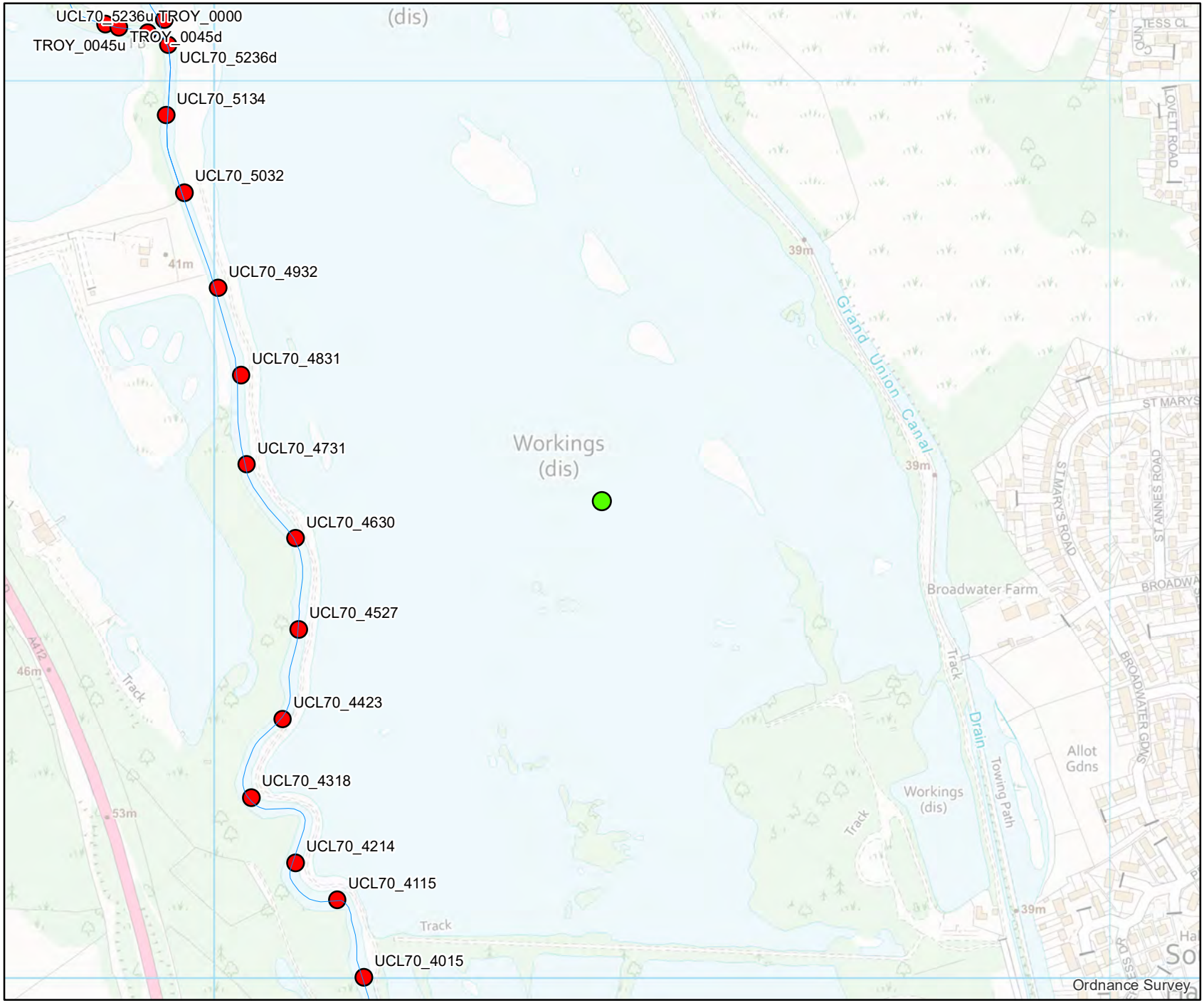
Detailed FRA centred on: Broadwater Lake,Nearest postcode UB9 6PE - 11/01/2023 - HNL 294490 AS



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 90 180 360
Metres

Legend

Statutory Main Rivers

Site location

1D Node Results

Node Results

The data in this map has been extracted from the Upper Colne Flood Risk Mapping Study (Halcrow, 2010).
This model has been designed for catchment wide flood riskmapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.
Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Environment Agency ref: HNL 294490 AS

The following information has been extracted from the Upper Colne Flood Risk Mapping Study (Halcrow, 2010)

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Caution:
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.

All flood levels are given in metres Above Ordnance Datum (mAOD)
All flows are given in cubic metres per second (cumecs)

Based on an understanding of the data used to develop the hydraulic and hydrological model, and the resolution of hydrological and hydraulic representation, a confidence score of 1 (high) to 5 (low) was attributed to model results within different reaches of the Upper Colne catchment for each of the following four aspects and an average produced to provide an overall confidence score.

- Hydrological Data
- Hydrological Analysis
- Hydraulic Data
- Hydraulic Analysis

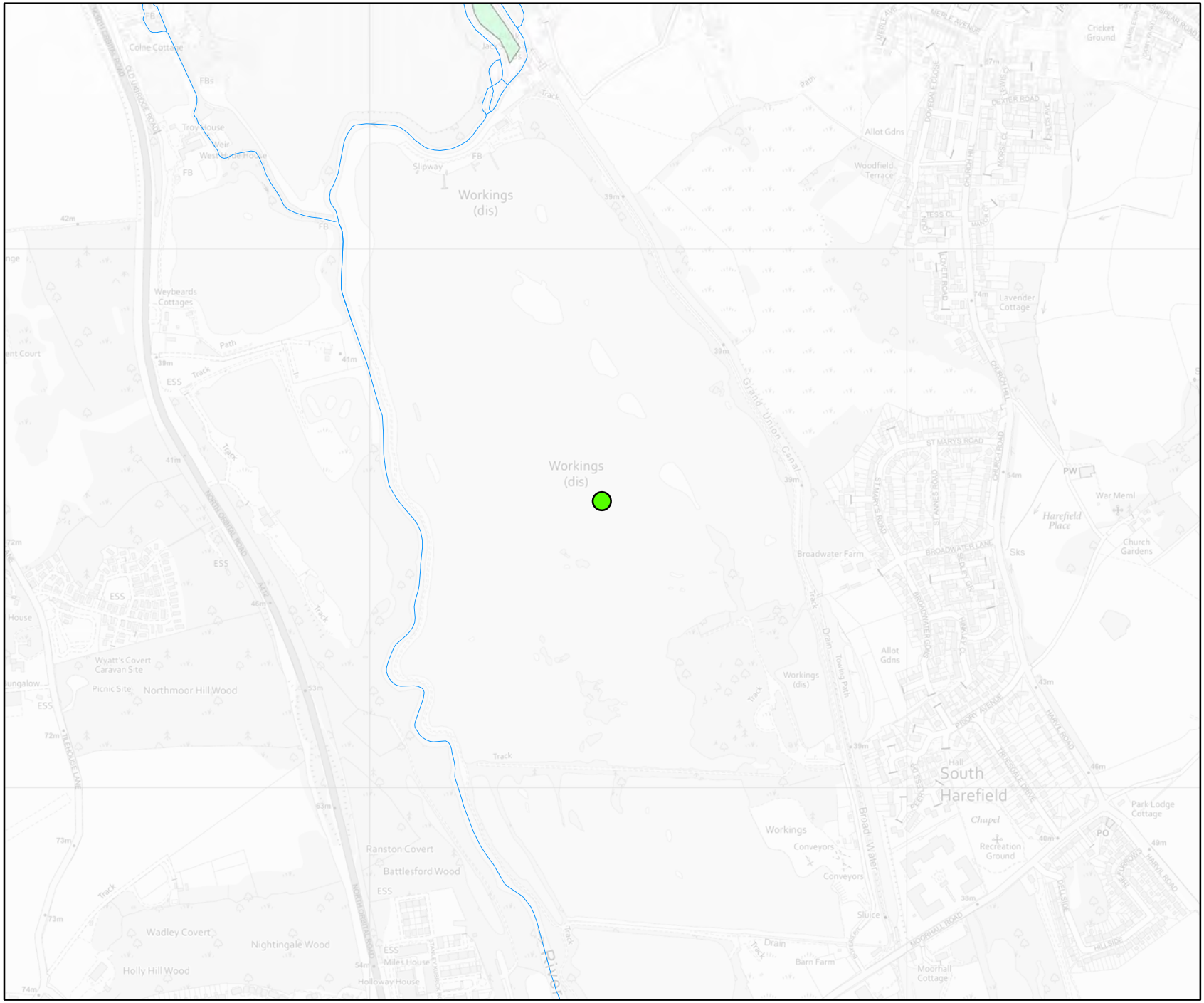
MODELLED FLOOD LEVEL

			Return Period									
Node Label	**Easting**	**Northing**	**2 yr**	**5 yr**	**10 yr**	**20yr**	**50yr**	**100yr**	**100yr +20%**	**200yr**	**1000yr**	**Confidence**
TROY_0045u	503880	190063	38.27	38.27	38.28	38.28	38.38	38.51	38.59	38.58	39.11	3
TROY_0045d	503895	190059	38.26	38.26	38.27	38.27	38.38	38.51	38.59	38.58	39.11	3
TROY_0000	503927	190053	37.80	37.95	38.27	38.27	38.38	38.51	38.59	38.59	39.06	3
UCL70_5236u	503945	190068	37.80	37.95	38.27	38.27	38.38	38.51	38.59	38.59	39.06	3
UCL70_5236d	503950	190040	37.80	37.95	38.27	38.27	38.38	38.51	38.59	38.59	39.06	3
UCL70_5134	503947	189962	37.75	37.91	38.22	38.22	38.33	38.47	38.56	38.55	39.04	3
UCL70_5032	503968	189875	37.64	37.80	38.09	38.10	38.20	38.32	38.40	38.39	38.82	3
UCL70_4932	504005	189769	37.59	37.75	38.03	38.03	38.12	38.24	38.30	38.30	38.57	3
UCL70_4831	504032	189672	37.57	37.72	37.99	37.99	38.08	38.18	38.24	38.23	38.51	3
UCL70_4731	504038	189572	37.53	37.68	37.92	37.93	38.01	38.09	38.15	38.14	38.37	3
UCL70_4630	504092	189490	37.41	37.56	37.80	37.81	37.89	37.97	38.01	38.01	38.27	3
UCL70_4527	504096	189388	37.31	37.44	37.69	37.70	37.78	37.87	37.92	37.92	38.24	3
UCL70_4423	504078	189288	37.26	37.38	37.63	37.63	37.73	37.83	37.89	37.88	38.23	3
UCL70_4318	504043	189201	37.11	37.23	37.49	37.49	37.58	37.67	37.73	37.72	38.17	3
UCL70_4214	504092	189128	36.96	37.08	37.34	37.34	37.43	37.51	37.58	37.57	38.13	3
UCL70_4115	504139	189087	36.85	36.97	37.25	37.25	37.34	37.41	37.49	37.47	38.05	3
UCL70_4015	504168	189000	36.80	36.92	37.19	37.19	37.29	37.35	37.42	37.40	37.88	3

MODELLED FLOWS

			Return Period									
Node Label	**Easting**	**Northing**	**2 yr**	**5 yr**	**10 yr**	**20yr**	**50yr**	**100yr**	**100yr +20%**	**200yr**	**1000yr**	**Confidence**
TROY_0045u	503880	190063	4.72	4.91	4.91	4.91	4.91	4.90	4.90	4.90	4.90	3
TROY_0045d	503895	190059	4.72	4.91	4.91	4.91	4.91	4.90	4.90	4.90	4.90	3
TROY_0000	503927	190053	4.72	4.94	5.03	5.03	4.90	4.89	4.89	4.89	15.60	3
UCL70_5236u	503945	190068	9.27	12.78	19.79	19.86	21.68	24.18	26.70	26.36	43.98	3
UCL70_5236d	503950	190040	13.98	17.71	22.32	22.39	22.54	24.13	28.08	27.57	59.58	3
UCL70_5134	503947	189962	14.17	17.49	23.68	23.73	25.49	28.40	31.07	30.79	56.61	3
UCL70_5032	503968	189875	14.23	17.53	25.99	26.08	29.57	34.61	38.29	37.97	66.64	3
UCL70_4932	504005	189769	14.23	17.53	25.99	26.08	29.57	34.68	38.72	38.35	74.12	3
UCL70_4831	504032	189672	14.23	17.52	25.99	26.08	29.57	34.61	38.33	38.00	63.25	3
UCL70_4731	504038	189572	14.23	17.52	25.99	26.08	29.57	34.57	38.09	37.79	57.21	3
UCL70_4630	504092	189490	14.23	17.52	25.97	26.05	29.35	33.81	36.85	36.58	49.35	3
UCL70_4527	504096	189388	14.23	17.52	25.94	26.01	28.89	32.19	34.17	33.99	38.95	3
UCL70_4423	504078	189288	14.23	17.52	24.85	24.90	26.24	26.97	27.24	27.19	28.23	3
UCL70_4318	504043	189201	14.22	17.52	25.55	25.70	29.25	33.82	36.53	36.34	43.94	3
UCL70_4214	504092	189128	14.23	17.52	25.55	25.70	29.25	33.75	36.24	36.07	40.81	3
UCL70_4115	504139	189087	14.22	17.52	25.55	25.70	29.25	33.75	36.24	36.07	63.26	3
UCL70_4015	504168	189000	14.22	17.52	25.55	25.70	29.22	33.32	39.29	37.88	99.19	3

Historic Flood Map centred on: Broadwater Lake,Nearest postcode UB9 6PE - 11/01/2023 - HNL 294490 AS



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 150 300 600

Metres

Legend

Site location

Flood Event Outlines

1987

The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey.
Our historic flood event outlines do not provide a definitive record of flooding.
It is possible that there will be an absence of datain places where we have not been able to record the extent of flooding.
It is also possible for errors occur in the digitisation of historic records of flooding.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

APPENDIX F

Sequential Test Flood Risk Classification

Risk	Score	Source of Flood Risk						
		Sea (tidal / coastal) and rivers (fluvial)	**Small watercourses and surface water (pluvial)**	**Reservoirs**	**Canals**	**Other water impounding structures**	**Groundwater**	
		Flood Map for Planning *Strategic Flood Risk Assessment*	*Flood Risk from Surface Water* *Strategic Flood Risk Assessment*	*Flood Risk from Reservoirs*	*Ordnance Survey mapping* *Topographic data*	*Ordnance Survey mapping* *Topographic data*	*Groundwater Flood Risk Indicator*	*Other source*
None/Negligible	0	Site not near the sea or rivers	No small watercourses in the vicinity of the site	Not within the maximum extent of flooding	No canals in the vicinity of the site	No other water impounding structures in the vicinity of the site	n/a	Not prone to groundwater flooding.
Low	1	Flood zone 1 < 0.1% AEP	Very low < 0.1% AEP	Within the maximum extent of flooding	Canals in the vicinity of the site but limited potential for flooding	Other water impounding structures in the vicinity but limited potential for flooding	Negligible to low risk	Limited potential for groundwater flooding
Medium	2	Flood zone 2 1.0%/0.5% to 0.1% AEP	Low 1.0% to 0.1% AEP	n/a	Potential for canal flooding	Potential for flooding from other water impounding structures	Medium risk	Potential for groundwater flooding
High	3	Flood zone 3a > 1.0%/0.5% AEP	Medium 3.3% to 1.0% AEP	n/a	n/a	Historical records of flooding from other water impounding structures	High risk or records of historical flooding	Historical records of groundwater flooding
Very High	4	Flood zone 3b > 3.3% AEP	High > 3.3 AEP	n/a	n/a	n/a	n/a	n/a

APPENDIX G

Surface Water Attenuation - Storage Volume Calculations

Suite 1 Park House Broncoed Bus Park Wrexham Rd Mold	Broadwater Lake Trench Soakaway
Date 03/10/2024 12:05 File 20241003 5784 SC P4.SRCX	Designed by DSH Checked by KT
Micro Drainage	Source Control 2020.1

Summary of Results for 2 year Return Period

Half Drain Time : 5 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	37.933	0.333	8.4	3.0	O K
30 min Summer	37.913	0.313	8.0	2.8	O K
60 min Summer	37.852	0.252	7.0	2.2	O K
120 min Summer	37.812	0.212	6.3	1.8	O K
180 min Summer	37.767	0.167	5.5	1.3	O K
240 min Summer	37.732	0.132	4.9	0.9	O K
360 min Summer	37.688	0.088	4.2	0.5	O K
480 min Summer	37.674	0.074	3.4	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	35.667	0.0	12
30 min Summer	22.671	0.0	20
60 min Summer	14.047	0.0	36
120 min Summer	10.072	0.0	66
180 min Summer	7.956	0.0	98
240 min Summer	6.618	0.0	126
360 min Summer	4.984	0.0	184
480 min Summer	4.022	0.0	244

Summary of Results for 2 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
600 min Summer	37.664	0.064	2.9	0.2	O K
720 min Summer	37.657	0.057	2.5	0.2	O K
960 min Summer	37.648	0.048	2.0	0.1	O K
1440 min Summer	37.641	0.041	1.5	0.1	O K
15 min Winter	37.963	0.363	8.9	3.4	O K
30 min Winter	37.922	0.322	8.2	2.9	O K
60 min Winter	37.830	0.230	6.6	2.0	O K
120 min Winter	37.767	0.167	5.5	1.3	O K
180 min Winter	37.715	0.115	4.7	0.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
600 min Summer	3.386	0.0	306
720 min Summer	2.933	0.0	366
960 min Summer	2.327	0.0	490
1440 min Summer	1.675	0.0	712
15 min Winter	35.667	0.0	13
30 min Winter	22.671	0.0	21
60 min Winter	14.047	0.0	38
120 min Winter	10.072	0.0	68
180 min Winter	7.956	0.0	98

Suite 1 Park House
Broncoed Bus Park
Wrexham Rd Mold

Broadwater Lake
Trench Soakaway

Date 03/10/2024 12:05
File 20241003 5784 SC P4.SRCX

Designed by DSH
Checked by KT

Micro Drainage | Source Control 2020.1

Summary of Results for 2 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	37.686	0.086	4.1	0.4	O K
360 min Winter	37.668	0.068	3.1	0.3	O K
480 min Winter	37.656	0.056	2.5	0.2	O K
600 min Winter	37.649	0.049	2.1	0.1	O K
720 min Winter	37.646	0.046	1.8	0.1	O K
960 min Winter	37.641	0.041	1.5	0.1	O K
1440 min Winter	37.635	0.035	1.1	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
240 min Winter	6.618	0.0	124
360 min Winter	4.984	0.0	184
480 min Winter	4.022	0.0	244
600 min Winter	3.386	0.0	306
720 min Winter	2.933	0.0	360
960 min Winter	2.327	0.0	490
1440 min Winter	1.675	0.0	734

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	2	Cv (Summer)	0.750
FEH Rainfall Version	2013	Cv (Winter)	0.840
Site Location	GB 504681 189207 TQ 04681 89207	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	1440
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.105

Time (mins) From:	To:	Area (ha)
0	4	0.105

Model Details

Storage is Online Cover Level (m) 38.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.70000	Trench Width (m)	0.4
Infiltration Coefficient Side (m/hr)	0.70000	Trench Length (m)	88.1
Safety Factor	2.0	Slope (1:X)	1000.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	37.600	Cap Infiltration Depth (m)	0.000

Suite 1 Park House
Broncoed Bus Park
Wrexham Rd Mold

Broadwater Lake
Trench Soakaway

Date 03/10/2024 12:06
File 20241003 5784 SC P4.SRCX

Designed by DSH
Checked by KT

Micro Drainage | Source Control 2020.1

Summary of Results for 30 year Return Period

Half Drain Time : 12 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	38.007	0.407	9.6	10.5	FLOOD
30 min Summer	38.007	0.407	9.6	11.1	FLOOD
60 min Summer	38.006	0.406	9.6	9.8	FLOOD
120 min Summer	38.004	0.404	9.6	7.5	FLOOD
180 min Summer	38.001	0.401	9.6	5.2	FLOOD
240 min Summer	37.999	0.399	9.5	3.8	O K
360 min Summer	37.880	0.280	7.5	2.5	O K
480 min Summer	37.802	0.202	6.1	1.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	86.490	6.7	14
30 min Summer	56.122	7.2	23
60 min Summer	34.702	5.9	40
120 min Summer	22.035	3.7	72
180 min Summer	16.573	1.4	100
240 min Summer	13.413	0.0	128
360 min Summer	9.809	0.0	188
480 min Summer	7.769	0.0	248

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
600 min Summer	37.750	0.150	5.2	1.1	O K
720 min Summer	37.712	0.112	4.6	0.7	O K
960 min Summer	37.679	0.079	3.7	0.4	O K
1440 min Summer	37.659	0.059	2.6	0.2	O K
15 min Winter	38.008	0.408	9.6	12.2	FLOOD
30 min Winter	38.009	0.409	9.6	12.7	FLOOD
60 min Winter	38.007	0.407	9.6	10.4	FLOOD
120 min Winter	38.003	0.403	9.6	6.4	FLOOD
180 min Winter	37.992	0.392	9.4	3.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
600 min Summer	6.454	0.0	308
720 min Summer	5.533	0.0	368
960 min Summer	4.322	0.0	488
1440 min Summer	3.041	0.0	724
15 min Winter	86.490	8.4	15
30 min Winter	56.122	8.8	24
60 min Winter	34.702	6.6	42
120 min Winter	22.035	2.6	74
180 min Winter	16.573	0.0	100

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	37.901	0.301	7.8	2.7	O K
360 min Winter	37.788	0.188	5.9	1.5	O K
480 min Winter	37.720	0.120	4.7	0.8	O K
600 min Winter	37.685	0.085	4.0	0.4	O K
720 min Winter	37.674	0.074	3.4	0.3	O K
960 min Winter	37.660	0.060	2.7	0.2	O K
1440 min Winter	37.647	0.047	1.9	0.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
240 min Winter	13.413	0.0	130
360 min Winter	9.809	0.0	190
480 min Winter	7.769	0.0	250
600 min Winter	6.454	0.0	306
720 min Winter	5.533	0.0	366
960 min Winter	4.322	0.0	482
1440 min Winter	3.041	0.0	730

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	30	Cv (Summer)	0.750
FEH Rainfall Version	2013	Cv (Winter)	0.840
Site Location	GB 504681 189207 TQ 04681 89207	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	1440
Summer Storms	Yes	Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.105

Time (mins) From:	To:	Area (ha)
0	4	0.105

Suite 1 Park House Broncoed Bus Park Wrexham Rd Mold	Broadwater Lake Trench Soakaway
Date 03/10/2024 12:06 File 20241003 5784 SC P4.SRCX	Designed by DSH Checked by KT
Micro Drainage	Source Control 2020.1

Model Details

Storage is Online Cover Level (m) 38.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.70000	Trench Width (m)	0.4
Infiltration Coefficient Side (m/hr)	0.70000	Trench Length (m)	88.1
Safety Factor	2.0	Slope (1:X)	1000.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	37.600	Cap Infiltration Depth (m)	0.000

Suite 1 Park House Broncoed Bus Park Wrexham Rd Mold	Broadwater Lake Trench Soakaway
Date 03/10/2024 14:57 File 20241003 5784 SC P4.SRCX	Designed by DSH Checked by KT
Micro Drainage	Source Control 2020.1

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 31 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
15 min Summer	38.019	0.419	9.6	23.2	FLOOD
30 min Summer	38.022	0.422	9.6	26.3	FLOOD
60 min Summer	38.022	0.422	9.6	26.1	FLOOD
120 min Summer	38.020	0.420	9.6	24.1	FLOOD
180 min Summer	38.017	0.417	9.6	20.9	FLOOD
240 min Summer	38.014	0.414	9.6	17.4	FLOOD
360 min Summer	38.007	0.407	9.6	11.0	FLOOD
480 min Summer	38.003	0.403	9.6	6.3	FLOOD

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	157.833	19.3	16
30 min Summer	103.439	22.4	27
60 min Summer	64.337	22.1	44
120 min Summer	40.528	20.2	78
180 min Summer	30.533	17.0	112
240 min Summer	24.772	13.5	144
360 min Summer	18.181	7.1	204
480 min Summer	14.426	2.5	258

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
600 min Summer	38.000	0.400	9.6	3.9	FLOOD
720 min Summer	37.934	0.334	8.4	3.1	O K
960 min Summer	37.834	0.234	6.7	2.0	O K
1440 min Summer	37.721	0.121	4.8	0.8	O K
15 min Winter	38.023	0.423	9.6	26.8	FLOOD
30 min Winter	38.027	0.427	9.6	30.9	FLOOD
60 min Winter	38.026	0.426	9.6	30.2	FLOOD
120 min Winter	38.023	0.423	9.6	26.5	FLOOD
180 min Winter	38.017	0.417	9.6	21.0	FLOOD

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
600 min Summer	11.986	0.1	310
720 min Summer	10.269	0.0	370
960 min Summer	8.001	0.0	490
1440 min Summer	5.585	0.0	734
15 min Winter	157.833	22.9	16
30 min Winter	103.439	26.9	29
60 min Winter	64.337	26.2	48
120 min Winter	40.528	22.5	86
180 min Winter	30.533	17.1	120

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
240 min Winter	38.012	0.412	9.6	15.4	FLOOD
360 min Winter	38.003	0.403	9.6	6.4	FLOOD
480 min Winter	37.954	0.354	8.8	3.3	O K
600 min Winter	37.871	0.271	7.3	2.4	O K
720 min Winter	37.811	0.211	6.3	1.8	O K
960 min Winter	37.732	0.132	4.9	0.9	O K
1440 min Winter	37.675	0.075	3.5	0.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
240 min Winter	24.772	11.5	152
360 min Winter	18.181	2.6	206
480 min Winter	14.426	0.0	250
600 min Winter	11.986	0.0	310
720 min Winter	10.269	0.0	370
960 min Winter	8.001	0.0	490
1440 min Winter	5.585	0.0	724

Rainfall Details

Rainfall Model	FEH	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
FEH Rainfall Version	2013	Cv (Winter)	0.840
Site Location	GB 504681 189207 TQ 04681 89207	Shortest Storm (mins)	15
Data Type	Point	Longest Storm (mins)	1440
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.105

Time (mins) From:	To:	Area (ha)
0	4	0.105

Model Details

Storage is Online Cover Level (m) 38.000

Trench Soakaway Structure

Infiltration Coefficient Base (m/hr)	0.70000	Trench Width (m)	0.4
Infiltration Coefficient Side (m/hr)	0.70000	Trench Length (m)	88.1
Safety Factor	2.0	Slope (1:X)	1000.0
Porosity	0.30	Cap Volume Depth (m)	0.000
Invert Level (m)	37.600	Cap Infiltration Depth (m)	0.000

APPENDIX H

Preliminary Drainage Layout

N

WATER LEVEL AT TIME OF SURVEY 37.03 mAOD. WATER LEVEL VARIES BETWEEN 36.56 mAOD (SUMMER) AND 37.39 mAOD (WINTER)

PERMEABLE RECLAIMED GRAVEL

PROPOSED ROAD TO DRAIN TOWARDS PERMEABLE GRAVEL WITHIN PENINSULA

PROPOSED ROAD TO DRAIN TOWARDS PERMEABLE GRASSCRETE PAVING

0.4 m x 0.4 m TRENCH SOAKAWAY

ALL ROOF DRAINAGE TO DISCHARGE ABOVE GROUND ONTO EXISTING CONCRETE HARDSTANDING

F1 CL=37.62 IL=37.02

F2 CL=37.57 IL=36.88

150Ø 1:80

EXTENTS OF EXISTING CONCRETE HARDSTANDING

150Ø 1:80

F30 CL=37.91 IL=37.31

ALL ROOF DRAINAGE TO DISCHARGE ABOVE GROUND ONTO EXISTING CONCRETE HARDSTANDING

150Ø 1:46

PROPOSED ROAD TO DRAIN TOWARDS PERMEABLE GRASSCRETE PAVING

FOUL PUMPING STATION STORAGE WILL BE REQUIRED WITHIN WETWELL TO RETAIN FLOW IN THE EVENT OF PUMP FAILURE. 24 HOURS OF STORAGE TO BE PROVIDED (STORAGE TO BE CALCULATED BASED ON WATER DEMAND IN ACCORDANCE WITH PART H OF BUILDING REGULATIONS)

F3 PUMPING STATION CL=38.01 IL=36.37

APPROXIMATELY 105m LONG RISING MAIN

0.4 m x 0.4 m TRENCH SOAKAWAY

EXISTING CONCRETE HARDSTANDING TO CONTINUE TO DRAIN AS EXISTING

ALL ROOF DRAINAGE TO DISCHARGE ABOVE GROUND ONTO EXISTING CONCRETE HARDSTANDING

F41 CL=38.31 IL=37.49

150Ø 1:80

F4 CL=37.85 IL=37.35

150Ø 1:150

F40 CL=38.31 IL=37.71

150Ø 1:80

EXTENTS OF EXISTING CONCRETE HARDSTANDING

PROPOSED REVERSING BAY TO DRAIN TOWARDS EXISTING SOFT LANDSCAPING

F5 CL=37.92 IL=37.17

DISINFECTION AND WASHDOWN AREA TO DISCHARGE TO FOUL DRAINAGE. AREA TO BE BUNDED TO PREVENT SPILLS INTO OPEN WATER. DRAINAGE OUTLET TO HAVE EITHER SHUT OFF VALVE WHEN NOT IN USE OR COVERED WITH ROOF/AWNING.

150Ø 1:150

F60 CL=37.82 IL=36.90

150Ø 1:80

F60 CL=37.73 IL=37.13

150Ø 1:80

0.4 m x 0.4 m TRENCH SOAKAWAY

EXISTING ACCESS TRACK BEYOND EXTENT OF EXISTING CONCRETE SLAB IS TO CONTINUE TO DRAIN AS EXISTING

0.4 m x 0.4 m TRENCH SOAKAWAY

NEW FOOTPATH TO DRAIN TO SOFT LANDSCAPING

FOUL PUMPING STATION STORAGE WILL BE REQUIRED WITHIN WETWELL TO RETAIN FLOW IN THE EVENT OF PUMP FAILURE. 24 HOURS OF STORAGE TO BE PROVIDED (STORAGE TO BE CALCULATED BASED ON WATER DEMAND IN ACCORDANCE WITH PART H OF BUILDING REGULATIONS)

F6 PUMPING STATION CL=37.92 IL=36.76

APPROXIMATELY 485m LONG RISING MAIN

NEW FOOTPATH TO DRAIN TO SOFT LANDSCAPING

KEY

- EXISTING PUBLIC FOUL WATER SEWER
- EXISTING PUBLIC FOUL MANHOLE
- PROPOSED FOUL SEWER
- PROPOSED FOUL RISING MAIN
- PROPOSED FOUL MANHOLE
- PROPOSED FOUL WATER PUMPING STATION
- PROPOSED TRENCH SOAKAWAY
- PROPOSED PERMEABLE GRAVEL
- PROPOSED PERMEABLE GRASSCRETE
- PROPOSED NEW TARMACADAM
- EXTENTS OF EXISTING HARDSTANDING
- ROOT PROTECTION ZONES
- EXISTING WATERCOURSE
- SITE BOUNDARY

NOTES

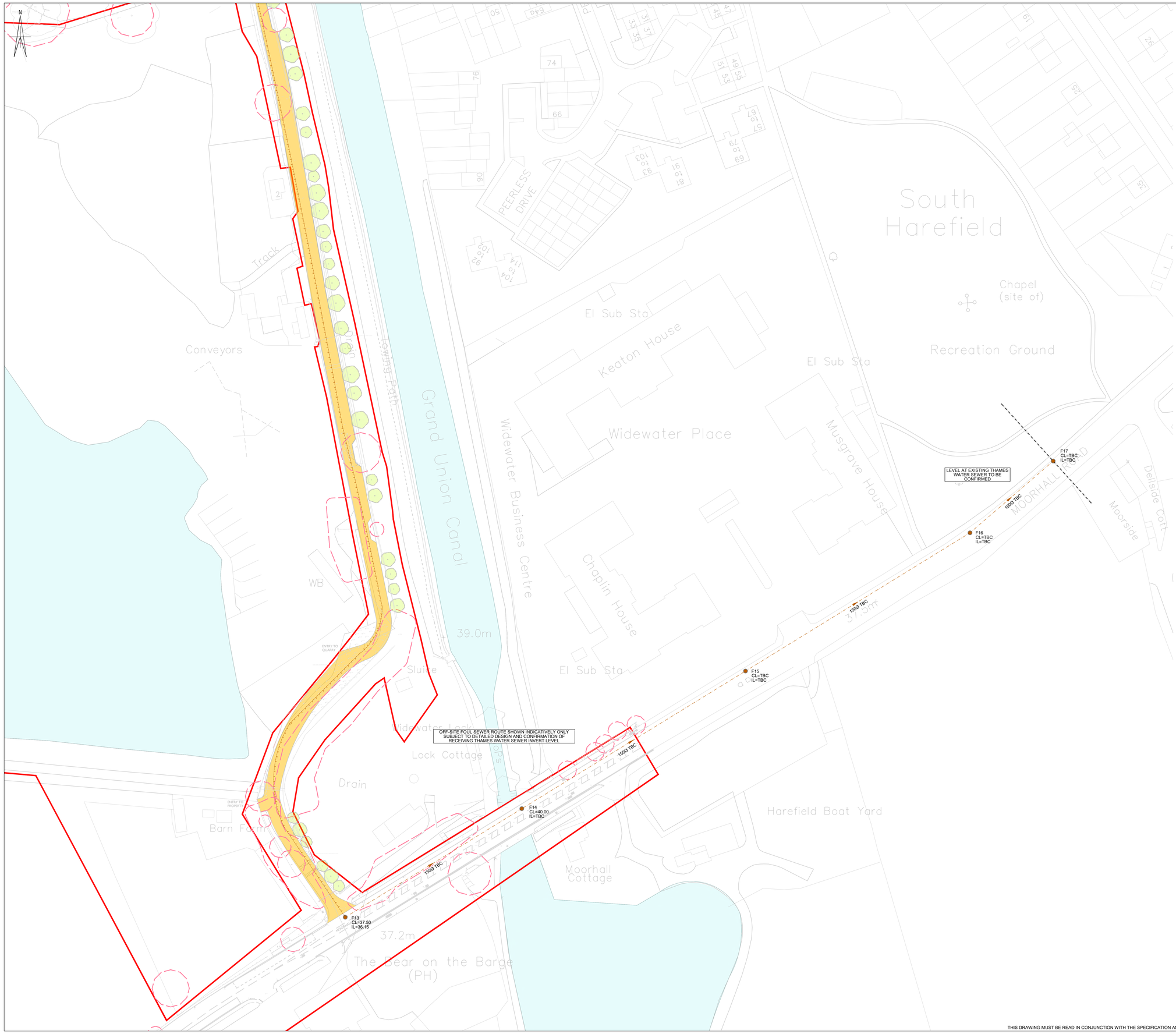
1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT WEETWOOD DRAWINGS.
2. PROPOSED SITE LAYOUT TAKEN FROM COLOUR UDL CAD FILE 'K-X-21221-MASTERMODEL 241001' OCT 24).
3. EXISTING LEVEL INFORMATION TAKEN FROM CAD FILE L-X-2121-TOPO, AUG 24.
4. EXISTING DRAINAGE LOCATION TAKEN FROM RECORD THAMES WATER ASSET LOCATION SEARCH DATED 12.05.23 AND ARE INDICATIVE ONLY AND TO BE CONFIRMED.
5. PROPOSED EXTERNAL LEVELS TO BE CONFIRMED.

REV	DATE	DESCRIPTION	DRAWN	CHECK
P4	14.10.24	SCHEME AMENDED	DSH	KT
P3	12.09.24	SCHEME AMENDED	DSH	KT
P2	28.09.23	SCHEME AMENDED	DSH	KT
P1	31.07.23	INITIAL ISSUE	DSH	TB

Weetwood
Development • Planning • Environment
Park House, Ffordd Bymwr Gwair, Mold CH7 1FQ
Tel 01352 700045
info@weetwood.net
www.weetwood.net

Client
HILLINGDON COUNCIL

Drawing Status: PLANNING	Date: JULY 2023
	Scale (A0): 1:500
Project: HILLINGDON WATER SPORTS FACILITY, BROADWATER LAKE, UXBRIDGE	Drawn: DSH
	Checked: TB
	Project No: 5784
Title: SCHEMATIC DRAINAGE LAYOUT SHEET 1 OF 2	Drawing No: 100
	Revision: P4



NOTES

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4. EXISTING DRAINAGE LOCATION TAKEN FROM RECORD THAMES WATER ASSET LOCATION SEARCH DATED 12.05.23 AND ARE INDICATIVE ONLY AND TO BE CONFIRMED.
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REV	DATE	DESCRIPTION	DRAWN	CHECK
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Drawing Status: PLANNING	Date: JULY 2023
	Scale (A0): 1:500
Project: HILLINGDON WATER SPORTS FACILITY, BROADWATER LAKE, UXBRIDGE	Drawn: DSH
	Checked: TB
	Project No: 5784
Title: SCHEMATIC DRAINAGE LAYOUT SHEET 2 OF 2	Drawing No: 100
	Revision: P3

APPENDIX I

Thames Water Public Sewer Record

Asset location search

Property Searches

Weetwood

MOLD
CH7 1FQ

Search address supplied	Marina Moorhall Road Harefield Uxbridge UB9 6PE
Your reference	Broadwater Lake
Our reference	ALS/ALS Standard/2023_4826425
Search date	12 May 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk

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

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: Marina, Moorhall Road, Harefield, Uxbridge, UB9 6PE

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:

TQ0490SW
TQ0489NE
TQ0489SE
TQ0490SE

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.

The following quartiles have not been printed as they contain no assets:

TQ0489SW

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.

Asset location search

Property Searches

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:

TQ0490SW	Affinity Water
TQ0489NE	Affinity Water
TQ0489SW	Affinity Water
TQ0489SE	Affinity Water
TQ0490SE	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

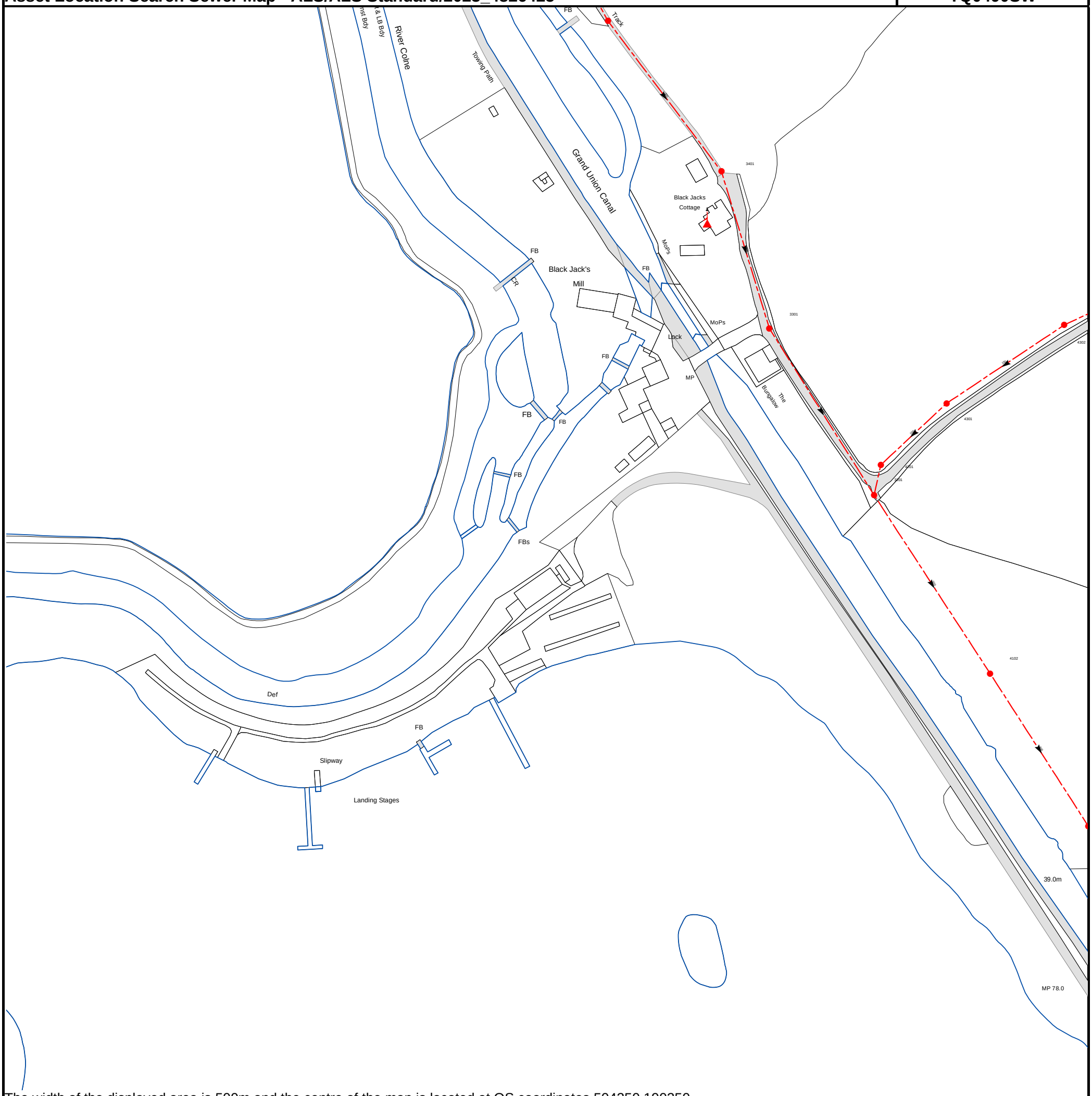
Should you require any advice concerning clean water operational issues or clean water connections, please contact:

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 Standard/2023_4826425

TQ0490SW



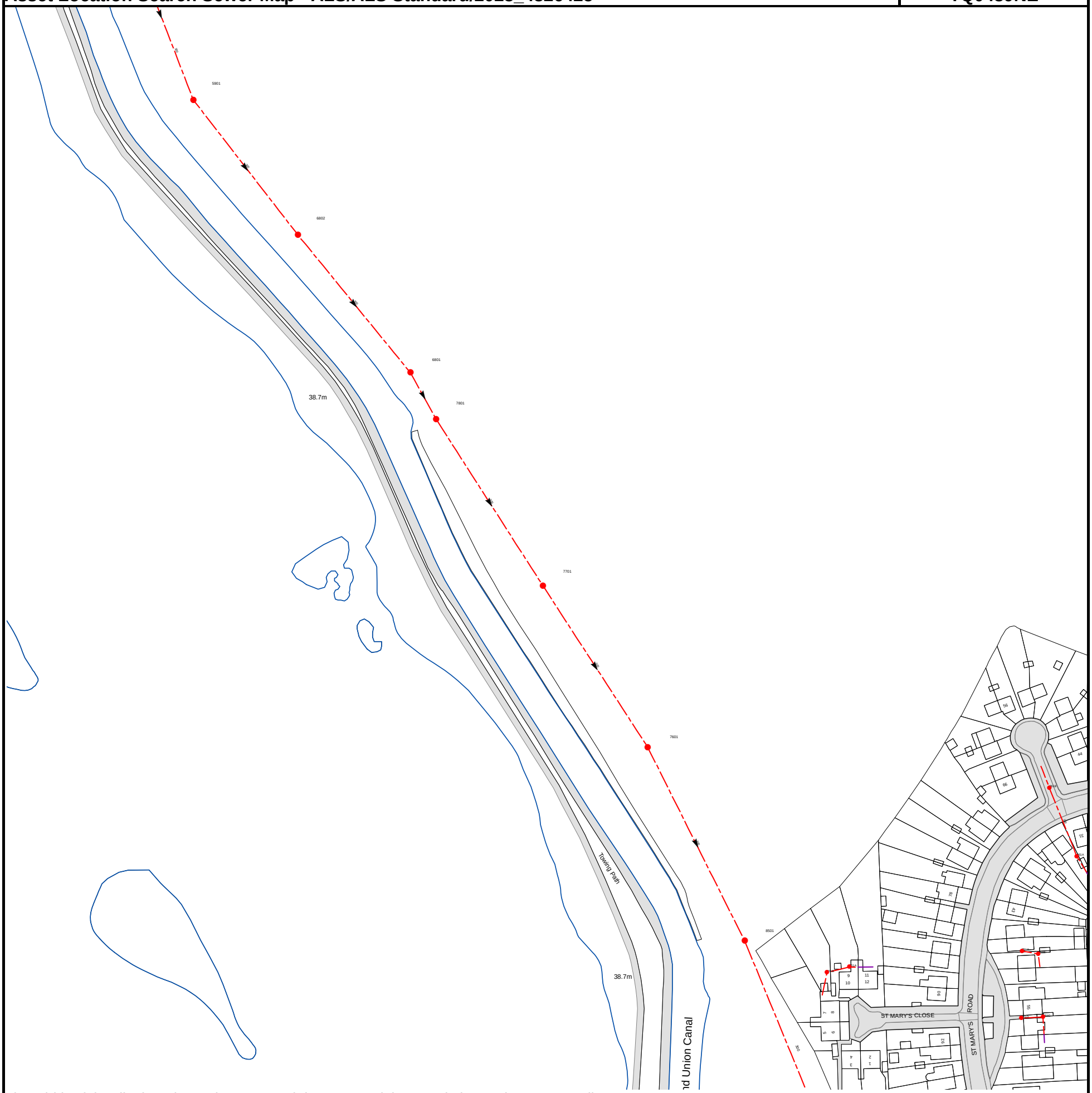
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 504250,190250

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
3401	n/a	n/a
3301	n/a	n/a
3201	n/a	n/a
4201	n/a	n/a
4301	n/a	n/a
4102	n/a	n/a
4302	n/a	n/a
4101	n/a	n/a
2401	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 Standard/2023_4826425 | TQ0489NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 504750,189750

The width of the displayed area is 500m and the centre of the map is located at OS coordinates 504750,189750

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.

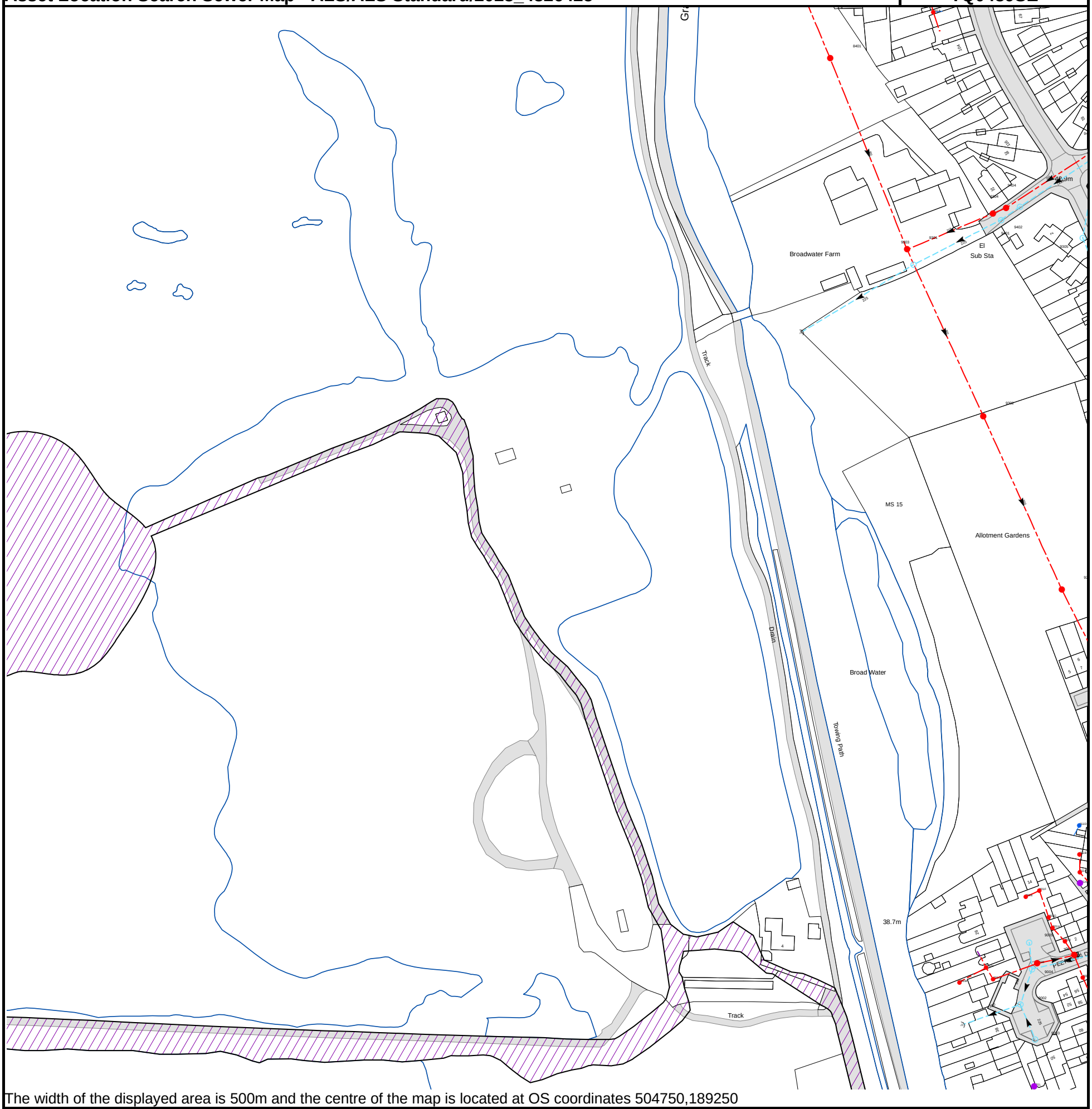
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
5901	n/a	n/a
6802	n/a	n/a
6801	n/a	n/a
7801	n/a	n/a
7701	n/a	n/a
7601	n/a	n/a
8501	n/a	n/a
851B	n/a	n/a
851A	n/a	n/a
951D	n/a	n/a
951A	n/a	n/a
951B	n/a	n/a
951C	n/a	n/a
961B	n/a	n/a
961A	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 Standard/2023_4826425

TQ0489SE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 504750,189250

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.

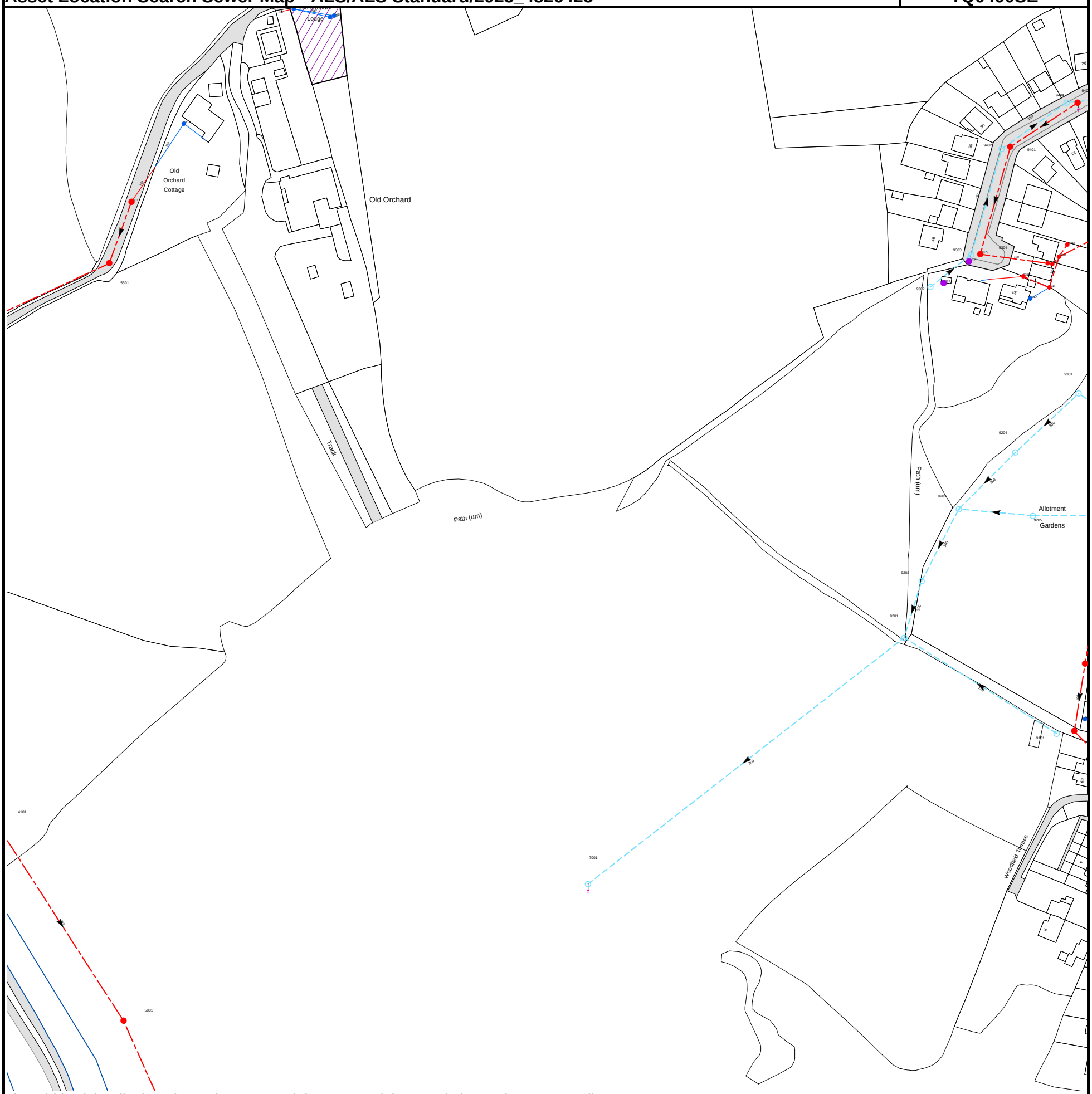
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
941A	n/a	n/a
9303	n/a	n/a
9301	38.23	36.07
9305	n/a	n/a
9304	n/a	n/a
9401	39.56	38.44
9402	39.83	38.74
9404	n/a	n/a
9403	43.09	42.02
8401	n/a	n/a
9201	37.62	35.77
9302	37.91	35.93
901I	n/a	n/a
901H	n/a	n/a
901G	n/a	n/a
901E	n/a	n/a
901F	n/a	n/a
901A	n/a	n/a
911A	n/a	n/a
911B	n/a	n/a
911D	n/a	n/a
9003	n/a	n/a
9002	n/a	n/a
901B	n/a	n/a
901M	n/a	n/a
901O	n/a	n/a
901C	n/a	n/a
9004	n/a	n/a
901N	n/a	n/a
901K	n/a	n/a
901J	n/a	n/a
9005	n/a	n/a
901L	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 Standard/2023_4826425

TQ0490SE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 504750,190250

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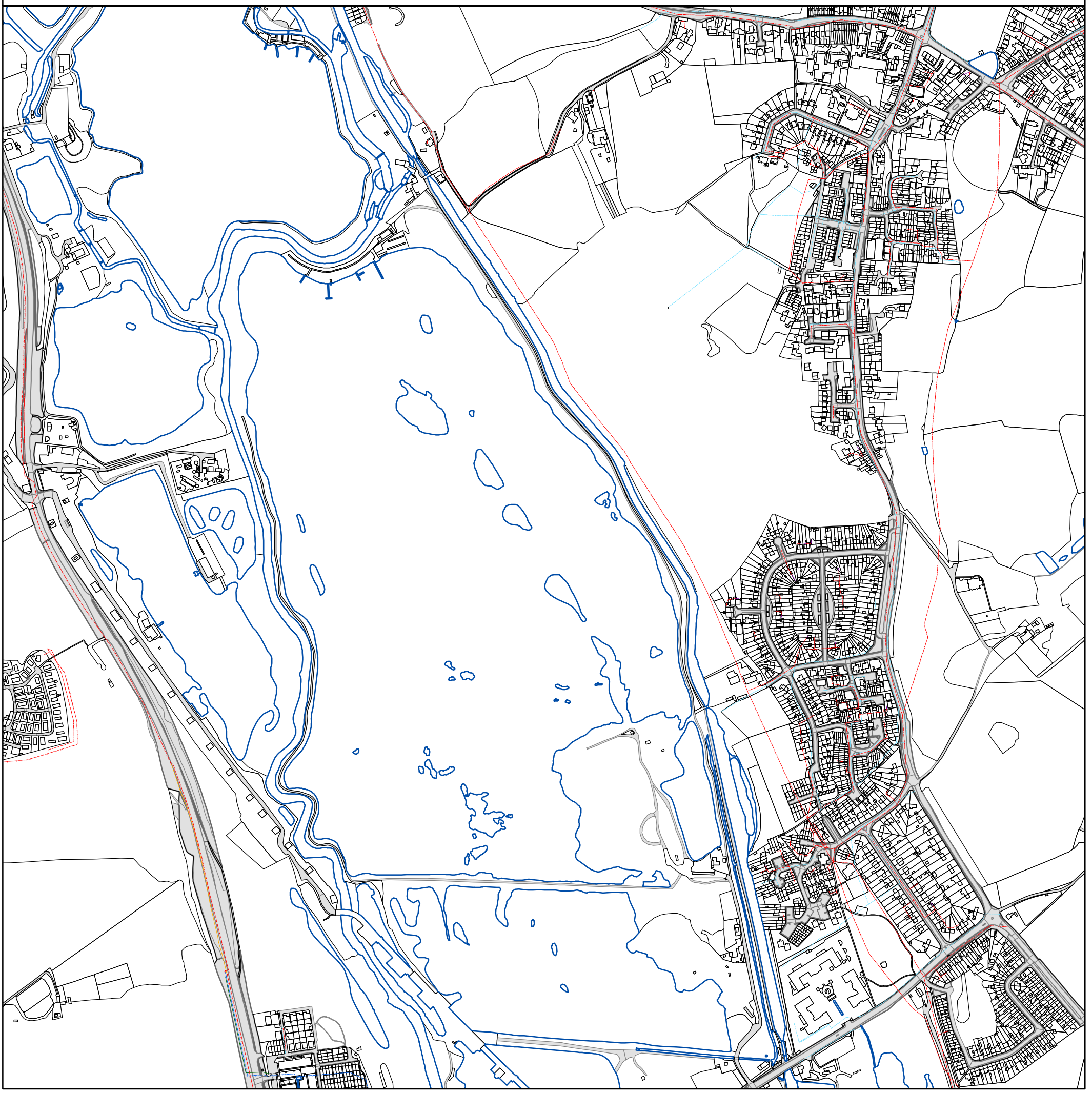
NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
931F	n/a	n/a
931J	n/a	n/a
9101	n/a	n/a
931G	n/a	n/a
9404	n/a	n/a
931H	n/a	n/a
9102	77.98	77.22
9403	n/a	n/a
9301	74.66	72.5
9103	n/a	n/a
911A	n/a	n/a
641A	49.22	48.72
641C	49.69	48.95
641B	49.69	48.81
5301	n/a	n/a
5401	n/a	n/a
541A	n/a	n/a
7001	n/a	n/a
9201	65.09	63.98
9202	66.49	65.02
9302	n/a	n/a
931B	n/a	n/a
9203	68.3	66.36
931C	n/a	n/a
9303	n/a	n/a
9304	n/a	n/a
931D	n/a	n/a
9402	n/a	n/a
9401	n/a	n/a
9204	72.33	70.25
931E	n/a	n/a
931A	n/a	n/a
9205	73.7	71.82
5001	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.

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2023_4826425



0 45 90 180 270 360
Meters

Scale:	1:7161
Width:	2000m
Printed By:	Skrishna1
Print Date:	12/05/2023
Map Centre:	504537,189652
Grid Reference:	TQ0489NE

Comments:

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

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
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

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

- Ancillary
- Drop Pipe
- Control Valve
- 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.

- Inlet
- Outfall
- Undefined End

Other Symbols

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

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the 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 indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. 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, please contact Property Searches on 0800 009 4540.

Payment 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 within 14 days of the 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. 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'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. 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 still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

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 0300 034 2222 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**
Please Call **0800 009 4540** quoting your invoice number starting CBA or ADS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number

APPENDIX J

GLA SuDS Pro Forma

HILLINGDON LONDON

GREATER LONDON AUTHORITY

LoDEG

1. Project & Site Details

Project / Site Name (including sub-catchment / stage / phase where appropriate)	Hillingdon Water Sports Facility and Activity Centre, Broadwater Lake, Harefield
Address & post code	Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
OS Grid ref. (Easting, Northing)	E 50469
	N 18921
LPA reference (if applicable)	
Brief description of proposed work	Redevelopment of the site to create the Hillingdon Watersports Facility and Activity Centre
Total site Area	63000 m^2
Total existing impervious area	20000 m^2
Total proposed impervious area	20000 m^2
Is the site in a surface water flood risk catchment (ref. local Surface Water Management Plan)?	No
Existing drainage connection type and location	None - surface water runoff discharges directly to the lake
Designer Name	Dan Hodgson
Designer Position	Senior Engineer
Designer Company	Weetwood Services Ltd

2. Proposed Discharge Arrangements

2a. Infiltration Feasibility

Superficial geology classification	Sandy clays
Bedrock geology classification	Sand and gravel
Site infiltration rate	m/s
Depth to groundwater level	m below ground level
Is infiltration feasible?	No

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	N	N
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.	N	N

2c. Proposed Discharge Details

Proposed discharge location	9 no. outfalls to the lake
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				
1 in 1				
1 in 30				
1 in 100				
1 in 100 + CC				
Climate change allowance used		40%		
3b. Principal Method of Flow Control		Attenuation in the swale system, vegetated basin, and in Broadwater Lake		

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	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	908	227
Basins/ponds	0	0	136
Attenuation tanks	0		0
Total	**0**	**908**	**363**

4. Supporting Information

4a. Discharge & Drainage Strategy	*Page/section of drainage report*
Infiltration feasibility (2a) – geotechnical factual and interpretive reports, including infiltration results	Refer Section 6 of submitted FRA report. Also refer Flood Risk and Drainage Clarification Note, 13 Feb 2024 (ref: 5784/CN-GLA/Final/v1.0/2024-02-13)
Drainage hierarchy (2b)	fer Section 6 of submitted FRA repo
Proposed discharge details (2c) – utility plans, correspondence / approval from owner/regulator of discharge location	N/A
Discharge rates & storage (3a) – detailed hydrologic and hydraulic calculations	Risk and Drainage Clarification Not
Proposed SuDS measures & specifications (3b)	Risk and Drainage Clarification Not
4b. Other Supporting Details	*Page/section of drainage report*
Detailed Development Layout	Refer Appendix A of submitted FRA
Detailed drainage design drawings, including exceedance flow routes	sk and Drainage Clarification Note,
Detailed landscaping plans	As above
Maintenance strategy	See Table 4 of subitted FRA
Demonstration of how the proposed SuDS measures improve:	
a) water quality of the runoff?	Refer Section 6.2.5 of submitted FR
b) biodiversity?	N/A
c) amenity?	N/A

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