February 2018	JP	MR

Report by: John Pakenham BSc (Hons)

Checked by: Martin Roberts I Eng, ACIWEM, MCIHT

Executive Summary

- The proposal is for partial demolition, conversion, extension and change of use of the Chocolate Factory buildings in Haringey. A mixed-use development of residential and retail/commercial is proposed in 4 new-build blocks. The full description is shown in Section 3.1 (below) of this report.
- The site is in fluvial Flood Zone 1, as indicated by the Environment Agency Flood Map, i.e. in an area having a low annual probability of flooding from fluvial sources.
- Much of the site is liable to flood in the extreme (1 in 1000 years) storm from surface water (overland flow) and the south half of the site is at risk if the nearby Hornsey Reservoir breaches.
- Other flood sources have been assessed – sewers, groundwater, and other artificial sources such as docks or canals. None of these were found to pose any additional risk.
- The assessed flood risk from surface water and reservoir failure will be mitigated by providing a passive flood barrier to each external door. This will protect up to 0.8m above ground level.
- SUDS: to comply with NPPF, surface water drainage systems must be designed with sustainability in mind. The run-off rate should be limited to the current urbanised Q_{bar} green field rate.
- 216m² of green roof is proposed to the new-build roof areas.
- The surface water drainage strategy utilises 4 underground tanks to store the volume of water in the critical '1 in 100 years plus 30% climate change' storm event. This will be pumped to the surface water sewer, pumping needed due to the flat gradient of the site. The total offsite flow rate is 17.0l/s, this being the Q_{bar} runoff rate. The proposed drainage layout is shown in Appendix D.
- The foul drainage will be routed into the foul sewerage network, following a Section 106 application and permission from Thames Water.

1 Introduction

- 1.1 This report has been prepared for Furness & Partnership in relation to 'The Chocolate Factory', Clarendon Road, Wood Green, London N22 6XJ. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.
- 1.2 GTA Civils Ltd. was appointed by the client to provide a Flood Risk Assessment (FRA) as required by the Environment Agency and Haringey Council in order to achieve Planning Approval at said property.
- 1.3 This report will take the form of a formal Flood Risk Assessment in accordance with the 2012 National Planning Policy Framework (NPPF) and the associated Technical Guidance document, both contained within the 2014 Planning Practice Guidance (PPG). Reference has also been made to the Surface Water Management Plan and Strategic Flood Risk Assessment published by Haringey Council.
- 1.4 The second, third and fourth versions of this report have been prepared following significant revisions to the proposed scheme. Appendix F has been added, which shows the Proforma that the Haringey LLFA engineer requires to be completed.

2 Existing Site and Current Flood Conditions

2.1 The application site lies to the west of Wood Green, which is administered by London Borough of Haringey Council (LBHC). The site area is 1.37ha and the main access point is from Clarendon Road. It is also bounded by highways. A site location map and aerial views of the site are shown in Appendix A.

2.2 The site comprises non-residential buildings and the site is all but impermeable.

2.3 The existing – urbanised – greenfield runoff rates from site have been calculated using Micro Drainage' ICP SUDS application – refer to Appendix E. There are three distinct catchments within the site and so the existing site's runoff rates have been calculated for each of these:

Catchment:	AT1	AT2	AT3
Area (ha):	0.277	0.411	0.17
Qbar – urban (l/s)	3.8	5.7	2.4
Q1	3.3	4.8	2.0
Q30	6.7	9.9	4.1
Q100	7.8	11.5	4.8

2.4 Hornsey Reservoir is located in Alexandra Park to the west of the railway tracks that are close to the western boundary. The River New flows southwards between the railway and reservoir. The Mosell Brook, which is culverted in this area, flows to the south of the site. Neither of these pose a fluvial flood risk to this site.

2.5 A topographical survey of the existing site has been conducted, with levels above Ordnance Datum (AOD). The site's levels range between approximately 25.5m AOD and 23.0m AOD with a very low gradient west to east.

2.6 Geology: the BGS online map shows that the site's solid geology is London Clay (clay, silt and sand). There are no records of drift deposits. This soil type has a notoriously low infiltration rate and because of this no percolation testing has been carried out. It has been assumed that the LLFA engineer agrees that this would be a waste of resources, ie a nil result is all but guaranteed.

2.7 The site is removed from the nearest Vulnerability Zones (aquifers). It overlies a Groundwater Source Protection Zone – Inner, however. Because of this mismatch it is contended that the Water Protection Zone relates to the reservoir, not groundwater. London Clay is not an aquifer, so the water must be at the surface.

- 2.8 A soil investigation report at the detailed design stage, that includes BRE 365 soakage tests, will be undertaken to confirm the soil's low infiltration rate.
- 2.9 Public sewers: Thames Water's sewer records for this area (see Appendix B) show that the site is served by both surface water and foul effluent sewers. These are also shown – with MH references – on the proposed drainage strategy layout in Appendix D.
- 2.10 Fluvial flooding: the Environment Agency's Flood Map in Appendix C shows the site lies in fluvial Flood Zone 1 (FZ1). Sites in FZ1 are susceptible to less than a 1 in 1000 chance (0.1%) of river flooding each year.
- 2.11 Tidal flooding: does not pose a risk due to the site's distance from the nearest shore and the absence of tidally influenced watercourses in this vicinity.
- 2.12 Surface water flooding: occurs when excess rainwater does not infiltrate into the ground, or is not intercepted by urban drainage systems, and instead flows across the surface. The EA's surface water flood map in the 'Low Risk' scenario ('1 in 1000 years' storm event) in Appendix C shows an overland flow route passing east and south through the site. The depth varies across the site: there are large areas up to 0.3m in depth and a significant swathe between 0.3m and 0.9m deep. By analysing the levels between the edges of the deeper shade of blue and within these deeper zones, it is clear that the levels do not vary by more than 0.2m, ie the maximum depth is $0.3 + 0.2 = 0.5\text{m}$, not 0.9m as the map suggests at first.
- 2.13 Artificial sources: flooding from reservoirs, canals and docks. There are no docks or canals in this area. The EA's reservoir flooding map (in Appendix C) shows part of the site lying within the 'risk area' in the event of the Hornsey Reservoir breaching. Likelihood is very low, but consequences may be significant. Velocity and depth would be mitigated by the railway embankment – the flood pathway would be via the pedestrian underpass west of Coburg Road. That said, the EA's data show this is a significant threat however. Haringey SFRA states that "any development located within this outline should demonstrate that there is egress from the development outside the area of risk".
- 2.14 Groundwater flooding: occurs when water levels in the ground rise above the surface. The SFRA does not show any registered historical groundwater flooding incidents at or near to the site.

- 2.15 Sewer flooding: occurs due to limited capacity or blockage in the sewer system causing backing up of storm water and effluent. The flood maps in the Strategic Flood Risk Assessment (SFRA) commissioned by HBC show no record of this area having suffered from this source – or any other source.
- 2.16 Historical records: there is no indication in the SFRA that this area has suffered from flooding from any of the flood sources (groundwater, sewer failure or overland flow/surface water flooding).
- 2.17 The flood risk of the site is High: the site is liable to flood from surface water with an estimated maximum flood depth of 0.5m, as set out in section 2.11 above. The south half of the site is liable to flood in the event of Hornsey Reservoir breaching – see section 2.12.

3 Proposed Development, 'The Sequential Test' & Mitigation

- 3.1 The planning application is for partial demolition, change of use and extension of the Chocolate Factory buildings; demolition of the remaining buildings and redevelopment to create four new build blocks ranging in height from 3 up to 18 storeys; mixed-use development comprising 10,657 sq.m (GIA) of commercial floorspace (flexible Use Classes A1, A3, B1, D1 and D2), 230 Class C3 residential units - together with associated residential and commercial car parking, public realm works and access.
- 3.2 As summarised in section 2.16 the flood risk is 'high', primarily due to overland flow (surface water). Both this and the risk to the south half of the site from reservoir flooding will be mitigated.
- 3.3 Vulnerability and the Sequential Test: the vulnerability classification of any new development should be considered. According to Table 2 of the NPPF's TG, residential dwellings are classed as 'More Vulnerable'. Commercial space is classed as 'Less Vulnerable'.
- 3.4 The Sequential and Exception Tests are policy – ie legal - mechanisms created to discourage 'vulnerable use' developments in FZ2 and FZ3. Unless wider planning benefits exist that offset the flood risk issues, this process 'steers' higher vulnerability uses to sites in lower flood-risk zones (eg FZ1.)
- 3.5 Table 3 of the NPPF states that 'More Vulnerable' and 'Less Vulnerable' uses constitute 'appropriate development' in fluvial FZ1. Figure 1 (overleaf) shows this table.
- 3.6 Mitigation: maximum likely flood depth is 0.5m over this relatively flat/level site, so the external doors of the ground floor units will be fitted with passive flood barriers. These rise only when approaching flood waters push on them. In this way it does not matter whether occupants are at home or not – or are asleep. This is important as urban surface water flooding can be very flashy, as most surfaces are impermeable. Note that this mitigation will deal with the reservoir flood risk as well.
- 3.7 Safe access to dry land: it is contended that the maximum depth of flooding (in the 1000 years storm) would last only a brief time period – probably up to 2 hours or so. It is contended that the '100 years plus climate change' depth would be less, possibly by 0.1m. Occupants would be able to make their way throughout the site with depths in the main up to 0.3m – or safely reside in their flats for this brief time until the waters recede.

Table 3: Flood risk vulnerability and flood zone ‘compatibility’

Flood risk vulnerability classification (see table 2)		Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Flood zone (see table 1)	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test required	✓	✓
	Zone 3a	Exception Test required	✓	×	Exception Test required	✓
	Zone 3b functional floodplain	Exception Test required	✓	×	×	×

Key: ✓ Development is appropriate.
 × Development should not be permitted.

Notes to table 3:

This table does not show:

- the application of the Sequential Test which guides development to Flood Zone 1 first, then Zone 2, and then Zone 3;
- flood risk assessment requirements; or
- the policy aims for each flood zone.

Figure 1: Table 3 of the NPPF’s Technical Guidance

4 Drainage Strategy

- 4.1 The order of the SuDS hierarchy was considered. The soil, London Clay, has a notoriously low permeability and so is very unlikely to offer any reasonable infiltration. As there are no watercourses on this site the only option available for discharging the site's surface water is discharging to surface water sewers.
- 4.2 There are 3 catchment areas within the site: AT1, AT2 and AT3 – see section 2.3 above for greenfield runoff rates. The labels describing the attenuation tanks on the strategy layout (see Appendix D) include these areas.
- 4.3 Because of the flat gradient of the site, it is necessary to pump the surface water. The pumped rate will be the existing greenfield (Q_{bar}) rates set out in section 2.3. These are $3.8 + 5.7 + 2.4 = 11.9$ l/s These are shown on the Proposed Drainage Layout in Appendix D.
- 4.4 Various sustainable drainage systems were considered to store the excess storm water:
- Green roofs: a total of 216m² green roof with 50mm substrate depth has been assumed at this stage.
 - Swales/Ponds: the density of the site makes these unfeasible – as well as the low infiltration rate of London Clay soil.
 - Rainwater harvesting tanks: the use of rainwater harvesting tanks on such a mixture of commercial and residential development is not generally considered good practice or commercially viable.
 - Porous Pavings: the impermeability of London Clay, combined with the possibility of contamination over this industrial site, makes these unfeasible.
- 4.5 There will be an additional pump in *each* of the 3 pumping stations to allow for maintenance. There will be an ultrasonic alarm fitted to each pump, which will be linked to the maintenance company's office, which will be manned 24/7/365, to ensure that there will be no interruption to this operation. It is unusual to pump surface water and this has been chosen only because the only alternative option would be to increase the offsite flow rate. The relative risk of failure would have to be weighed up against the policy of limiting the offsite flow rate to pre-development *greenfield* runoff rate.
- 4.6 Each upstream attenuation tank has been sized to store the storm water in the critical '1 in 100 year plus 30% climate change' storm event, this complying with the NPPF. Refer to Appendix D for the drainage strategy layout and Appendix E for the Micro Drainage calculation sheets.

- 4.7 The Micro Drainage Simulation calculation sheets in Appendix E show that in the (critical storm) '30 minutes winter storm, 1 in 100 years +30% climate change' the system will not flood. The other winter storm duration calculations were run to confirm that the 30 minute winter event is the worst case, ie critical storm.
- 4.8 The revised climate change allowances from the EA require that 40% climate change should be tested in such a proposal. The drainage calculations were run with this additional 10% CC. The flood volumes in the 3 catchments are 9m³, 16.5m³ and 5.5m³ respectively, total 31.4m³. In reality, only a fraction of this would flood as there is additional capacity in each of the networks' pipes and manholes. The small volume that would flood once this capacity has been reached would be limited to the roads, less than the height of a kerb.
- 4.9 The porous pavings will filter any impurities in the surface water, thereby minimising pollution in the downstream sewer.
- 4.10 Exceedance flows: if the pumps were to fail, the resulting flow would go eastwards – as currently. The buildings will be set 0.15m above the ambient levels, so it is clear that the flow would not flood the units.
- 4.11 Foul drainage: it is proposed to discharge the development's foul water into the existing foul networks, both private and public – see the Drainage Strategy layout in Appendix E.
- 4.12 Permission to discharge into the sewer – by means of a Section 106 application – will be needed from Thames Water, the owner of the sewerage network.

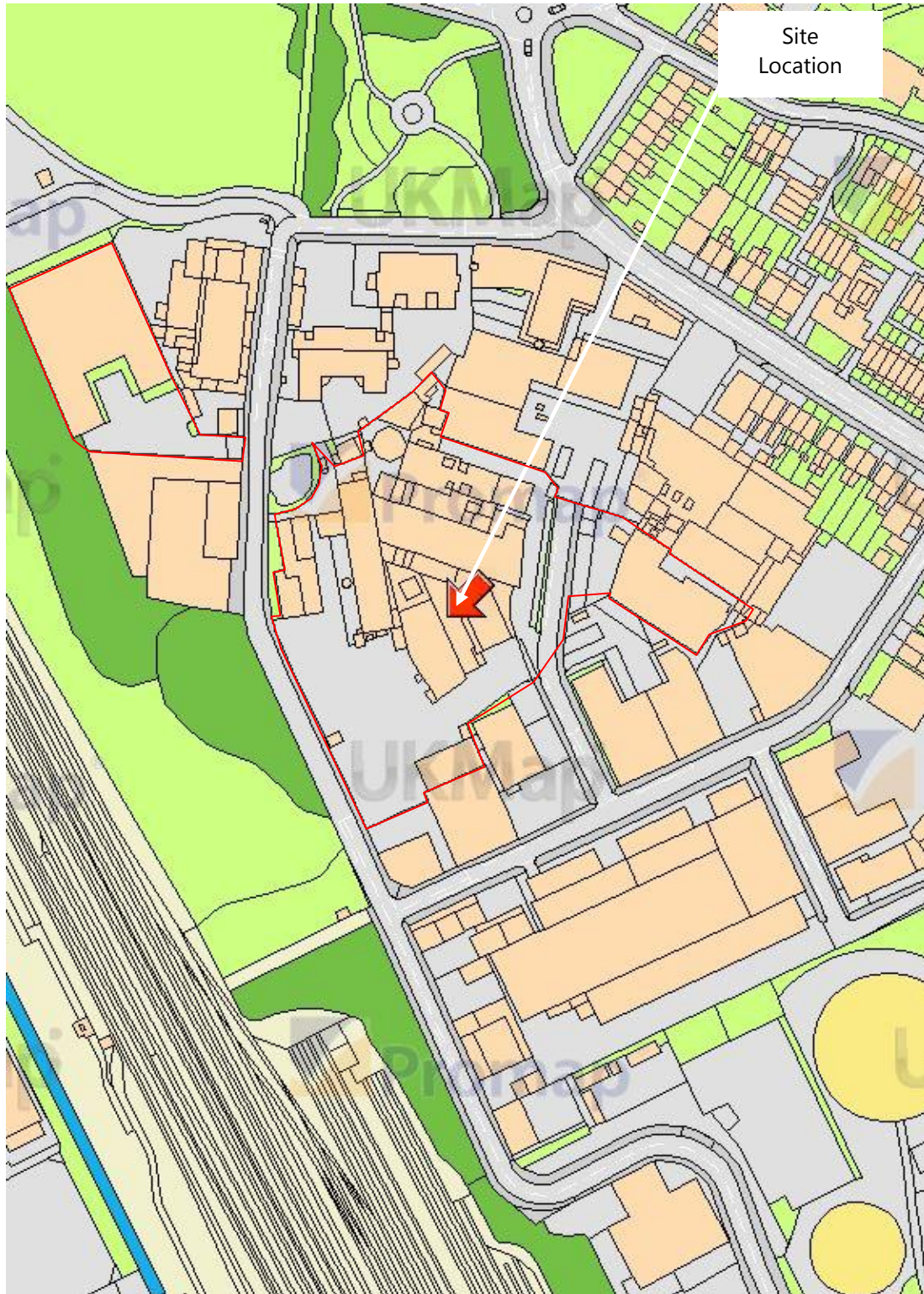
5 Conclusions

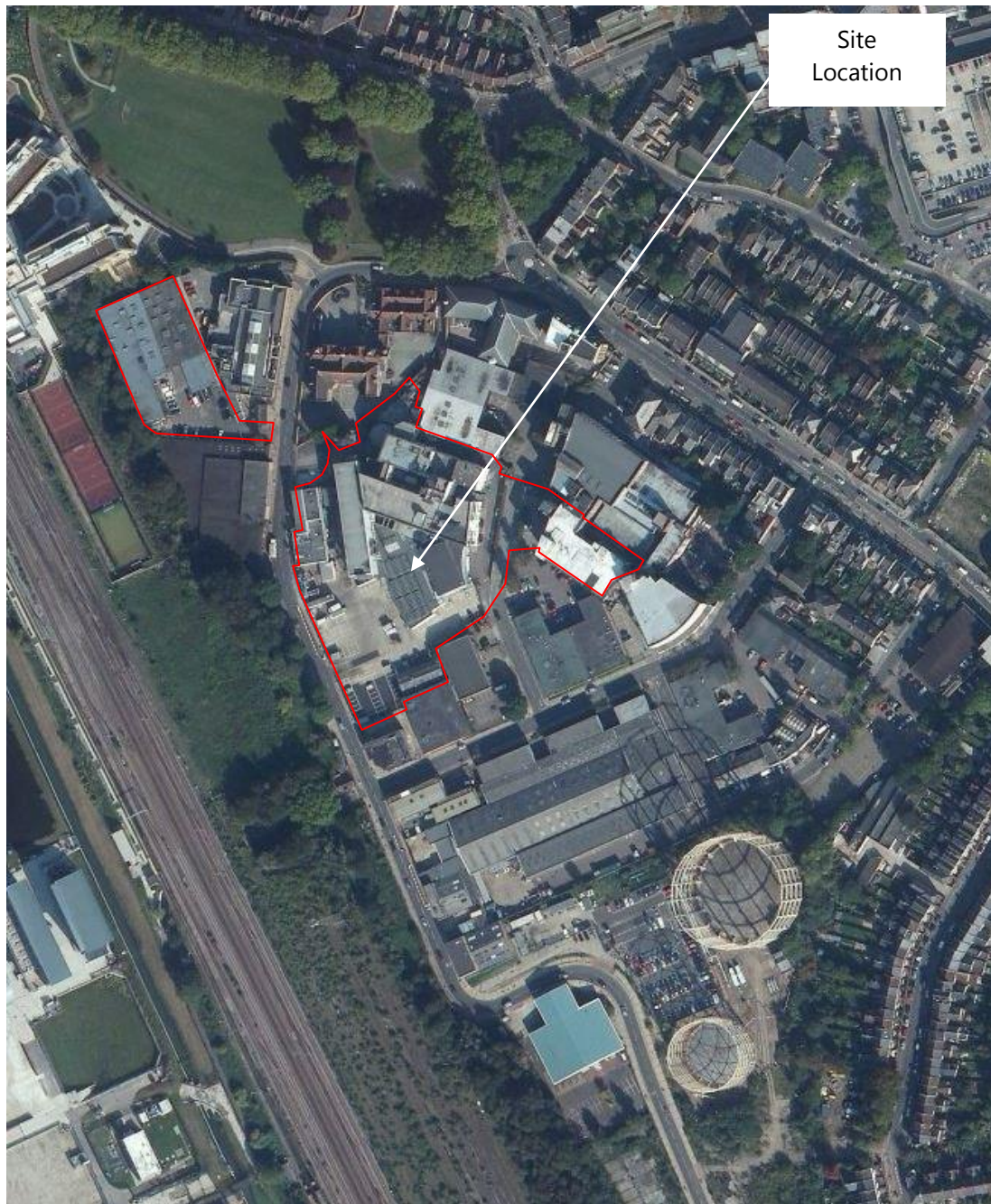
- 5.1 The application site has a 'High Risk' flood risk profile over much of its area.
- 5.2 The surface water flood risk will be mitigated by providing a passive flood barrier in front of each external doorway. This will rise to 0.8m above ground level.
- 5.3 The site's surface water flow rate will be restricted to the Qbar rate of 11.9l/s (overall in 3 separate catchments) in the critical storm event. The 3 attenuation tanks will hold the volume of water in this event.
- 5.4 This development will not increase the flood risk, either on this site or to neighbouring properties, and so complies fully with the 2012 NPPF/2015 PPG.

- End of Report -

Appendix A

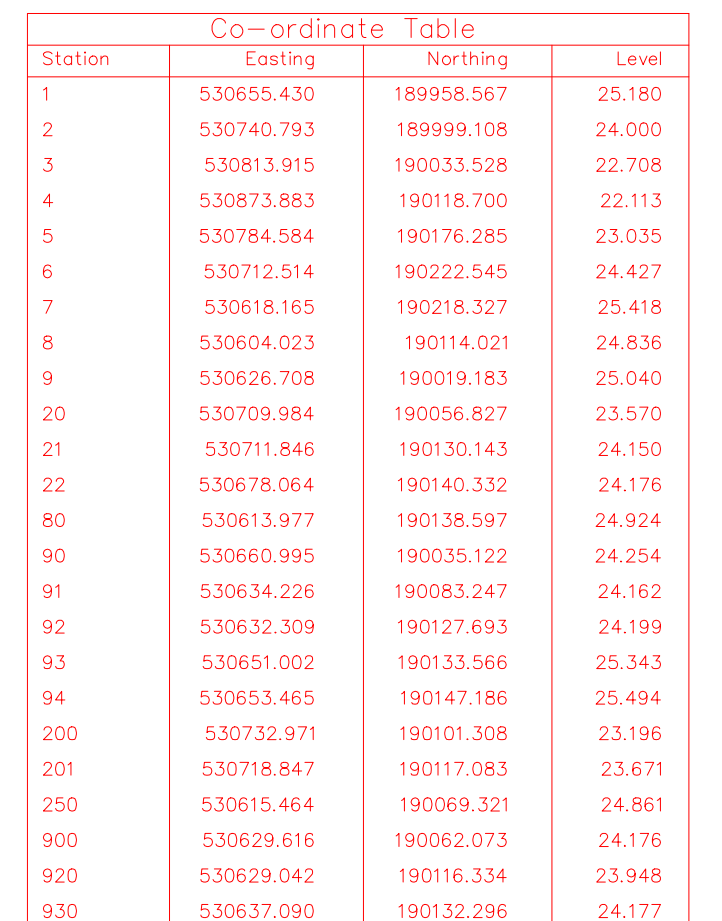
Site Location Map & Photos





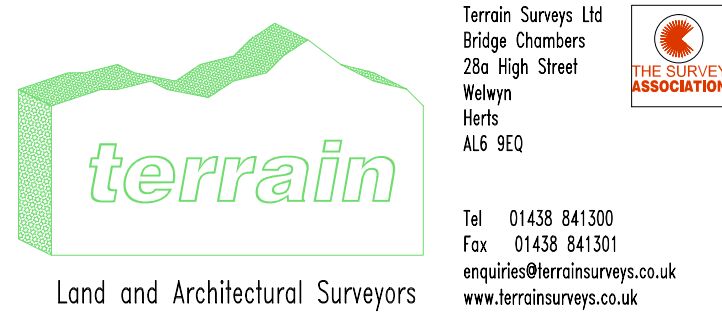
Appendix B

Topographic Survey & Sewer Records



GPS Note:
This survey is related to Ordnance Survey National Grid by GPS 'rapid static' methods. No scale factor has been applied to the survey information. All horizontal distances taken from this drawing are ground distances.

Revision	Description	Date
01	Survey control points	10/10/2017
02	Banking	10/10/2017
03	Gate (single)	10/10/2017
04	Gate (double)	10/10/2017
05	Tree Spread and Grass Shown to scale	10/10/2017
06	Abbreviations	10/10/2017
07	Retaining Wall	10/10/2017
08	Barbed Wire Fence	10/10/2017
09	Electricity Pole	10/10/2017
10	Chalkline Fence	10/10/2017
11	Concrete Paving Slab	10/10/2017
12	Post and Rail Fence	10/10/2017
13	Post and Wire Fence	10/10/2017
14	Flower Bed	10/10/2017



Client
WORKSPACE GROUP PLC

Project

THE CHOCOLATE FACTORY
WOOD GREEN
N22 6XJ

TOPOGRAPHICAL SURVEY

Drawn by AJC	Checked by PG
-----------------	------------------

Scale	1:200 @ A1	Date	APRIL 2016
Revision			

Drawing Number	TS16-093M\1		-
Sheet	1	of	1

All levels related to Ordnance Survey GPS Active Network at Survey Station 2.

Value 24.000m



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 530250,189750

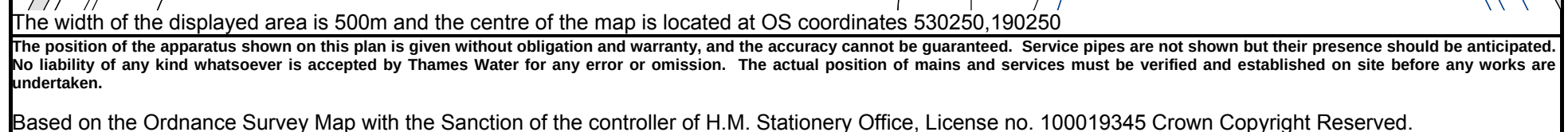
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

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
251A	n/a	n/a
061A	n/a	n/a
061B	n/a	n/a
071D	n/a	n/a
071E	n/a	n/a
1502	30.46	27.95
2502	28.61	25.25
0503	32.51	30.51
1501	30.58	28.24
2501	28.63	23.86
0508	n/a	n/a
3501	28.15	23.82
2602	30.45	26.53
2601	30.58	25.14
1602	33.44	30.87
1604	32.91	30.24
1601	33.58	31.2
1603	32.96	30.5
3603	29.58	25.89
3604	29.66	24.99
1706	35.68	33.11
1704	36.07	33.43
1705	35.73	33.49
1703	36.17	33.77
271A	n/a	n/a
271B	n/a	n/a
1702	35.45	33.95
2702	34.61	n/a
2701	34.53	33.24
1701	36.22	35.06
2703	33.83	31.84
3701	32.25	30.17
3504	27.39	23.67
3503	27.36	25.28
4502	27.33	24.97
4501	27.34	25.24
3502	28.18	25.39
4602	27.88	25.34
3605	28.32	25.64
3602	29.42	26.95
3601	29.46	26.03
371E	n/a	n/a
371D	n/a	n/a
3707	30.73	28.17
4703	n/a	n/a
3706	30.83	27.85
3704	31.08	26.66
3705	n/a	n/a
3702	31.01	28.99
4701	30.19	26.61
3703	31.01	28.69
4702	30.08	26.55
371B	n/a	n/a
371A	n/a	n/a
4508	27.33	25.01
4507	27.36	25.55
3506	27.4	23.59
3505	27.39	25.06
4506	27.29	25.03
4505	27.22	24.17
4514	n/a	n/a
451B	n/a	n/a
4504	27.79	24.31
4515	n/a	n/a
451A	n/a	n/a
4503	27.47	25.11
0505	33.44	31.56
0502	34.98	32.7
0501	34.81	32.98
051E	n/a	n/a
071B	n/a	n/a
071C	n/a	n/a
0602	34.86	31.65
0703	37.42	34.37
0704	37.25	34.01
0601	34.85	31.93
0507	n/a	n/a
071A	n/a	n/a
051D	n/a	n/a
051C	n/a	n/a
0506	31.47	29.77
2504	28.14	26.17
2503	28.12	25.41
3508	27.75	25.22
051A	n/a	n/a
3507	27.69	23.64
051B	n/a	n/a
1506	29.58	25.87
1505	29.61	24.36
1504	30.33	27.79
1503	30.32	27.6

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0504	32.67	30.31
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.		

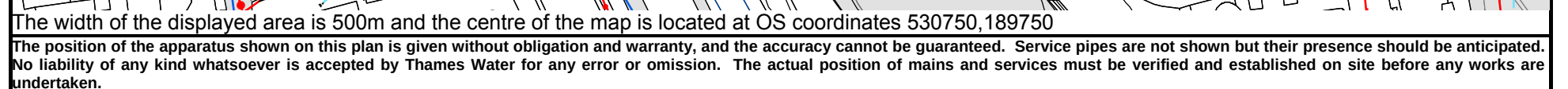


NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
341F	n/a	n/a
341C	n/a	n/a
341E	n/a	n/a
3312	35.34	32.6
4317	34.65	32.55
4402	35.74	32.07
4401	34.51	31.9
4319	n/a	n/a
4301	32.82	31.76
4303	33.19	28.62
4302	32.93	31.67
4306	32.84	28.44
4318	32.73	30.29
4307	31.55	28.2
4304	32.79	n/a
4308	32.02	28.03
4309	31.51	27.93
4305	32.14	n/a
4312	30.47	n/a
43YQ	n/a	n/a
44ZT	n/a	n/a
3401	38.23	35.85
3402	40.34	38.26
341B	n/a	n/a
3404	37.76	35.09
3102	31.25	29.81
3101	31.42	29.19
3201	n/a	n/a
1202	46.67	44.84
2302	n/a	n/a
2301	45.95	44.39
3302	n/a	n/a
3303	n/a	n/a
3301	n/a	n/a
3304	36.93	34.11
23ZS	n/a	n/a
23ZT	n/a	n/a
2403	46.35	n/a
24YY	n/a	n/a
24XY	n/a	n/a
141B	n/a	n/a
3403	37.06	34.7
341A	n/a	n/a
24YV	n/a	n/a
24YP	n/a	n/a
24YT	n/a	n/a
24YX	n/a	n/a
24XZ	n/a	n/a
341D	n/a	n/a
14YY	n/a	n/a
24YW	n/a	n/a
4101	31.67	27.4
0201	n/a	n/a
1201	n/a	n/a
04YQ	n/a	n/a
04XQ	n/a	n/a
04XY	n/a	n/a
04XZ	n/a	n/a
04YP	n/a	n/a
04YT	n/a	n/a
04YV	n/a	n/a
04YW	n/a	n/a
04XS	n/a	n/a
141C	n/a	n/a
04XX	n/a	n/a
141A	n/a	n/a
04XW	n/a	n/a
04YS	n/a	n/a
1402	56.66	52.57
0401	56.13	51.7
1401	57.5	55.82
04ZQ	n/a	n/a
0403	n/a	n/a
04ZV	n/a	n/a
04ZR	n/a	n/a
1405	n/a	n/a
1407	n/a	n/a
1406	n/a	n/a
04ZW	n/a	n/a
04ZX	n/a	n/a
04ZS	n/a	n/a
0402	n/a	n/a
14ZP	n/a	n/a
14ZR	n/a	n/a
141D	n/a	n/a
1403	54.64	53.02
14YZ	n/a	n/a
14ZQ	n/a	n/a
141E	n/a	n/a
141G	n/a	n/a
141F	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
141H	n/a	n/a
24YS	n/a	n/a
24ZQ	n/a	n/a
24YR	n/a	n/a
24ZP	n/a	n/a
2401	49.32	47.93
2402	49.15	n/a

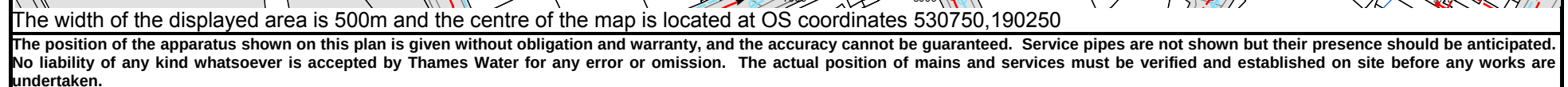
The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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



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
551C	25.62	24.73
961A	n/a	n/a
9603	24.25	22.65
9501	23.94	21.55
961B	n/a	n/a
8903	22.96	21.58
8902	23.03	21.15
9901	21.96	20.74
8901	22.49	20.72
6904	n/a	n/a
7902	24.6	22.52
7901	24.54	23.26
6902	25.13	23.3
6901	25.12	22.32
6903	24.5	22.97
561Q	29.3	27
561E	29.125	27.035
561D	30.54	28.09
561M	30.36	26.73
561C	30.42	28.49
561R	30.41	28.61
561A	n/a	n/a
561P	n/a	n/a
561O	n/a	n/a
661D	31.03	30
661C	31.36	30.2
561L	31	27.739
561N	n/a	n/a
571D	30.57	29.3
571G	n/a	n/a
571F	n/a	n/a
571E	29.73	28.623
571B	n/a	n/a
571M	29.65	28.375
671A	n/a	n/a
571A	n/a	n/a
571H	29.65	28.45
571L	30.55	29.7
571C	n/a	n/a
571K	31.4	30.75
6701	n/a	n/a
5703	30.05	23.64
661B	30.33	28.98
651J	31.15	29
5502	26.15	23.89
551K	26.27	25.29
5501	26.1	n/a
551L	26.3	24.55
661P	n/a	n/a
661O	n/a	n/a
661I	n/a	n/a
661Q	n/a	n/a
661M	21.53	20.15
661A	30.31	29.29
661L	n/a	n/a
661E	30.35	26.45
661J	30.585	28.525
661H	n/a	n/a
561H	26.71	25.57
661G	n/a	n/a
561K	26.99	25.415
661F	n/a	n/a
561T	n/a	n/a
561J	26.991	25.95
561G	27.13	26.33
561F	27.25	25.99
561B	n/a	n/a
661K	n/a	n/a
561I	27.2	26.037
651I	31.3	30
6801	25.07	22.64
651L	31.3	30
6905	24.99	23.92
6803	24.83	23.05
6802	24.87	23.72
8701	24.33	21.75
8601	25.34	22.28
861A	n/a	n/a
861B	n/a	n/a
8501	25.33	21.24
871A	n/a	n/a
9701	n/a	n/a
971U	n/a	n/a
9801	22.72	21.62
9704	23.9	22.25
9604	n/a	n/a
9702	24.16	23.37
9703	24.32	22.63
9605	n/a	n/a
991E	n/a	n/a
9602	24.44	22.25

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9601	24.43	22.87
971V	n/a	n/a
991A	n/a	n/a
991B	n/a	n/a
981A	n/a	n/a
571I	n/a	n/a
571J	29.63	26.995
5702	30.03	25.21
5701	29.67	25.44
5801	30.01	25.44
552C	n/a	n/a
551Y	n/a	n/a
552D	n/a	n/a
551X	n/a	n/a
552E	n/a	n/a
551W	n/a	n/a
552N	n/a	n/a
552M	n/a	n/a
551B	26.21	25.04
552K	n/a	n/a
552L	n/a	n/a
651X	n/a	n/a
651U	n/a	n/a
651W	n/a	n/a
651V	n/a	n/a
651C	28.2	26.29
651D	28.21	26.13
651F	n/a	n/a
651G	28.353	27
651E	29.57	27.24
651Y	n/a	n/a
651H	30.4	26.6
651B	n/a	n/a
651A	30.27	28.57
651O	n/a	n/a
651T	30.89	28.17
651M	30.4	29
551U	n/a	n/a
551V	25.67	24.96
551D	25.72	24.878
551O	25.5	24.5
551G	25.62	24.9
551P	n/a	n/a
5503	25.62	24.87
551N	25.475	24
551R	25.5	23.93
552B	n/a	n/a
551F	25.47	24.93
551T	n/a	n/a
551H	25.44	24.97
551Z	n/a	n/a
552A	n/a	n/a
552F	n/a	n/a
552I	n/a	n/a
551I	25.77	25.08
552G	23.55	21.91
552H	24.22	21.81
552J	n/a	n/a
651Q	30.91	n/a
651R	30.89	n/a
9504	24.45	21
9503	23.8	20.84
651S	30.91	28.47
651P	n/a	n/a
651N	n/a	n/a
9502	24.01	22.29
651K	30.803	29.575
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.		



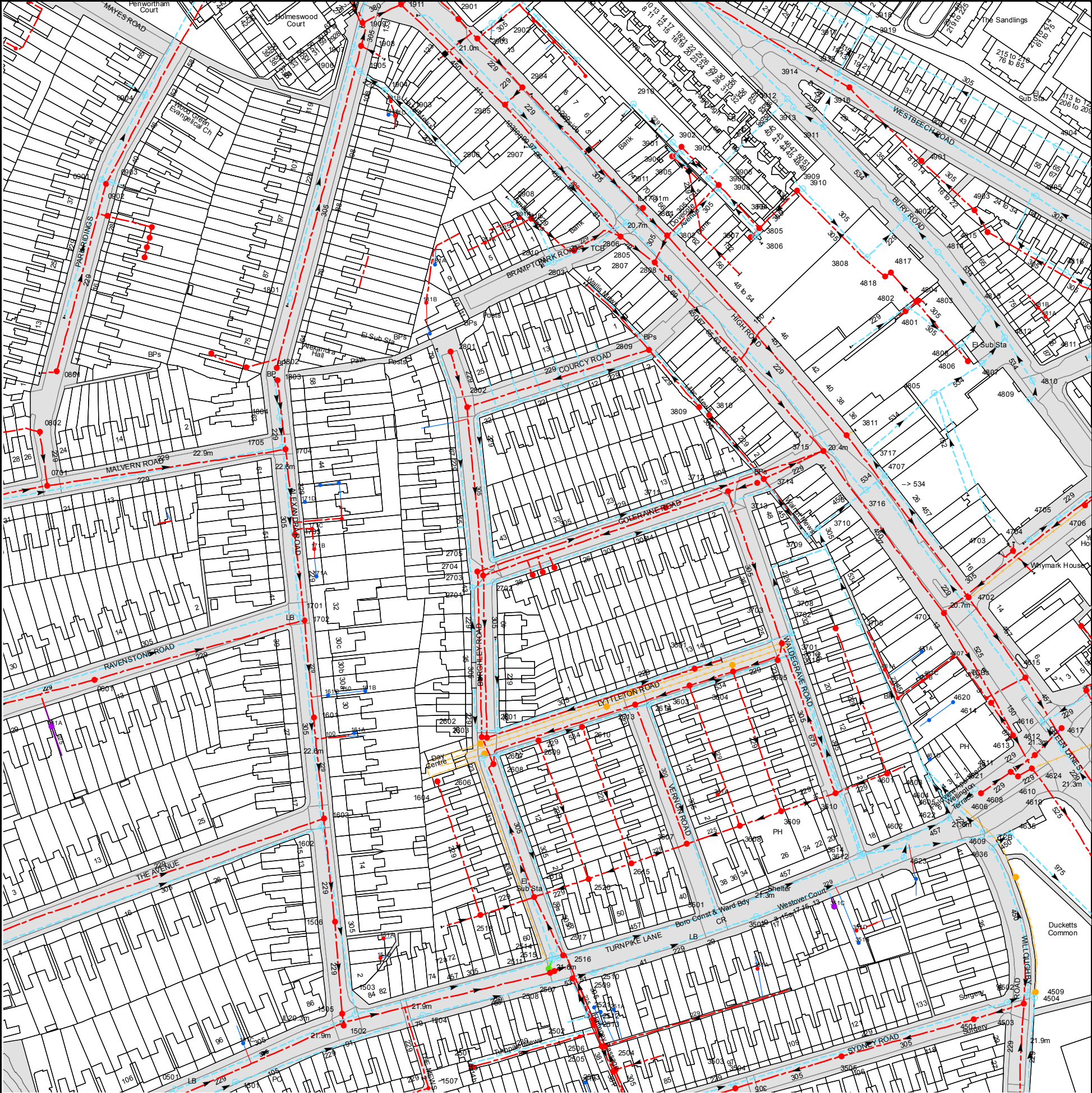
[Thames Water Utilities Ltd](http://www.thameswater-propertysearches.co.uk), Property Searches, PO Box 3189, Slough SL1 4W, DX 151280 Slough 13
T 0845 070 9148 E searches@thameswater.co.uk I www.thameswater-propertysearches.co.uk

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
931G	n/a	n/a
731A	n/a	n/a
641B	n/a	n/a
9405	30.33	n/a
9406	30.63	28.77
9402	30.64	27.01
9403	30.53	28.58
9407	30.51	28.55
9401	31.37	27.43
941D	n/a	n/a
941E	n/a	n/a
9404	31.96	29.38
941A	n/a	n/a
931B	n/a	n/a
9302	26.8	25.91
931A	n/a	n/a
931E	n/a	n/a
9303	26.55	25.64
9304	25.92	24.9
9305	25.97	24.9
9309	25.45	24.18
9306	26.43	24.29
9413	27.45	24.66
9412	27.38	24.56
9411	27.35	25.65
9414	n/a	24.1
9410	28.51	26.03
9409	28.57	26.46
8401	34.75	33.66
941B	n/a	n/a
6405	34.01	31.35
641A	n/a	n/a
6404	34.03	32.05
6403	33.97	31.18
5402	30.7	28.59
5304	28.23	26.25
7303	26.89	24.95
7302	27.38	25.53
5306	28.19	26.72
631B	n/a	n/a
7301	28.04	26.49
63ZT	n/a	n/a
5307	28.61	27.01
5308	28.7	26.72
631A	n/a	n/a
63ZV	n/a	n/a
5309	29.58	27.06
5310	29.58	27.53
7402	30.34	28.92
54YQ	n/a	n/a
6401	29.82	28.02
6402	29.83	28.46
7401	32.41	31.02
5404	31.41	28.03
5403	31.46	28.54
6408	33.22	31.6
54YP	n/a	n/a
54XY	n/a	n/a
5401	31.78	28.86
6407	33.82	31.41
5405	31.79	28.33
6406	33.84	32.47
5301	29.95	27.31
5302	29.72	26.6
7208	24.49	22.31
7213	n/a	n/a
721A	n/a	n/a
7403	29.54	27.26
7307	25.79	24.5
7308	26.09	24.04
7209	23.76	21.78
7309	26.15	23.27
7306	n/a	n/a
721B	n/a	n/a
8201	23.57	21.49
8301	27.49	25
8302	25.62	24.07
8303	25.7	23.01
8305	26.55	23.59
8304	28.4	27.46
8202	22.81	20.97
8306	28.09	26.74
8307	26.77	25.45
8308	26.77	23.65
8313	26.77	n/a
8309	25.97	23.91
8310	25.88	24.23
8311	24.99	23.42
8312	24.96	23.53
9301	26.95	23.87
9408	28.78	27.82

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9204	22.11	20.41
9203	22.35	20.87
9202	22.65	21.08
9201	23.43	21.35
7212	23.9	22.05
521B	n/a	n/a
7211	23.99	22.27
6206	25.33	22.51
5202	26.25	22.87
521A	n/a	n/a
7204	24.73	23.53
6207	25.25	23.47
5203	26.13	24.03
6203	25.71	23.59
6202	25.69	22.33
6208	25.19	22.83
7203	24.31	22.15
6204	25.62	23.73
7215	n/a	n/a
7214	n/a	n/a
7202	25.26	22.27
6205	26.36	23.26
6201	n/a	n/a
7210	24.47	21.72
7206	24.48	22.02
7207	25.47	23.73
7201	26	24.48
7205	25.93	23.3
5303	27.98	25.41
7310	25.73	24.66
7304	25.78	n/a
9212	n/a	n/a
821B	n/a	n/a
9211	21.09	20.05
921D	n/a	n/a
821A	n/a	n/a
9210	20.98	19.88
921A	n/a	n/a
9207	21.88	20.46
921B	n/a	n/a
8203	22.33	20.75
8204	22.47	21.12
9206	22.18	20.63
9205	22.14	20.29
901A	n/a	n/a
801A	n/a	n/a
9012	21.26	19.18
801C	n/a	n/a
9001	21.72	19
8103	22.27	20.95
8102	22.02	20.07
811A	n/a	n/a
9108	21.48	20.52
8101	22	20.86
8105	22.01	20.85
8104	22.29	20.06
811D	n/a	n/a
811C	n/a	n/a
911B	n/a	n/a
911J	n/a	n/a
911A	n/a	n/a
811B	n/a	n/a
911D	n/a	n/a
911C	n/a	n/a
911E	n/a	n/a
911F	n/a	n/a
7103	22.98	21.71
911L	n/a	n/a
9109	n/a	n/a
911I	n/a	n/a
911K	n/a	n/a
8009	22.12	20.91
901B	n/a	n/a
8007	23.04	21.9
8006	23.02	21.44
8008	22.12	20.32
901C	n/a	n/a
9011	21.43	20.35
9010	21.95	20.02
8005	22.42	21.4
8004	22.44	20.84
9008	21.4	19.56
8003	22.64	20.39
9007	21.47	18.77
8002	22.5	21.41
801D	n/a	n/a
9006	21.32	20.1
9009	21.44	19.41
8001	22.41	21.18
9004	21.48	19.28
9005	21.58	19.01
9003	21.62	19.1
801B	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
9002	21.49	20.36
7006	23.99	22.65
7004	23.94	21.53
7003	23.92	22.17
6004	24.79	22.93
7002	23.56	22.57
7001	23.57	22.11
6002	24.71	23.05
6003	24.71	23.66
6101	24.73	23.56
6104	24.74	23.47
6103	24.74	22.96
6102	24.8	22.97
6105	25.06	23.84
5105	25.31	23.87
5104	25.82	24.29
5106	25.52	24.15
5102	28.01	23.75
511A	n/a	n/a
511B	n/a	n/a
5103	25.82	23.08
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.		



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 531250,189750

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.

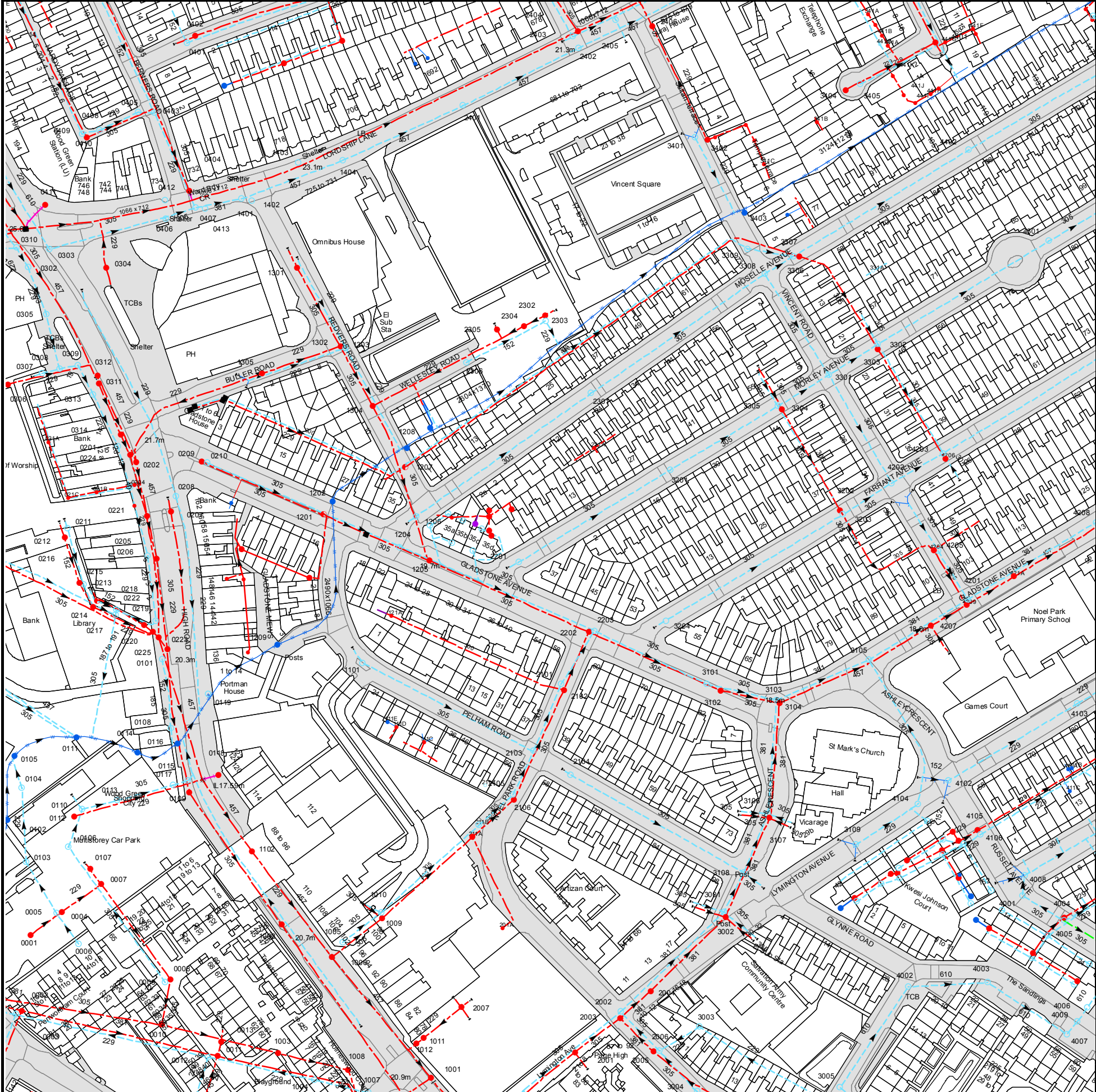
Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

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
251D	n/a	n/a
451A	n/a	n/a
461G	n/a	n/a
461F	n/a	n/a
171F	n/a	n/a
171E	n/a	n/a
171G	n/a	n/a
291C	n/a	n/a
4624	21.26	19.92
4617	21.19	n/a
4618	21.12	17.03
5718	n/a	n/a
4725	n/a	n/a
4501	21.85	20.62
4503	21.94	20.77
4502	21.77	20.35
4504	21.92	20.14
4509	21.91	19.37
461E	n/a	n/a
4623	21.01	20.11
4602	20.97	20.05
471A	n/a	n/a
461B	n/a	n/a
461C	n/a	n/a
4603	21.07	19.94
461D	n/a	n/a
4605	21.16	19.99
4604	21.16	20.02
4622	21.01	19.94
4607	n/a	n/a
4606	20.97	20.01
4621	20.94	20.03
4608	21.03	19.1
4609	21.04	19.94
4620	n/a	n/a
4614	21.37	14.37
4636	n/a	18.78
4611	21.18	18.7
4635	21.14	16.79
4613	n/a	n/a
4610	21.27	14.35
4615	21.06	16.93
4619	21.4	13.67
4612	21.27	17.67
4616	21.18	19.79
3502	21.18	20.27
3713	21.26	19.56
3714	21.2	18.49
3605	21.44	n/a
3609	n/a	n/a
3703	21.47	18.84
3613	21.43	18.68
3702	21.33	19.98
3701	21.31	19.96
3615	21.3	17.42
3709	21.29	19.77
3710	21.14	18.32
3715	20.37	14.22
351C	n/a	n/a
3610	21.46	19.74
3708	21.3	19.07
3811	20.35	17.01
351D	n/a	n/a
351B	n/a	n/a
3705	n/a	n/a
3614	21.05	16.9
3612	21.05	20.07
3716	20.4	18.22
3717	20.46	18.11
4707	20.41	18.25
461A	n/a	n/a
4601	21.26	19.96
2513	n/a	n/a
2512	21.69	19.73
2510	21.53	20.39
251C	n/a	n/a
2505	21.74	20.11
2506	21.75	19.81
2503	21.72	20.12
251A	n/a	n/a
2504	21.77	19.84
3503	21.63	20.61
3504	21.73	20.3
351A	n/a	n/a
3505	21.7	20.43
151A	n/a	n/a
1506	22.16	20.47
2518	n/a	n/a
3501	21.25	20.28
2519	21.65	19.56
2520	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2615	n/a	n/a
3607	21.46	19.91
1602	22.37	21.06
3608	n/a	n/a
1603	22.38	20.72
361A	n/a	n/a
1604	n/a	n/a
2608	21.96	16.96
2606	21.97	18.82
2607	21.92	18.78
2609	21.87	20.69
2603	n/a	n/a
2602	22.08	16.83
161A	n/a	n/a
2601	21.97	20.61
2610	21.75	20.74
1601	22.64	20.78
2613	21.61	18.36
2614	21.5	18.76
161C	n/a	n/a
161B	n/a	n/a
1501	22.12	21.15
151C	n/a	n/a
1505	22.19	20.37
1502	21.97	n/a
1503	21.83	20.69
151B	n/a	n/a
1504	21.75	20.81
1507	21.74	21.03
2501	21.73	21.17
2511	21.53	19.86
2508	21.59	20.3
2515	21.48	20.37
2514	21.54	19.15
2507	21.58	20.21
2516	21.15	20.07
2517	n/a	n/a
2509	21.56	20.16
2502	21.52	20.69
251B	n/a	n/a
2521	21.66	20.81
4904	19.91	17.72
4801	n/a	n/a
4902	20.11	17.62
4802	20.46	18.75
4803	n/a	n/a
4804	20.28	18.21
4805	20.09	17.96
4814	20.21	17.63
4701	20.94	13.93
4808	20.36	18.41
4806	20.31	18.46
4702	20.59	16.95
4903	20.2	17.44
4807	20.12	17.87
4813	20.28	17.73
4815	20.21	17.44
4812	20.29	17.96
4703	20.48	18.53
4809	20.53	18.04
4704	20.5	19.82
4810	20.36	17.96
4905	20.17	17.89
481B	n/a	n/a
481A	n/a	n/a
4705	20.43	19.55
4816	20.15	18.15
4706	20.45	17.55
4811	20.32	18.57
3919	19.75	17.69
4901	20.08	17.21
3917	19.75	17.85
3918	18.65	17.31
4818	n/a	18.07
4817	n/a	18.12
181A	n/a	n/a
2808	20.78	14.45
2803	21.29	20.33
3808	20.57	18.67
2810	21.33	20.39
2804	21.18	18.13
281A	n/a	n/a
3807	n/a	n/a
3806	n/a	n/a
2807	20.8	14.53
3801	n/a	n/a
3805	n/a	n/a
3802	20.56	18.44
2805	20.68	19.92
3804	n/a	n/a
2806	20.86	19.77
291B	n/a	n/a
291A	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2911	20.62	n/a
2908	21.58	20.5
3909	20.74	17.75
3910	20.74	18.91
3908	n/a	n/a
3907	n/a	n/a
3906	n/a	n/a
2906	21.37	19.39
3904	20.67	17.47
3905	20.59	18.45
3903	n/a	n/a
2907	n/a	n/a
3902	n/a	n/a
3901	20.18	18.99
3911	19.95	17.43
191C	n/a	n/a
191A	n/a	n/a
1903	21.35	20.34
3913	19.98	18.12
2905	20.88	14.83
2910	n/a	n/a
191B	n/a	n/a
3912	n/a	n/a
1904	21.44	20.25
3916	19.96	16.89
2904	20.74	15.34
29WP	n/a	n/a
3915	19.89	17.44
1905	21.29	20.27
1906	21.37	20.26
29VZ	n/a	n/a
3914	19.89	17.97
29VW	n/a	n/a
1907	21.25	20.18
1702	22.9	20.92
171D	n/a	n/a
171C	n/a	n/a
171B	n/a	n/a
171A	n/a	n/a
181B	n/a	n/a
181D	n/a	n/a
2801	22.42	20.13
2802	22.56	19.97
2701	22.29	20.61
2704	22.31	16.33
2703	22.3	19.7
2705	22.29	20.69
2702	22.26	20.55
2708	n/a	n/a
2709	n/a	n/a
2710	n/a	n/a
2809	21.74	20.34
3711	21.74	15.39
3603	21.37	18.52
3601	21.5	19.93
3809	21.43	20.62
3810	21.35	19.73
3712	21.55	19.49
3604	21.46	18.69
1908	21.3	19.21
2903	20.85	17.18
2902	20.95	18.13
1909	21.11	15.29
29VY	n/a	n/a
2901	20.9	17.23
29VV	n/a	n/a
1911	20.97	14.98
0802	23.2	22.39
0701	23.46	21.94
061A	n/a	n/a
0801	22.81	20.48
0601	23.51	21.5
0901	22.27	20.82
0902	22.34	20.08
0909	n/a	n/a
0903	22.25	21.2
0807	n/a	n/a
0809	n/a	n/a
0810	n/a	n/a
0808	n/a	n/a
0811	n/a	n/a
1811	n/a	n/a
1802	22.83	20.53
1803	22.84	21.42
1804	22.82	21.95
1705	22.79	21.84
1704	22.76	21.17
1801	22.37	21.29
1703	22.88	21.08
1701	22.91	21.69
091A	n/a	n/a
0904	21.22	20.81
0501	22.34	21.21



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 531250,190250

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.

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
341E	n/a	n/a
2403	21.34	19.01
2404	21.31	18.01
2402	21.26	20.09
2405	21.1	18.76
2406	20.78	18.37
3401	19.62	18
3402	19.45	19.03
3416	n/a	n/a
3414	n/a	n/a
341B	n/a	n/a
3404	18.76	17.74
3405	18.74	17.61
341A	n/a	n/a
04XW	n/a	n/a
14ZP	n/a	n/a
14YZ	n/a	n/a
141A	n/a	n/a
141B	n/a	n/a
2401	22.01	20.85
0405	26.23	24.4
0401	26.88	24.64
0402	26.87	24.15
0304	24.21	21.27
0302	24.9	23.89
0303	24.83	23.25
0310	25.23	23.91
0406	24.16	23.11
0411	n/a	n/a
0412	24.04	22.33
0404	24.01	n/a
0410	26.7	23.86
0409	26.71	24.55
0408	26.51	24.45
0403	26	24.33
441C	n/a	n/a
4401	18.64	17.54
441G	n/a	n/a
441B	n/a	n/a
441O	n/a	n/a
441F	n/a	n/a
341D	n/a	n/a
44ZP	n/a	n/a
44YZ	n/a	n/a
44ZQ	n/a	n/a
4206	17.85	15.43
4203	17.91	16.63
3303	18.06	15.81
3302	18.1	16.74
4301	17.93	16.56
4402	18	16.62
441I	n/a	n/a
441J	n/a	n/a
441H	n/a	n/a
441N	n/a	n/a
441K	n/a	n/a
441A	n/a	n/a
4008	18.35	16.97
40WS	n/a	n/a
40WW	n/a	n/a
40WR	n/a	n/a
4004	18.38	17.15
4005	18.4	17.46
4007	n/a	17.12
40WP	n/a	n/a
40W	n/a	n/a
4009	n/a	n/a
4006	18.49	17.1
40VZ	n/a	n/a
41SY	n/a	n/a
4104	18.44	16.98
411C	n/a	n/a
4102	18.43	17.15
411A	n/a	n/a
411B	n/a	n/a
4103	18.03	16.94
4207	18.03	15.1
4209	18.05	15.06
4201	18.05	16.59
421A	n/a	n/a
4205	17.98	16.7
4204	17.98	15.39
4208	17.83	16.48
4202	18.09	16.73
40XR	n/a	n/a
41TR	n/a	n/a
41TQ	n/a	n/a
41SR	n/a	n/a
40XQ	n/a	n/a
41SW	n/a	n/a
4002	18.6	17.21

Manhole Reference	Manhole Cover Level	Manhole Invert Level
41TP	n/a	n/a
41SZ	n/a	n/a
41SQ	n/a	n/a
41SV	n/a	n/a
41ST	n/a	n/a
40XS	n/a	n/a
401A	n/a	n/a
41SS	n/a	n/a
40XT	n/a	n/a
40XP	n/a	n/a
40WY	n/a	n/a
4105	18.35	17.14
4106	18.34	17.3
4003	18.6	17.17
40WX	n/a	n/a
40WZ	n/a	n/a
40VY	n/a	n/a
4001	18.4	17.01
2202	19.07	16.03
2203	19.05	16.98
2003	19.85	16.55
2002	19.83	17.86
2004	19.5	16.35
2005	19.87	16.69
2006	19.85	17.86
3204	18.66	17.06
3004	19.93	17.92
3003	20.03	17.87
3101	18.67	16.89
3102	18.62	15.7
3001	18.85	17.63
3002	18.88	16.15
3108	18.7	17.62
3106	18.56	17.36
3107	18.59	15.9
3103	18.38	16.82
3104	18.38	15.6
3005	n/a	17.28
30YR	n/a	n/a
30YQ	n/a	n/a
3109	18.58	17.37
30YP	n/a	n/a
3105	18.17	16.7
22XV	n/a	n/a
22YY	n/a	n/a
22XT	n/a	n/a
22XZ	n/a	n/a
22YP	n/a	n/a
22YQ	n/a	n/a
2305	19.92	18.77
22XS	n/a	n/a
2304	19.68	18.72
2302	19.81	19.25
2303	20	18.84
2301	19.07	17.16
221A	n/a	n/a
3201	18.67	17.1
3403	18.77	16.85
3309	18.53	17.06
3415	n/a	n/a
341C	n/a	n/a
3308	18.44	16.93
3305	18.26	16.94
3304	18.17	15.96
3307	18.21	16.9
3306	18.13	15.97
3301	18.25	16.81
3202	18.09	15.67
3203	18.13	16.75
331A	n/a	n/a
1007	21.17	20.09
1004	21.24	19.98
1001	20.89	16.89
1008	21.16	17.81
0012	21.5	19.91
0011	21.54	18.06
1003	21.37	18.1
2001	20.24	18.08
1012	20.94	18.5
0013	21.35	19.98
1011	21.01	18.63
2007	20.92	18.97
1006	20.66	17.51
1005	20.67	18.49
201A	n/a	n/a
1002	20.5	15.93
1009	20.37	16.74
1010	20.37	18.33
1102	20.28	17.54
0407	23.78	21.88
0209	21.65	17.36
0413	23.67	23.01
0210	21.6	17.44

Manhole Reference	Manhole Cover Level	Manhole Invert Level
121B	n/a	n/a
1401	23.35	21.83
1402	23.17	21.52
1305	21.4	18.73
1301	22.21	19.94
1403	23.13	21.58
1201	20.52	16.66
1202	20.32	18.07
1302	21.01	17.33
1404	22.84	21.66
1303	20.94	19.79
1304	20.43	16.99
1204	20.03	17.2
1207	19.99	17.06
1208	20.04	17.97
1206	19.81	17.49
13YQ	n/a	n/a
12XQ	n/a	n/a
22ZP	n/a	n/a
22YZ	n/a	n/a
22XX	n/a	n/a
22ZQ	n/a	n/a
2306	19.93	18.63
211A	n/a	n/a
211B	n/a	n/a
2106	19.25	16.46
2105	19.25	17.54
0109	20.1	16.4
211C	n/a	n/a
0115	20.22	18.64
2104	19.02	17.81
0118	20.36	n/a
2103	19.2	17.4
111C	n/a	n/a
111D	n/a	n/a
111E	n/a	n/a
0119	20.42	18.45
2102	18.97	16.18
2101	18.97	17.18
1101	20.03	17.54
1230	n/a	n/a
1209	20.3	18.34
121A	n/a	n/a
1231	n/a	n/a
1232	n/a	n/a
1228	n/a	n/a
2201	19.29	17.31
1205	19.91	16.42
22YS	n/a	n/a
1229	n/a	n/a
0212	21.59	20.32
0211	21.51	20.6
0221	21.01	19.07
0207	21.19	18.14
021E	n/a	n/a
021C	n/a	n/a
0208	21.16	19.79
021B	n/a	n/a
0203	21.38	20.34
0204	21.38	19.6
0202	21.53	18.03
0224	21.49	19.58
0201	21.73	20.53
021A	n/a	n/a
0314	21.69	19.7
0313	22.58	20.95
0306	23.28	21.51
0311	22.55	20.25
0312	22.65	19.65
0307	23.28	21.51
0308	23.43	21.37
0309	23.06	21.21
0305	24.05	22.45
0101	20.8	20.03
0223	20.43	16.83
0225	20.7	17.89
0220	20.62	17.42
0222	20.64	19.12
0219	20.58	19.87
0217	20.89	19.57
0218	20.92	19.67
0214	21.13	18.51
0213	21.02	19.91
0215	n/a	n/a
0216	21.21	n/a
0206	20.71	17.51
0205	20.87	20.16
0102	21.02	19.09
0105	20.39	18.95
0003	21.26	19.8
0104	n/a	n/a
0002	21.34	18.61
0103	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0001	n/a	n/a
001A	n/a	n/a
0005	21.41	20.55
0004	21.56	19.58
0106	20.97	19.51
0112	20.95	n/a
0111	20.48	18.77
0006	n/a	n/a
0110	20.85	19.33
0107	21.14	19.16
0007	21.2	19.05
0113	20.59	18.95
0114	20.45	18.6
0010	21.33	18.48
0009	21.34	19.98
0008	21.44	18.7
0108	20.62	19.84
0117	20.2	18.72
0116	20.54	18.47
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

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.

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

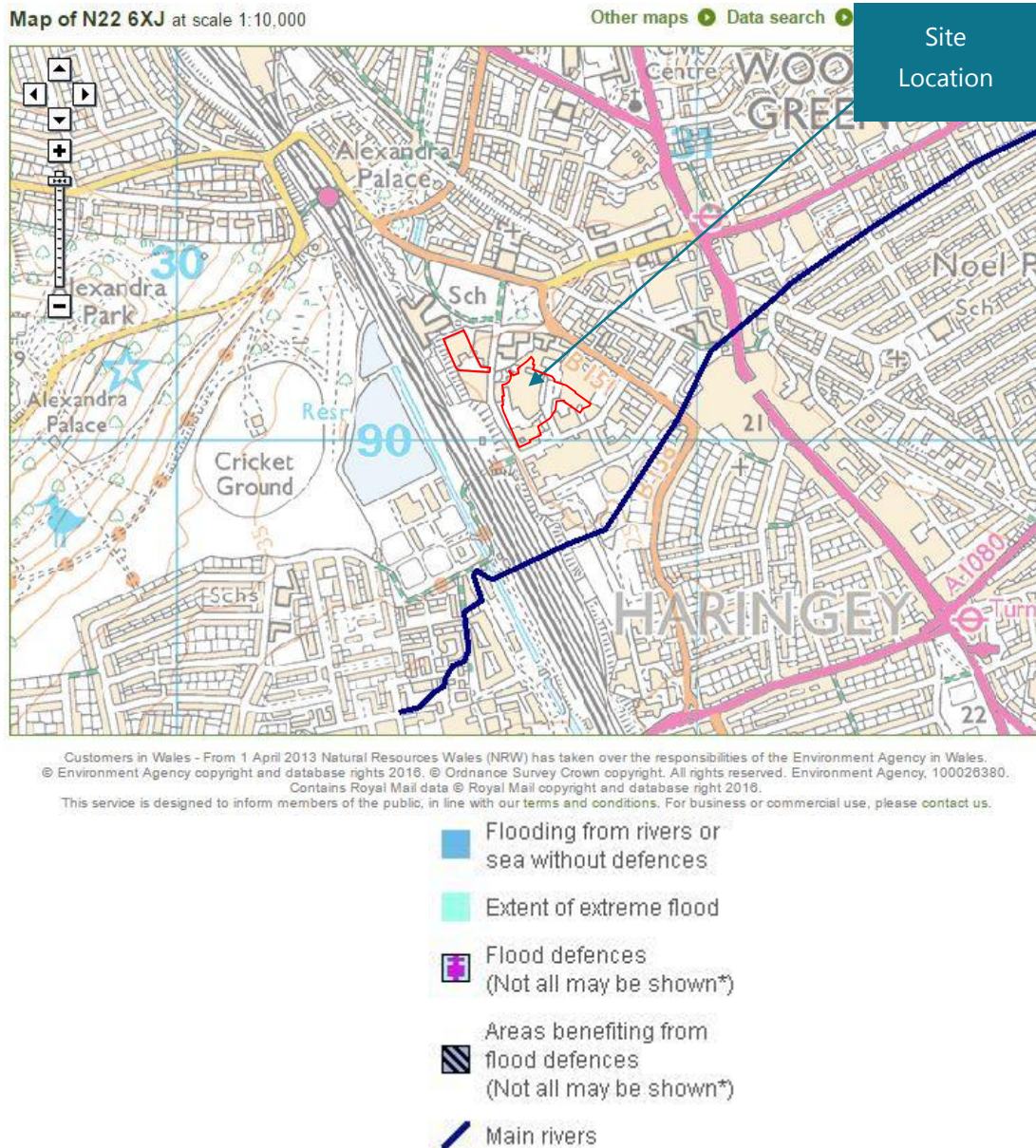
Other Sewer Types (Not Operated or Maintained by Thames Water)

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

- 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.

Appendix C

Environment Agency Flood & Groundwater Maps

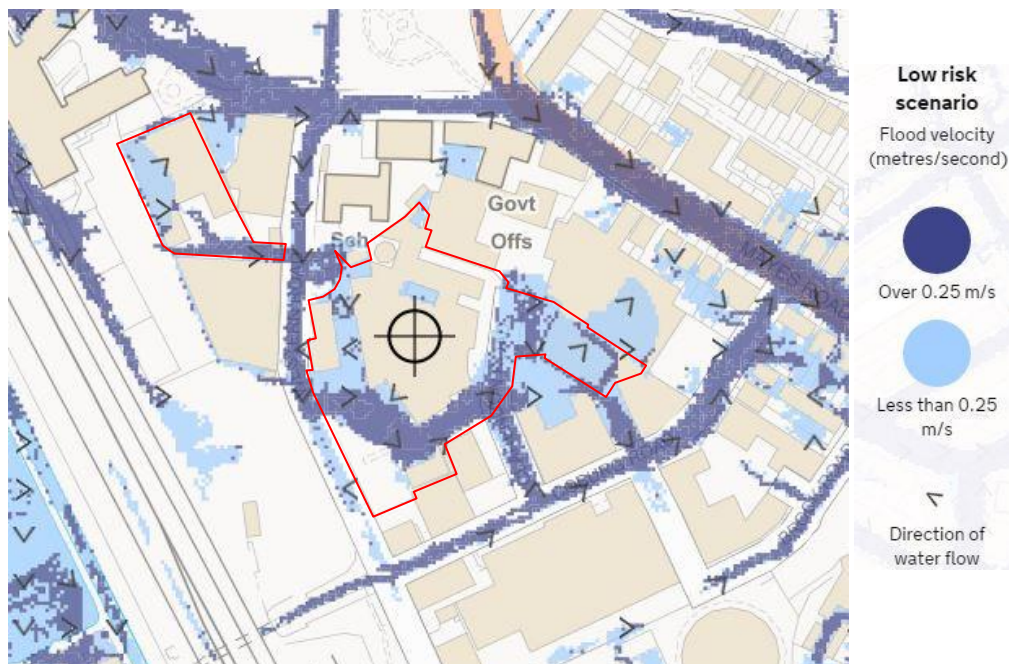


EA's Online Flood Map for Planning (Rivers and Seas)

The vast majority of the site is in fluvial Flood Zone 1 (FZ1) with a triangle at the NE corner in Flood Zone 3A (FZ3A)

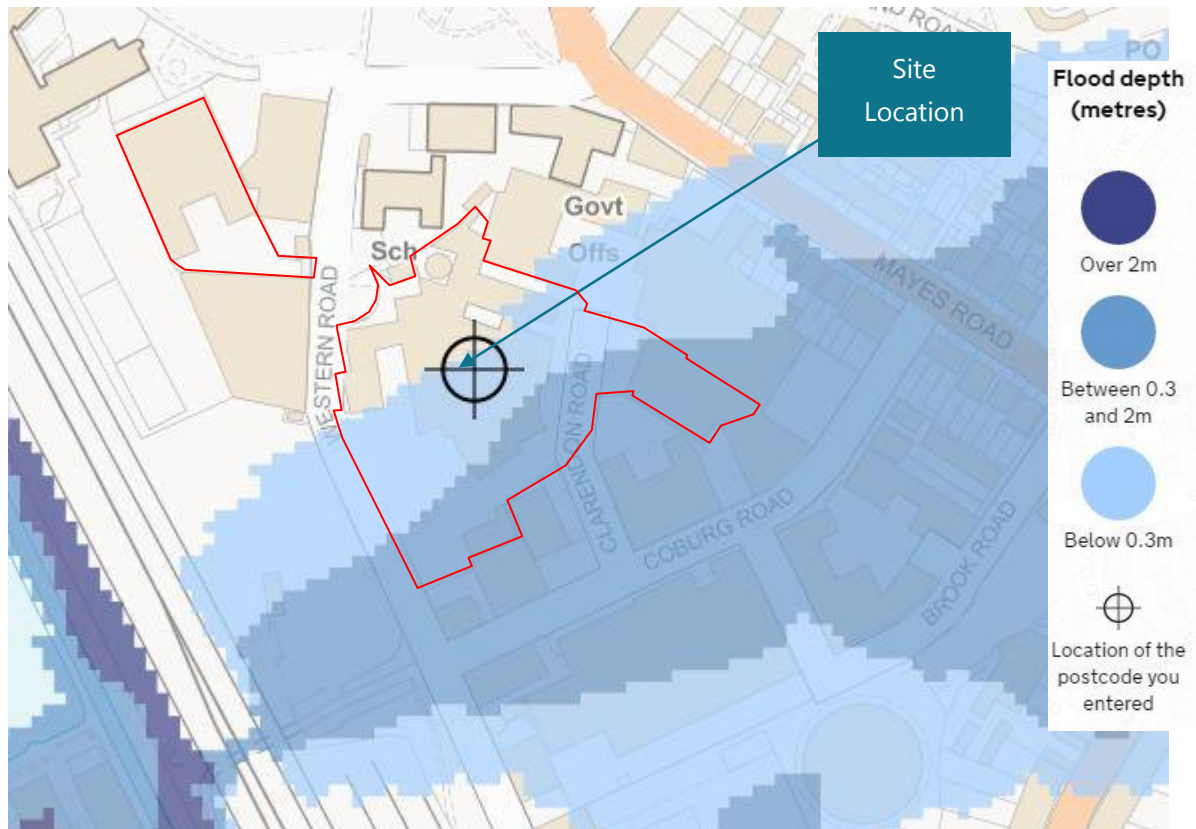


EA's Online Surface Water Flood Depth Map in the 'Low Risk Scenario'
(1 in 1000 years storm event)



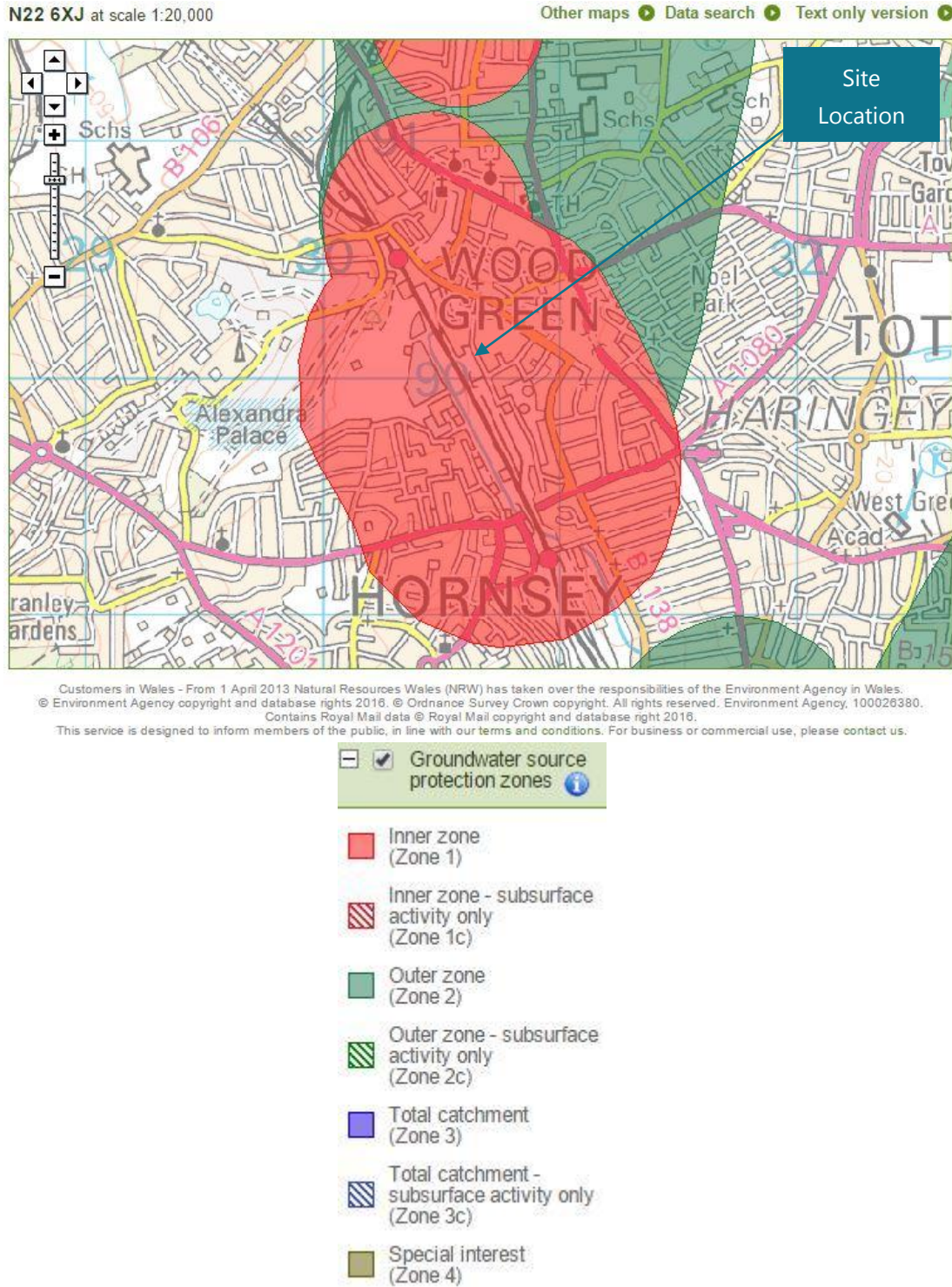
EA's Online Surface Water Flood Velocity Map in the 'Low Risk Scenario'
(1 in 1000 years storm event)

The site is affected by overland flow routes, which flow east and south; the maximum flood depth is 0.9m and the velocity will exceed 0.25m/s in places



EA's Online Flood Risk from Reservoirs – Flood Depth - Map

The south half of the site is in an area susceptible to flooding if the nearby Hornsey Reservoir, to the west of the railway tracks, were to fail



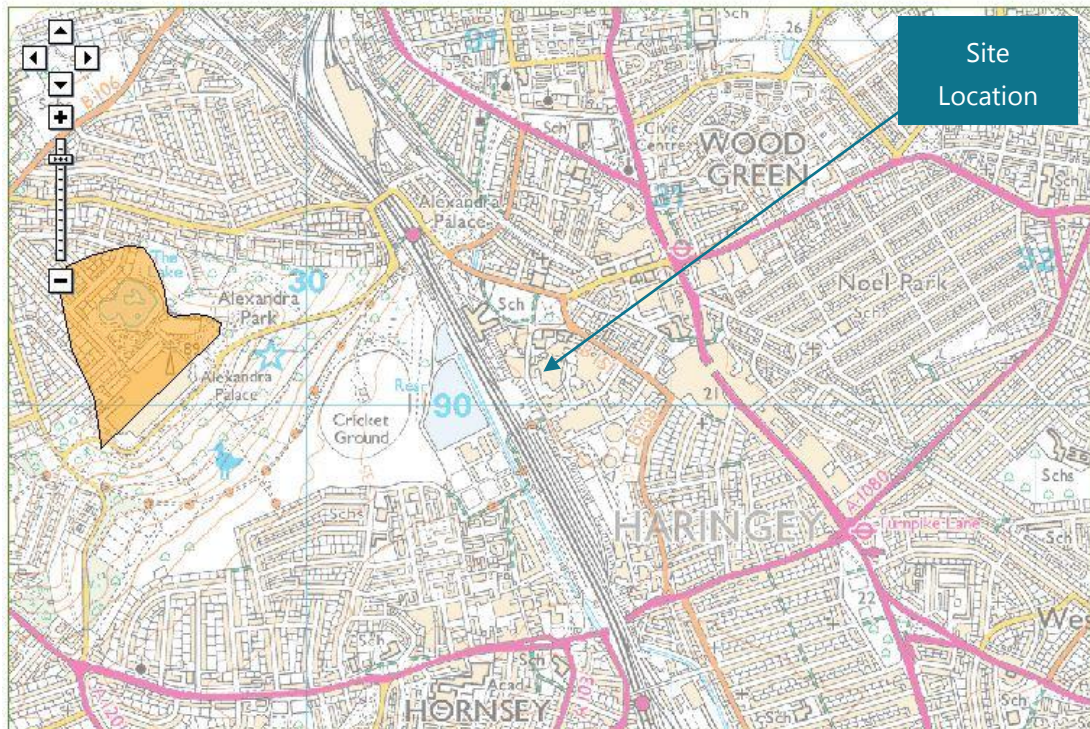
Environment Agency's Groundwater Source Protection Zones Map

The site is in an 'Inner Zone (Zone 1)'

Because the site does not overlie an aquifer it is deduced/contended that this zone is not a *groundwater* source, as such, but a *reservoir* source - water protection zone

N22 6XJ at scale 1:15,000

Other maps Data search Text only version



Customers in Wales - From 1 April 2013 Natural Resources Wales (NRW) has taken over the responsibilities of the Environment Agency in Wales.
© Environment Agency copyright and database rights 2016. © Ordnance Survey Crown copyright. All rights reserved. Environment Agency, 100026380.
Contains Royal Mail data © Royal Mail copyright and database right 2016.
This service is designed to inform members of the public, in line with our terms and conditions. For business or commercial use, please contact us.

- Major Aquifer High
- Major Aquifer Intermediate
- Major Aquifer Low
- Minor Aquifer High
- Minor Aquifer Intermediate
- Minor Aquifer Low

Environment Agency's Groundwater Vulnerability Zone Map

The site is removed from the nearest aquifer