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 Coeffiecient	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	10
Number of Online Controls	9	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH
FEH Rainfall Version	2013
Site Location	GB 506100 181400 TQ 06100 81400
Data Type	Catchment
Cv (Summer)	0.750
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, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	2, 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)
S7.000	S55	600 Winter	100	+40%	2/120 Winter				36.299
S7.001	S56	600 Winter	100	+40%	2/15 Summer				36.298
S8.000	S57	600 Winter	100	+40%	2/240 Winter				36.747
S8.001	S58	480 Winter	100	+40%	2/15 Summer				36.747
S9.000	S59	600 Winter	100	+40%	2/180 Winter				37.208
S9.001	S60	600 Winter	100	+40%	2/15 Summer				37.207
S10.000	S61	600 Winter	100	+40%	2/120 Winter				37.364
S10.001	S62	600 Winter	100	+40%	2/15 Summer				37.362
S11.000	S63	720 Winter	100	+40%	2/30 Winter				37.997
S12.000	S64	30 Winter	100	+40%	30/15 Summer				38.080
S11.001	S65	720 Winter	100	+40%	2/15 Summer				38.031
S13.000	S66	600 Winter	100	+40%	30/60 Winter				38.116
S13.001	S67	600 Winter	100	+40%	2/60 Winter				38.115
S11.002	S68	600 Winter	100	+40%					36.771

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

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.000	S55	0.432	0.000	0.15		0.6	FLOOD RISK	
S7.001	S56	1.166	0.000	0.02		0.2	FLOOD RISK	
S8.000	S57	0.307	0.000	0.13		0.6	FLOOD RISK	
S8.001	S58	1.092	0.000	0.00		0.2	FLOOD RISK	
S9.000	S59	0.308	0.000	0.23		0.9	FLOOD RISK	
S9.001	S60	1.042	0.000	0.03		0.4	FLOOD RISK	
S10.000	S61	0.340	0.000	0.20		0.9	FLOOD RISK	
S10.001	S62	1.074	0.000	0.03		0.4	FLOOD RISK	
S11.000	S63	0.724	0.000	0.09		0.5	FLOOD RISK	
S12.000	S64	0.106	0.000	2.98		13.4	FLOOD RISK	
S11.001	S65	0.942	0.000	0.03		0.5	FLOOD RISK	
S13.000	S66	0.243	0.000	0.17		1.0	FLOOD RISK	
S13.001	S67	1.052	0.000	0.02		0.2	FLOOD RISK	
S11.002	S68	-0.129	0.000	0.05		0.7	OK	

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

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S14.000	S69	600 Winter	100	+40%	2/180 Winter				37.921
S14.001	S70	600 Winter	100	+40%	2/15 Summer				37.923
S15.000	S71	480 Winter	100	+40%	30/30 Summer				35.904
S15.001	S72	480 Winter	100	+40%	2/15 Summer				35.902
S16.000	S73	360 Winter	100	+40%	2/120 Summer				37.324
S16.001	S74	360 Winter	100	+40%	2/15 Summer				37.321

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S14.000	S69	0.318	0.000	0.13		0.6	FLOOD RISK	
S14.001	S70	1.105	0.000	0.01		0.2	FLOOD RISK	
S15.000	S71	0.243	0.000	0.19		0.8	FLOOD RISK	
S15.001	S72	1.126	0.000	0.01		0.3	FLOOD RISK	
S16.000	S73	0.479	0.000	0.30		1.2	FLOOD RISK	
S16.001	S74	0.991	0.000	0.04		0.6	FLOOD RISK	

Appendix F – Greenfield Calculation

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Shuaib Kasenally
Site name:	THHR PH2 Whole Site
Site location:	Hillingdon Hospital

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.52531° N
Longitude:	0.46155° W
Reference:	4002463444
Date:	Mar 17 2022 13:49

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 4.52

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics	Default	Edited
SAAR (mm):	623	623
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	7.19	7.19
1 in 1 year (l/s):	6.11	6.11
1 in 30 years (l/s):	16.53	16.53
1 in 100 year (l/s):	22.93	22.93
1 in 200 years (l/s):	26.88	26.88

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Sam Abernethy
Site name:	THHR PH2 Whole Site
Site location:	Hillingdon Hospital

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	51.52528° N
Longitude:	0.46062° W
Reference:	2079074052
Date:	Apr 06 2022 08:50

Runoff estimation approach IH124

Site characteristics

Total site area (ha): 3.6

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics	Default	Edited
SOIL type:	2	2
HOST class:	N/A	N/A
SPR/SPRHOST:	0.3	0.3

Hydrological characteristics	Default	Edited
SAAR (mm):	623	623
Hydrological region:	6	6
Growth curve factor 1 year:	0.85	0.85
Growth curve factor 30 years:	2.3	2.3
Growth curve factor 100 years:	3.19	3.19
Growth curve factor 200 years:	3.74	3.74

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates	Default	Edited
Q_{BAR} (l/s):	5.72	5.72
1 in 1 year (l/s):	4.87	4.87
1 in 30 years (l/s):	13.17	13.17
1 in 100 year (l/s):	18.26	18.26
1 in 200 years (l/s):	21.41	21.41

Appendix G – Thames Water Asset Record

Asset location search

Property Searches

AECOM Infastructure & Environment UK Limited
1

MANCHESTER
M1 4HD

Search address supplied Hillingdon Hospital
Pield Heath Road
Uxbridge
UB8 3NN

Your reference THHR_01

Our reference ALS/ALS/24/2021_4539696

Search date 11 November 2021

Knowledge of features below the surface is essential for every development

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

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

Contact us to find out more.

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

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: Hillingdon Hospital, Pield Heath Road, Uxbridge, UB8 3NN

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

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

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

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

TQ0682SE
TQ0681NE
TQ0781NW

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.

Following examination of our statutory maps, Thames Water has been unable to find any plans of water mains within this area. If you require a connection to the public water supply system, please write to:

New Connections / Diversions
Thames Water
Network Services Business Centre
Brentford
Middlesex
TW8 0EE

Tel: 0845 850 2777
Fax: 0207 713 3858
Email: developer.services@thameswater.co.uk

The following quartiles have not been printed as they are out of Thames' water catchment area. For details of the assets requested please contact the water company indicated below:

TQ0682SE Affinity Water
TQ0681NE Affinity Water
TQ0781NW Affinity Water

Affinity Water Ltd
Tamblin Way
Hatfield
AL10 9EZ

Tel: 0345 3572401

For your guidance:

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

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

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

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

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

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

Clean Water queries

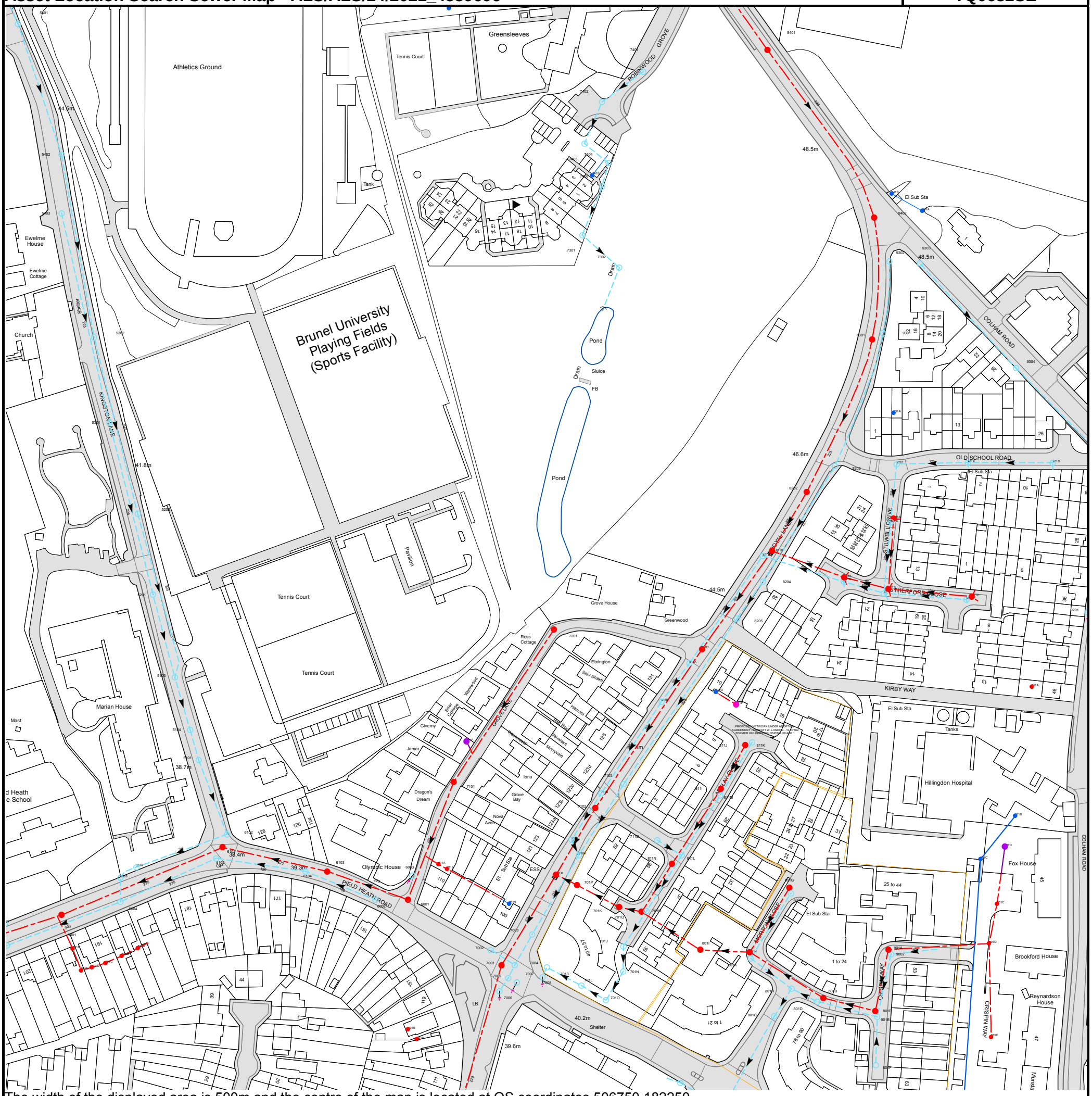
Should you require any advice concerning clean water operational issues or clean water connections, please contact:

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

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

Asset Location Search Sewer Map - ALS/ALS/24/2021_4539696

TQ0682SE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 506750,182250

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.

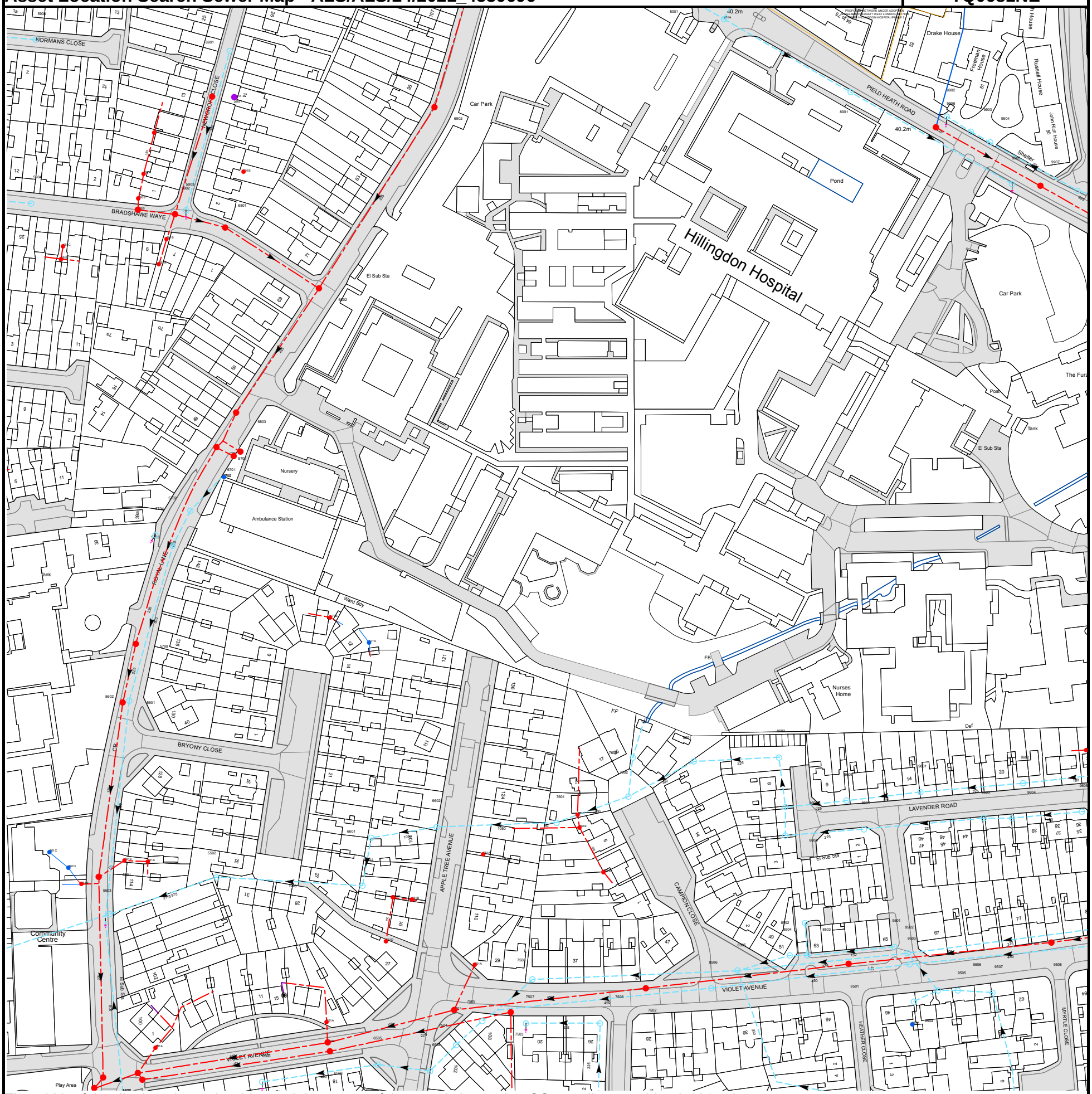
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7401	n/a	n/a
8401	49.36	47.17
5401	n/a	n/a
741A	n/a	n/a
5402	n/a	n/a
5403	43.7	42.21
5302	n/a	n/a
5301	42.15	40.46
5202	n/a	n/a
5201	40.38	38.6
5103	39.49	38.25
5104	38.91	38.02
7201	42.49	40.53
7301	n/a	n/a
7403	n/a	n/a
741B	n/a	n/a
7402	n/a	n/a
7406	n/a	n/a
7404	n/a	n/a
7302	n/a	n/a
811B	42.96	41.44
811A	43.57	41.68
8201	43.59	41.55
811O	n/a	n/a
811P	n/a	n/a
8205	44.24	43.65
821D	44.88	42.08
8204	44.68	44.07
821B	45.05	42.98
8202	45.71	43.5
8203	46.42	45.69
821C	45.43	42.27
821A	45.5	43.22
8301	n/a	n/a
8402	n/a	n/a
9301	47.84	47.35
921H	45.36	42.35
921B	45.41	43.36
9302	47.89	47.33
921G	46.11	43.07
941B	n/a	n/a
931A	n/a	n/a
921A	46.11	44.47
921F	47.54	43.96
9303	n/a	n/a
941A	n/a	n/a
921I	44.94	42.52
921E	47.75	46.22
921C	44.92	43.61
911C	n/a	n/a
911D	n/a	n/a
911B	n/a	n/a
9304	n/a	n/a
911A	n/a	n/a
921D	48.49	47.06
9201	n/a	n/a
5005	37.27	35.73
511A	n/a	n/a
5101	38.7	37.84
5102	38.14	36.93
6101	38.25	36.04
6102	n/a	n/a
6104	39.08	37.39
6103	39.55	38.23
6003	n/a	n/a
611A	n/a	n/a
711E	n/a	n/a
7101	41.09	38.98
711F	n/a	n/a
701M	n/a	n/a
711A	41.18	40.52
701P	n/a	n/a
7104	41.21	40.32
7102	n/a	n/a
711B	41.72	40.62
7103	41.95	41.29
711D	n/a	n/a
811N	n/a	n/a
811L	n/a	n/a
811M	n/a	n/a
811I	n/a	n/a
811J	n/a	n/a
811K	n/a	n/a
7007	40.11	39.52
7003	40.49	39.4
7008	40.3	38.77
7013	n/a	n/a
701L	n/a	n/a
701O	n/a	n/a
701K	n/a	n/a
701N	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
701J	n/a	n/a
701Q	n/a	n/a
701R	n/a	n/a
8001	n/a	n/a
801I	n/a	n/a
801J	n/a	n/a
801K	n/a	n/a
801C	n/a	n/a
801G	n/a	n/a
8006	n/a	n/a
801H	n/a	n/a
801D	n/a	n/a
801B	n/a	n/a
801E	n/a	n/a
801F	n/a	n/a
901B	n/a	n/a
901A	n/a	n/a
9002	n/a	n/a
5002	36.31	35.63
5003	36.2	34.89
5001	36.69	34.38
501F	n/a	n/a
501E	n/a	n/a
501D	n/a	n/a
501C	n/a	n/a
5004	37.17	35.76
501B	n/a	n/a
501A	n/a	n/a
6002	39.93	38.85
6001	40.23	37.96
601B	n/a	n/a
601A	n/a	n/a
7002	40.39	39.39
7006	39.98	38.57
7001	40.19	38.28
7005	40.09	38.75
701S	n/a	n/a
7004	40.2	38.86
901E	n/a	n/a
901D	n/a	n/a
901C	n/a	n/a

Asset Location Search Sewer Map - ALS/ALS/24/2021_4539696

TQ0681NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 506750,181750

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

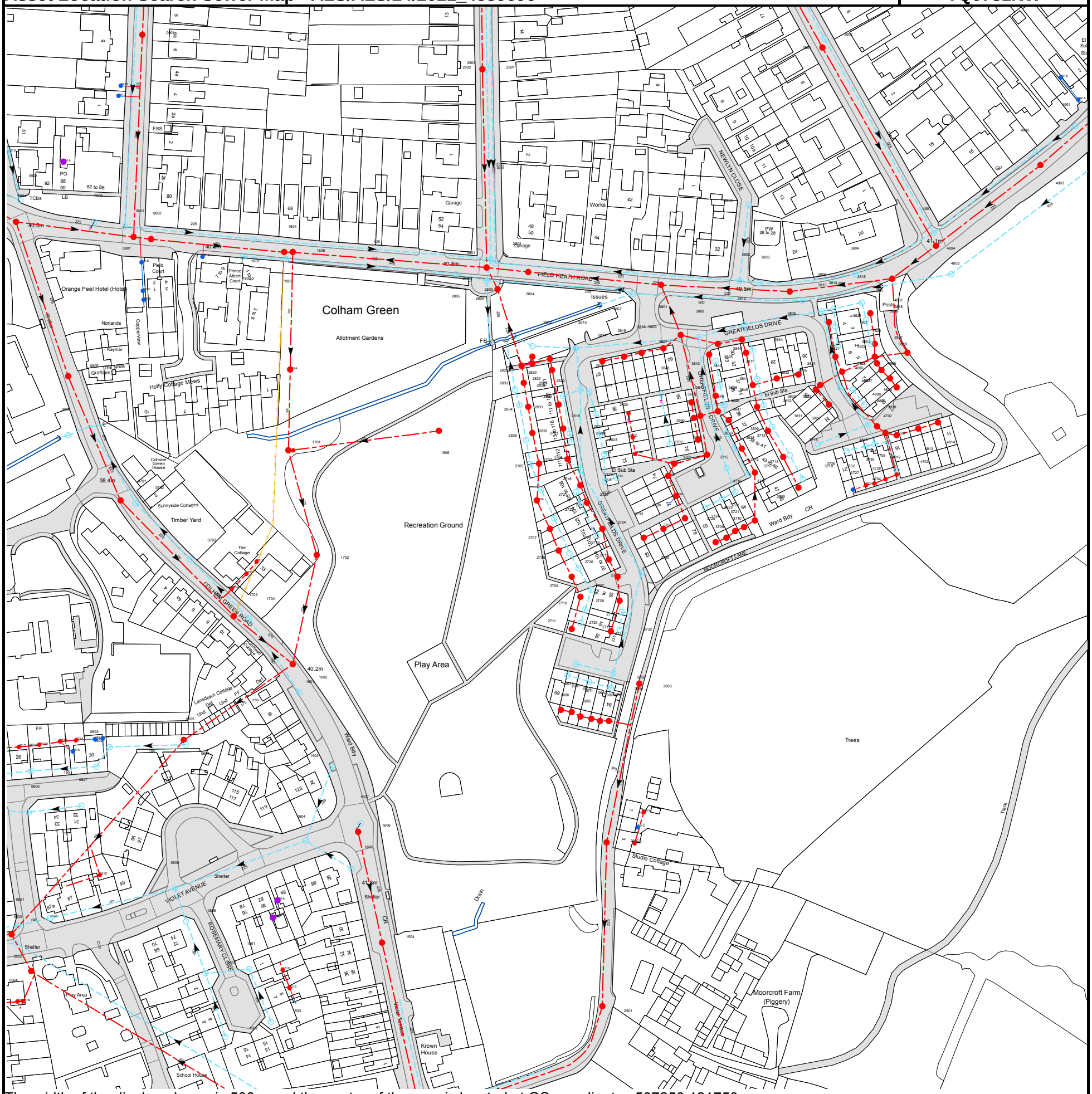
Manhole Reference	Manhole Cover Level	Manhole Invert Level
891A	n/a	n/a
8901	n/a	n/a
5906	n/a	n/a
591C	n/a	n/a
5901	n/a	n/a
6901	n/a	n/a
691B	n/a	n/a
6902	38.69	36.73
9901	n/a	n/a
9907	n/a	n/a
9905	n/a	n/a
9904	n/a	n/a
9903	n/a	n/a
9906	n/a	n/a
9902	n/a	n/a
961A	n/a	n/a
7502	36.32	33.04
8601	36.47	34.96
8506	36.7	34.62
8505	37.02	35.08
8602	n/a	n/a
8603	37.29	35.7
8604	37.35	35.83
8504	37.33	36.4
8502	37.54	36.65
8503	37.39	36.54
8606	37.71	36.2
8605	37.88	36.36
9501	37.85	37.04
9502	37.84	35.96
9503	37.94	35.03
951A	n/a	n/a
9504	37.87	36.78
9601	n/a	n/a
9505	38.1	36.45
9506	37.99	36.6
9603	n/a	n/a
9507	38.26	36.94
9604	38.6	37.31
9602	38.68	37.27
9508	38.74	34.9
9605	38.93	37.82
5601	33.66	31.92
5602	33.59	31.81
5708	n/a	n/a
671A	n/a	n/a
671B	n/a	n/a
5703	35.31	33.05
5704	35.46	34.15
5702	35	33.12
671C	n/a	n/a
6702	36.37	34.16
6701	36.47	35.13
5701	36.41	34.07
6803	36.7	34.25
6802	37.24	35.21
581A	n/a	n/a
581D	n/a	n/a
581C	n/a	n/a
581B	n/a	n/a
6801	n/a	n/a
5902	n/a	n/a
5903	n/a	n/a
5905	n/a	n/a
5904	n/a	n/a
591B	n/a	n/a
591A	n/a	n/a
691A	n/a	n/a
7503	35.21	32.02
7501	34.65	31.96
7506	35.58	33.59
751A	n/a	n/a
8501	37.5	34.01
651D	n/a	n/a
651B	n/a	n/a
651C	n/a	n/a
761D	n/a	n/a
761A	n/a	n/a
761B	n/a	n/a
6602	34.45	32.57
7601	35.69	33.05
761C	n/a	n/a
7602	36.01	33.38
7603	35.82	33.61
561C	n/a	n/a
561D	n/a	n/a
551B	n/a	n/a
5501	32.99	31.83
5505	32.44	31.25
5503	32.94	30.48

Manhole Reference	Manhole Cover Level	Manhole Invert Level
561B	n/a	n/a
5506	32.54	30.17
5507	32.52	31.43
561A	n/a	n/a
551A	n/a	n/a
5502	33.27	30.97
651A	n/a	n/a
6502	33.62	31.49
6503	33.63	31.66
6501	34.06	32.03
6601	34.59	32.66
6504	n/a	n/a
6505	34.03	32.49
7504	34.79	32.8
7508	36.08	34.15
7507	35.6	33.43
7505	35.13	33.03
5504	32.65	30.04
6506	n/a	n/a

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

Asset Location Search Sewer Map - ALS/ALS/24/2021_4539696

TQ0781NW



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 507250,181750

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
0804	40.56	37.87
0809	40.98	40.41
0902	40.68	39.86
091A	n/a	n/a
091D	n/a	n/a
091C	n/a	n/a
091B	n/a	n/a
2901	43.19	41.18
2902	43.19	41.63
2903	43.25	42.08
0901	42.92	40.85
3805	40.62	38.55
2807	40.73	39.34
3801	40.64	38.33
3803	40.81	39.75
3802	40.76	39.76
4802	40.94	38.87
4804	41.27	39.65
3804	40.96	40.1
4803	41.04	39.11
4801	41.15	40.43
3903	41.71	40.47
4903	n/a	n/a
4902	42.02	41.18
4901	42	41.45
491A	n/a	n/a
491B	n/a	n/a
3902	43.62	41.58
3901	43.62	42.24
3726	41.34	40.46
3824	41.14	39.63
3826	41.27	40.32
3827	41.15	39.99
3821	41.04	39.47
3727	41.75	40.96
3828	41.44	40.35
3732	42.06	41.06
3829	41.5	40.63
3731	42.06	41.06
3728	41.79	40.81
3830	41.47	40.24
3730	42.06	41.07
3729	41.83	40.68
4810	41.55	40.09
4806	41.48	39.47
4807	41.52	39.5
4811	41.81	40.4
4705	42.05	41.05
4702	41.85	40.79
4808	41.56	39.7
4809	41.61	39.78
4704	42.11	40.98
4703	42.07	41.03
4812	41.91	40.52
4813	41.94	40.68
4814	41.96	40.89
3842	40.42	39.64
3710	41.58	40.58
3841	40.51	39.5
3839	40.73	39.87
3712	41.03	39.95
3840	40.76	39.45
3711	41.55	40.46
3723	41.71	40.78
3713	40.94	39.95
3715	41.01	39.83
3722	41.71	40.7
3714	41.16	40.19
3836	40.67	39.54
3721	41.71	40.57
3716	41.09	39.93
3833	40.67	39.4
3847	40.77	39.6
3832	40.87	39.88
3838	41.07	39.97
3831	41.07	40.03
3852	40.77	39.88
3717	41.14	40.1
3718	41.22	40.47
3720	41.26	40.42
3853	40.77	39.97
3719	41.36	40.74
3825	41.23	39.7
3843	40.29	39.68
3820	40.83	39.29
2815	39.94	39.06
3822	40.86	39.76
3844	40.18	39.39
2816	40	39.01
4805	40.74	39.23

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3855	40.53	39.29
3834	40.58	39.3
3809	40.06	38.87
3854	40.85	40.06
3817	40.94	40.03
3810	40.11	38.7
3819	40.94	39.45
3811	40.23	39.29
3808	40.03	38.94
3807	39.99	38.53
3861	40.72	39.87
3812	40.09	39.1
3823	40.69	39.92
3816	40.76	40.01
3818	40.74	40.03
3813	40.78	39.49
3814	40.77	39.61
3815	40.85	39.7
3806	n/a	n/a
2808	40.62	38.47
2724	41.77	40.65
2820	41.05	40.12
2821	41.1	40.16
2725	41.62	40.9
2814	39.9	39.19
2736	41.12	40.23
2735	41.17	40.39
2734	41.17	40.43
2822	n/a	n/a
2823	n/a	n/a
271A	n/a	n/a
3848	40.34	39.22
3708	41.56	40.47
3705	41.16	39.59
3701	40.71	39.62
3704	41.54	39.06
3706	41.38	39.86
3707	41.62	40.03
3849	40.58	39.42
3851	40.61	39.1
3702	40.82	39.91
3850	40.55	38.84
3709	41.62	40.6
3703	40.97	38.97
3846	40.44	39.4
3845	40.38	39.27
3859	40.6	38.99
2501	41.01	38.43
261B	n/a	n/a
2607	42.18	40
261C	n/a	n/a
261A	n/a	n/a
2609	43.27	42
2608	43.25	41.98
2610	43.27	42.2
2604	43.02	41.91
2603	41.99	40.51
2602	42.74	41.35
2729	42.73	42.12
2732	42.71	41.86
2731	42.66	41.23
2728	41.79	40.88
2714	42.12	41.06
2727	n/a	n/a
2730	42.05	40.63
2726	41.98	41.3
3725	41.7	40.99
2733	41.64	40.81
3724	41.71	40.92
2611	43.27	42.31
2612	43.27	42.34
2613	43.27	42.34
2605	43	42.02
2606	42.99	42.16
2601	42.62	41.59
2711	n/a	n/a
2712	42.67	41.86
2713	42.64	41.8
2710	42.65	41.57
2709	42.27	41.37
2715	42.12	40.91
2716	41.97	40.65
2708	41.89	40.98
2707	41.96	40.73
2717	41.92	40.56
2722	41.5	40.74
2723	41.67	40.55
2706	41.63	40.49
2720	41.54	40.33
2718	41.83	40.25
2721	41.34	40.5
2719	41.18	40
2704	40.93	40.05

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2705	41.05	40.24
2703	41.13	40.23
2702	40.97	40.38
2701	40.79	39.9
2835	40.93	39.98
2824	40.9	40.25
1806	n/a	n/a
2832	40.88	39.98
2834	40.92	39.83
2826	40.65	39.66
2831	40.81	39.97
2818	40.74	39.99
2819	40.85	40
2825	40.61	39.6
2817	40.62	39.79
2833	40.79	39.63
2830	40.68	39.63
2827	40.83	39.47
2828	40.8	39.56
2829	40.71	39.62
2839	40.71	39.34
2813	40.67	39.49
2812	40.5	39.4
2809	40.04	38.05
2806	40.95	38.85
2805	40.95	39.47
2804	40.97	37.99
2803	n/a	n/a
2802	40.94	39.59
2801	40.99	38.98
1501	41	39.36
1503	49.1	47.99
151B	n/a	n/a
151A	n/a	n/a
151D	n/a	n/a
151E	n/a	n/a
1604	41.24	38.76
1603	41.21	39.72
1605	41.85	39.48
1606	41.51	39.5
1607	41.51	39.53
1504	41.92	39.03
0806	n/a	n/a
0805	38.69	36.83
0701	38.42	36.57
0801	40.89	40.2
0803	40.94	37.6
0702	39.32	38.25
081D	n/a	n/a
081C	n/a	n/a
081B	n/a	n/a
0802	40.91	37.58
0703	39.1	37.69
081A	n/a	n/a
171A	n/a	n/a
1703	39.68	36.38
1802	40.91	39.93
171B	n/a	n/a
1704	39.93	38.22
1801	40.91	39.97
171C	n/a	n/a
1804	40.75	37.32
1803	40.82	39.65
1701	38.5	36.22
181A	n/a	n/a
1805	40.73	37.2
1601	40.57	35.62
1602	40.52	38.9
1702	39.82	35.82
0502	39.05	35.1
0503	38.95	35.25
051A	n/a	n/a
0501	39.14	37.25
061D	n/a	n/a
051B	n/a	n/a
0606	39.2	38.18
0504	39.16	35.48
0601	39.25	37.99
061C	n/a	n/a
051C	n/a	n/a
061B	n/a	n/a
061E	n/a	n/a
061A	n/a	n/a
0607	39.64	39.23
061G	n/a	n/a
0602	39.72	38.58
051D	n/a	n/a
061F	n/a	n/a
0603	39.78	38.84
0505	40.23	38.08
0604	39.97	35.4
0506	40.39	38.3
0605	39.98	39.26

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0507	40.54	39.03
1502	40.78	39.49

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

Gulley

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 milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Searches on 0800 009 4540.

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Appendix H – Hillingdon SuDS Proforma Phase 1

GREATERLONDONAUTHORITY

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	The Hillingdon Hospital Redevelopment- Phase 1
Address & post code	Pield Heath Rd, Uxbridge UB8 3NN
OS Grid ref. (Easting, Northing)	E 506850
	N 181894
LPA reference (if applicable)	
Brief description of proposed work	Proposed redevelopment of the existing hillingdon hospital which includes a proposed new multistorey hospital building and multistorey carpark.
Total site Area	45200 m^2
Total existing impervious area	45200 m^2
Total proposed impervious area	45200 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	N
Existing drainage connection type and location	Connection to Thames Water Public Sewer. Location along Pield Heath Road, Royal Lane and Colham Green Road.
Designer Name	Shuaib Kasenally
Designer Position	Civil Engineer
Designer Company	AECOM

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Boyn Hill Gravel Member
Bedrock geology classification	London Clay
Site infiltration rate	m/s
Depth to groundwater level	m below ground level
Is infiltration feasible?	N

2b. Drainage Hierarchy

	Feasible (Y/N)	*Proposed (Y/N)*
1 store rainwater for later use	Y	Y
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	Y	Y
4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
5 discharge rainwater direct to a watercourse	Y	Y
6 discharge rainwater to a surface water sewer/drain	Y	Y
7 discharge rainwater to the combined sewer.	N	N

2c. Proposed Discharge Details

Proposed discharge location	Existing Watercourse. Thames Water Sewer on Royal Lane
Has the owner/regulator of the discharge location been consulted?	Yes

3. 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	7.2			
1 in 1	6.1	341		6.1
1 in 30	16.5	831		16.5
1 in 100	22.9	1091		22.9
1 in 100 + CC			4355	22.9
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Vortex Control (Hydrobrake)		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	3623	0	0
Blue roofs	0	0	0
Filter strips	0	0	0
Filter drains	0	0	0
Bioretention / tree pits	0	0	0
Pervious pavements	5587	0	0
Swales	274	0	0
Basins/ponds	2953	0	0
Attenuation tanks	1900		0
Total	**14337**	**0**	**0**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 2.3 Ground Investigation Report
Drainage hierarchy (2b)	Section 6 Section 6.2
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Section 4 Section 6.3 Appendix G
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 6.3 Section 6.5 Appendix E
Proposed SuDS measures & specifications (3b)	Section 6.2
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Section 2
Detailed drainage design drawings, including exceedance flow routes	Appendix A
Detailed landscaping plans	
Maintenance strategy	Section 9
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Section 6.2
b) biodiversity?	
c) amenity?	

Appendix I – Hillingdon SuDS Proforma Phase 2

GREATERLONDONAUTHORITY

1. Project & Site Details		
	Project / Site Name (including sub-catchment / stage / phase where appropriate)	The Hillingdon Hospital Redevelopment- Phase 2
	Address & post code	Pield Heath Rd, Uxbridge UB8 3NN
	OS Grid ref. (Easting, Northing)	E 506850
		N 181894
	LPA reference (if applicable)	
	Brief description of proposed work	Proposed redevelopment of the existing hillingdon hospital to mixed use development comprising of residential (class C3), Commercia, Business and Service User (Class E)
	Total site Area	37000 m^2
	Total existing impervious area	37000 m^2
	Total proposed impervious area	37000 m^2
	Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	N
	Existing drainage connection type and location	Discharge into exisitng Water Course
	Designer Name	Shuaib Kasenally
	Designer Position	Civil Engineer
	Designer Company	AECOM

2. Proposed Discharge Arrangements			
	2a. Infiltration Feasibility		
	Superficial geology classification	Boyn Hill Gravel Member	
	Bedrock geology classification	London Clay	
	Site infiltration rate	m/s	
	Depth to groundwater level	m below ground level	
	Is infiltration feasible?	N	
	2b. Drainage Hierarchy		
		Feasible (Y/N)	*Proposed (Y/N)*
	1 store rainwater for later use	Y	Y
	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	Y	Y
	4 attenuate rainwater by storing in tanks or sealed water features for gradual release	Y	Y
	5 discharge rainwater direct to a watercourse	Y	Y
	6 discharge rainwater to a surface water sewer/drain	Y	N
	7 discharge rainwater to the combined sewer.	N	N
	2c. Proposed Discharge Details		
	Proposed discharge location	Discharge into Existing water course	
	Has the owner/regulator of the discharge location been consulted?	Yes	

3. 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	7.2			
1 in 1	5	626		5
1 in 30	13.5	1525		13.5
1 in 100	18.8	2001		18.8
1 in 100 + CC			3650	18.8
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Vortex Control (Hydrobrake)		

3c. Proposed SuDS Measures

	Catchment area (m^2)	*Plan area (m^3)*	*Storage vol. (m^3)*
Rainwater harvesting	0		0
Infiltration systems	0		0
Green roofs	0	0	0
Blue roofs	0	0	0
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	0		0
Total	**0**	**0**	**0**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Section 2.3 Ground Investigation Report
Drainage hierarchy (2b)	Section 6 Figure 4 Section 7.3
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	Section 4 Section 7.1 Appendix G
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Section 7.1 Section 7.2 Section 7.3
Proposed SuDS measures & specifications (3b)	Section 7.2
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Section 2
Detailed drainage design drawings, including exceedance flow routes	Appendix D
Detailed landscaping plans	
Maintenance strategy	Section 9
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	
b) biodiversity?	
c) amenity?	

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