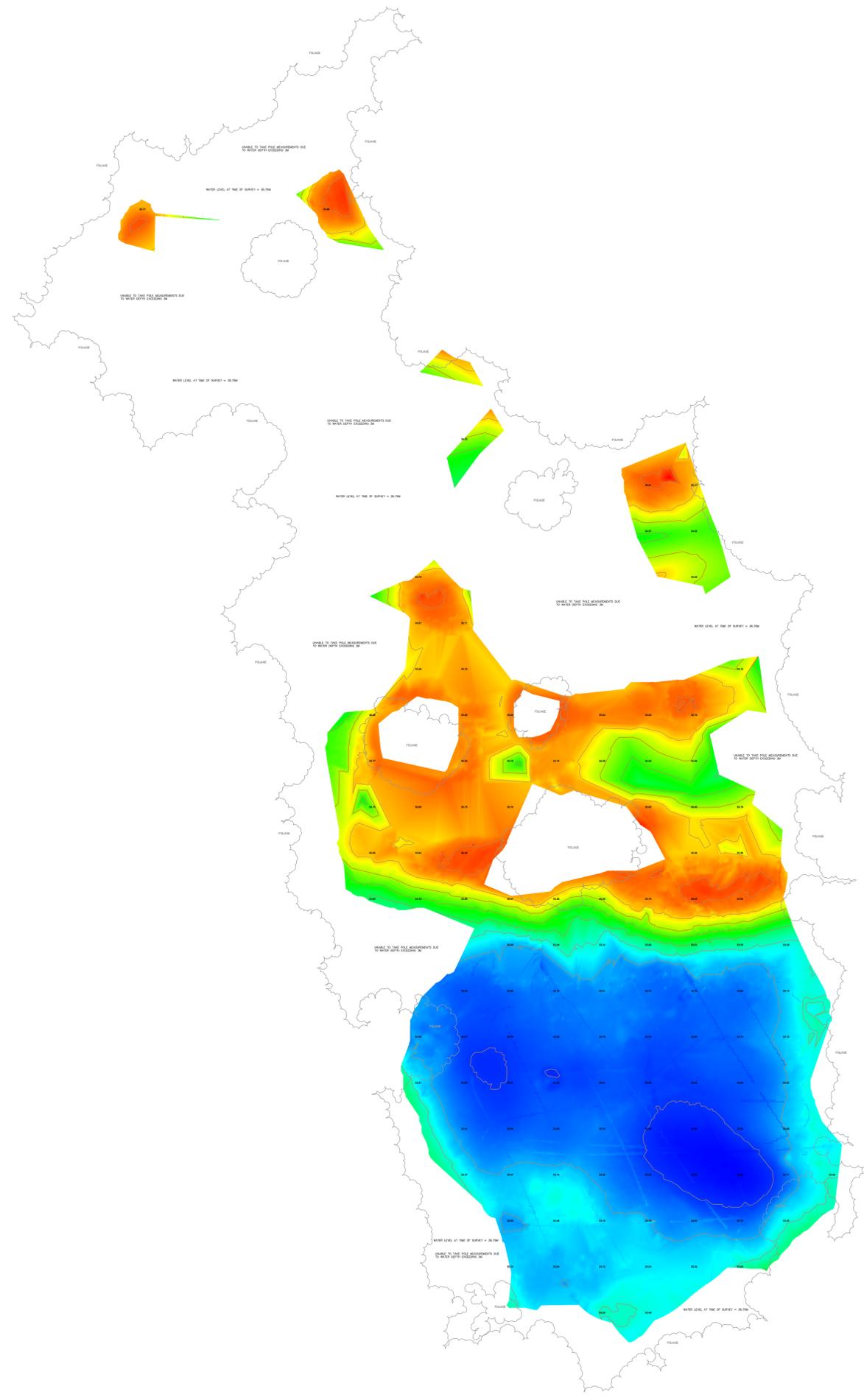
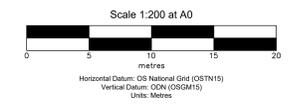




BATHYMETRIC SURVEY

Broadwater Lake
 Hillingdon

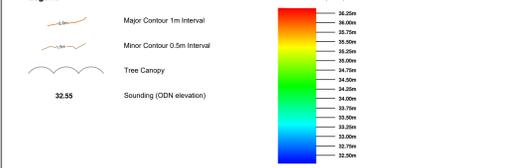
Sheet 1 of 1



Survey Notes

- Multibeam bathymetry was acquired using a Nortek iWBMS Narrow Transom with integrated Applanix Sullmaster IMU to provide orientation data. Positioning was achieved using dual Applanix 5450P antennas on a fixed baseline, employing VRS RTK connections via NTRIP connection to Trimble VRSNow.
- LiDAR data was acquired using a North 4iDAR, positioned using the same system as the multibeam.
- The above position and orientation data was post-processed using Applanix PCSI-Pac.
- Shallow geophysical data was acquired using an Invenor Compact Sub-Bottom Profiler (SBP), positioned using a Trimble RT3 GNSS receiver, employing VRS RTK connections via Trimble VRSNow.
- Spot heights were measured using a pole-mounted Trimble R13 GNSS receiver, employing VRS RTK connections via Trimble VRSNow.
- Access was limited, especially around the periphery of the water body, by the amount of overhanging vegetation and subsequent branches, etc., in the water. Extremely shallow (less than 0.75m) areas also could not be safely navigated.
- Water level on the day was 36.7m.
- Topographic detail was extracted from the LiDAR data, and is presented here for contextual purposes only.
- Coverage from both the multibeam and sub-bottom systems was severely limited by dense aquatic vegetation growth across significant portions of the water body, which acted to inhibit block the signal; vegetation growth was more prominent in deeper areas (>2m water depth).
- Point measurements were attempted across all navigable areas of the water body, where no data was collected, the water depth exceeded the 3m pole length.
- Noting points 9 and 10 above, it is safe to conclude that most areas away from the banks that contain no data are, on average, >3m deep.
- Areas of sparse data have resulted in higher degrees of interpolation within the surface model.
- As well as extensive plant growth, a number of carp were observed in the water, along with significant amounts of insect and bird life.

Legend



Abbreviations	Abbreviations	Abbreviations	Abbreviations
AV	Air Valve	IL	Invert Level
AVP	Valve	ILR	Invert Level from Records
B	Bank	LA	Ladder
BL	Blue Bag	LB	Letter Box
CB	Cable Box	LP	Lamp Post
CL	Cable Level	HT	Height in Metres
CR	Cable Rise	MW(MW/SFP)	Manhole (Box/Water/Gas/Plas)
CS	Cable Rise	MW	Manhole/Wall
CH	Chop Herb	NB	Noticeboard
CP	Cable Pole	PCP	Paved/Non-Crossing Pond
CS	Cable Pole	PI	Pillar
FD	Flow Bed	PO	Pole
FL	Flotation Floor Level	PP	Pipe and Panel Reinforce
FP	Fuel Pump	PR	Pipe and Rail Reinforce
FW	Flow Water Pipe	PW	Pipe and Wire Reinforce
HW	Flow Water Sewage	RE	Reinforcing Eye
G	Gully	RE	Roof Edge
GS	Gully	RE	Roof Edge
GS	Gully	RE	Roof Edge

Prepared for: **Mace Group**
 Survey Date: 08/06/2023

Drawing Reference	Rev	Date	Description	Filename	Drawn By	Fast QC	Office QC	Approved By
1122-0501-001-001	001	15/06/2023	Final Issue	1122-0501-001.dwg	JW	JW	JW	RJB

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Appendix 11 – Water Quality Survey of Broadwater Lake (London Borough of Hillingdon)

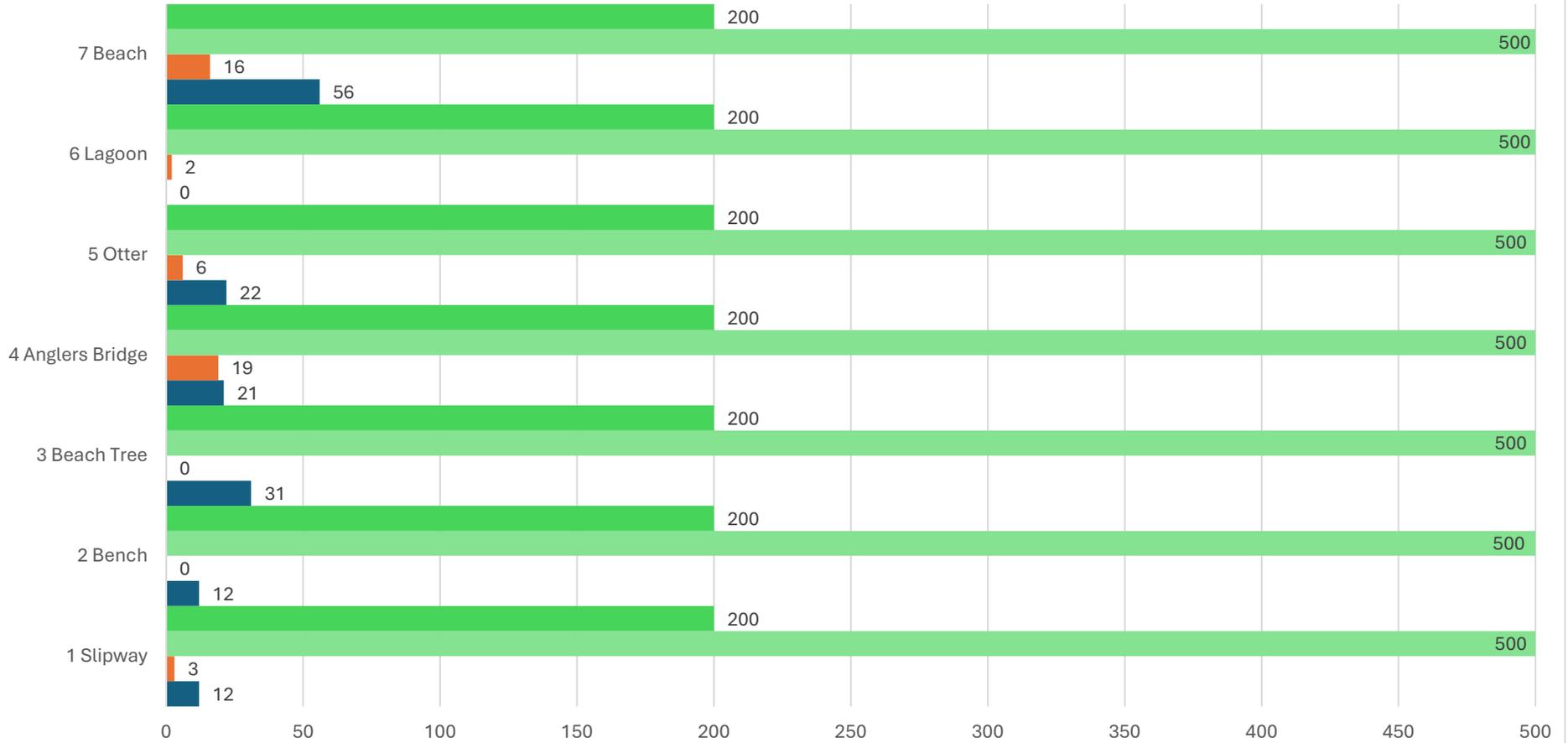
WATER QUALITY DATA – BATHING WATER

COLLECTED BY LONDON BOROUGH OF HILLINGDON

	Date	Slipway	Bench	Beach Tree	Life Buoy	Anglers bridge	Otter Beach	Lagoon	Beach
Total Coliforms	12/11/2024	109	66	145		53	83	11	165
Total Coliforms	16/12/2024	43	73	64		150	613	105	33
Total Coliforms	17/01/2025	378	150	147	154	74	78	117	
Total Coliforms	18/02/2025	20	13	14	11	16	11	88	
Escherichia coli	12/11/2024	12	12	31		21	22	0	56
Escherichia coli	16/12/2024	35	29	29		69	435	25	11
Escherichia coli	17/01/2025	120	49	79	62	20	31	44	
Escherichia coli	18/02/2025	1	0	0	0	0	3	12	
Intestinal enterococci	12/11/2024	3	0	0		19	6	2	16
Intestinal enterococci	16/12/2024	11	12	14		29	75	12	7
Intestinal enterococci	17/01/2025	42	11	9	5	12	16	1	
Intestinal enterococci	18/02/2025	0	0	2	0	1	0	5	
Clostridium perfringens	16/12/2024	100	100	100		32	33	21	19
Clostridium perfringens	17/01/2025	17	9	14	11	6	15	0	
Clostridium perfringens	18/02/2025	1	12	17	13	6	15	11	

12/11/24 Escherichia Coli (EC) and Intestinal Enterococci (IE) Concentrations across Broadwater Lake - Plotted Against Environment Agency Thresholds for 'Excellent' Inland Bathing Water Quality.

Broadwater Lake Site Name and Number



	1 Slipway	2 Bench	3 Beach Tree	4 Anglers Bridge	5 Otter	6 Lagoon	7 Beach
EA 'Excellent' IE Threshold	200	200	200	200	200	200	200
EA 'Excellent' EC Threshold	500	500	500	500	500	500	500
Intestinal enterococci [IE] (CFU/100ml)	3	0	0	19	6	2	16
Escherichia coli [EC] (CFU/100ml)	12	12	31	21	22	0	56

Sample Site Escherichia Coli (EC) and Intestinal Enterococci (IE) Concentrations and Environment Agency Thresholds

EA 'Excellent' IE Threshold EA 'Excellent' EC Threshold Intestinal enterococci [IE] (CFU/100ml) Escherichia coli [EC] (CFU/100ml)

Appendix 12 – Bathymetric Survey of Ruislip Lido