

The use of drawings by the Customer acts as an agreement to the following statements: The Customer must not use the drawings if it does not agree with any of the following statements:
 All drawings are based upon site information supplied by third parties and as such their accuracy cannot be guaranteed. All features are approximate and subject to clarification by a detailed topographical survey, statutory service enquiries and confirmation of the legal boundaries. Do not scale the drawings. Figured dimensions must be used in all cases. All dimensions must be checked on site. Any discrepancies must be reported in writing to Colour UDL before proceeding. All drawings are copyright protected. Refer to full Terms & Conditions at www.colour-udl.com

- KEY**
- Hard Surfaces
 - Outline of existing hardstanding
 - Proposed building footprints
 - Existing tarmac surface made good where required
 - Pedestrian Tarmac Black
 - Pedestrian Coloured Tarmac Buff
 - Vehicular Coloured Tarmac Buff
 - Existing Concrete Hardstanding to be retained and to be made good for vehicle and pedestrian use
 - 1.2m wide elevated metal grate Fire Escape Walkway
 - Grass-Concrete Pavers
 - Compacted Gravel Surface with wildflower seeding
 - Wet-pour Safety Surface for bolddering fall protection



07	Revised layout	12.08.25	DB	PO
06	Revised layout	01.07.25	JR	PO
05	Revised	20.11.24	TK	PO
04	Revised	30.09.24	TK	PO
03	Revised	05.09.24	TK	PO
02	Revised	28.08.24	TK	PO
01	First Issue	15.08.24	TK	PO
Rev	Amendments			Child

Project: HWSFAC - Broadwater Lake
 Drawing Title: General Arrangement Plan
 Hard Surface Materials Strategy

Project No. 2121 Scale @ A1 1:1000 Project Status RIBA Stage 3
 Drawing No. HWSFAC-COL-XX-XX-DR-L-6420 Revision 07

York 0190 49 25 888
 London 0203 92 49 888
 Newcastle 0191 24 24 224

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0 10 20 30 40 50 60 70 80 90 100m

APPENDIX B

Cut and Fill Analysis
(Colour-UDL)

The use of drawings by the Customer acts as an agreement to the following statements. The Customer must not use the drawings if it does not agree with any of the following statements:

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-  Site red line boundary
-  Existing shoreline retained
-  Existing island to be removed
3,491m²
-  Proposed reclaimed land
2,884m²
-  Proposed floating reedbeds
11 no.
(30m²/oct. reedbed + 67m²): 367m²
-  Proposed tern rafts
14 no.
(16m²/raft): 224m²
-  Proposed submerged tree planters
50 no.
(10m²/planter): 500m²
-  Area of Dredging
11,254m²
-  Enhance shallows as nursery habitat for coarse fish with artificial reefs
532m²

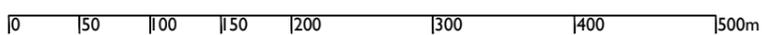
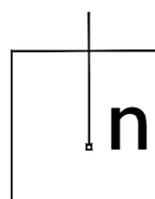
02	Reduced reclaimed land on peninsula	23.09.24	TK	PO
01	First Issue	28.08.24	TK	PO
Rev	Amendments	Date	Drwn	Chkd

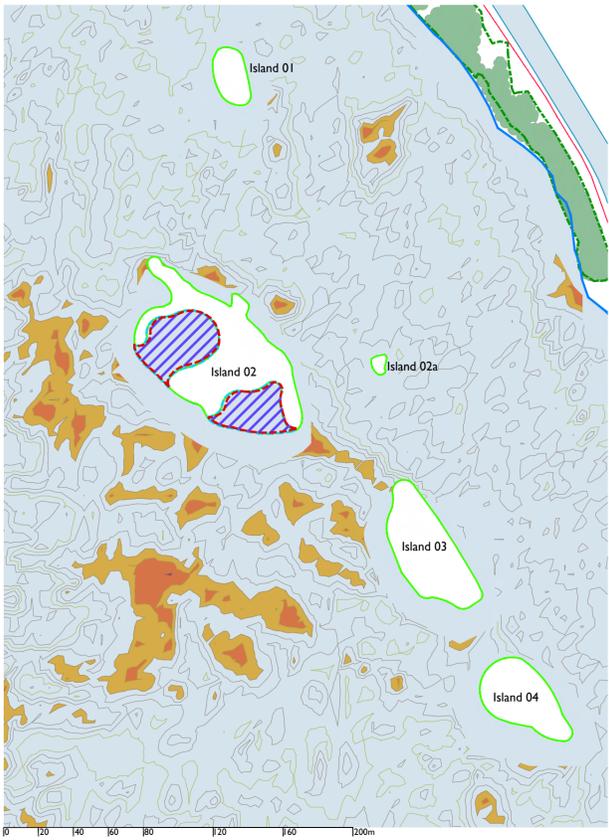
Project
HWSFAC
Drawing Title
Water Area Calculations
2024 Proposal

Project No. 2121	Scale @ A3 1:5000	Project Status For Planning
Drawing No. HWSFAC-COL-XX-XX-DR-L-6114a		Revision 02

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Newcastle 0191 24 24 224
York 01904 925 888
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Summary of Open Water Area and Volumes

CUT/DREDGING	Cut Material Volume (m ³)	Open Water Area (m ² Increase)
Island 02	2,359m ³	2,171m ²
Island 06	2644m ³	1,141m ²
Island 07	649m ³	296m ²
Transit Channel	7,094m ³	0m ²
Total Cut	12,746m³	3,608m²

FILL	Fill Material Volume (m ³)	Open Water Area (m ² loss)
Beach, Shelf & Buffer	7,965m ³	2,892m ²
Island 08 link buffer	325m ³	0m ²
Total Fill	8,290m³	2,892m²

Existing Open Water Area	639,654m ²
Land Added	2,892m ²
Land Removed	3,608m ²
Proposed Open Water Area	640,370m²

Net Increase of Open Water	716m²
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Lake bed level	Winter water depth	Summer water depth
36.5m	0.96m	0.64m
36.0m	1.46m	1.14m
35.5m	1.96m	1.64m
<35m	>2.46m	>2.14m

Note:

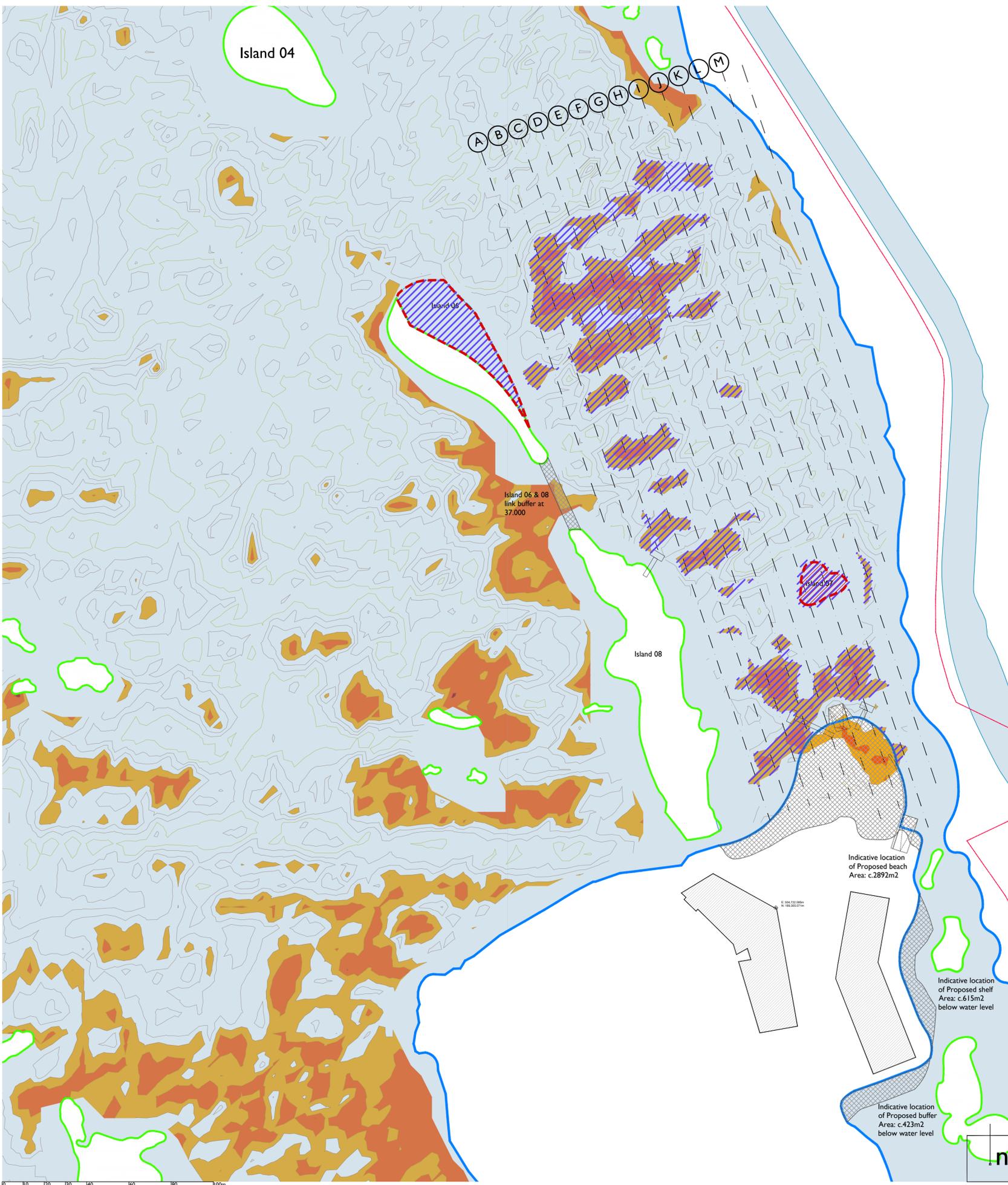
- Calculations are based on an average winter/summer water level provided by the surveyor (refer dwg 32578BVLS-01-05)
- Minimum 1.5m water depth is referable for sailing and water activities to minimise algal blooms in summer
- It was not possible to carry out a depth survey around the islands, but it is assumed that the water level is less than half a meter
- Island 06 cut material identified as Giant Knotweed. Cut material to be disposed of safely using a suitably licensed landfill site or incineration facility.

 Extent of dredging

 Existing land mass to be removed

Note: Cut and fill exercise has been carried out using 3rd party data and calculations given are an approximate total.

Further detailed analysis for costing or construction should be carried out by a Qualified Civil Engineer.



P07	Amendment to Cut & Fill	23.09.24	BF	PO
P06	Amendment to Cut & Fill	21.08.24	BF	PO
P05	Potential dredging area removed	16.07.24	BF	PO
P04	Amendment to beach massing and land removals	21.06.24	BF	PO
P03	Proposed beach extension volume calculations	18.06.24	BF	PO
P02	Proposed beach extension	13.06.24	BF	PO
P01	First Issue	12.06.24	BF	PO
Rev	Amendments	Date	Drwn	Chkd

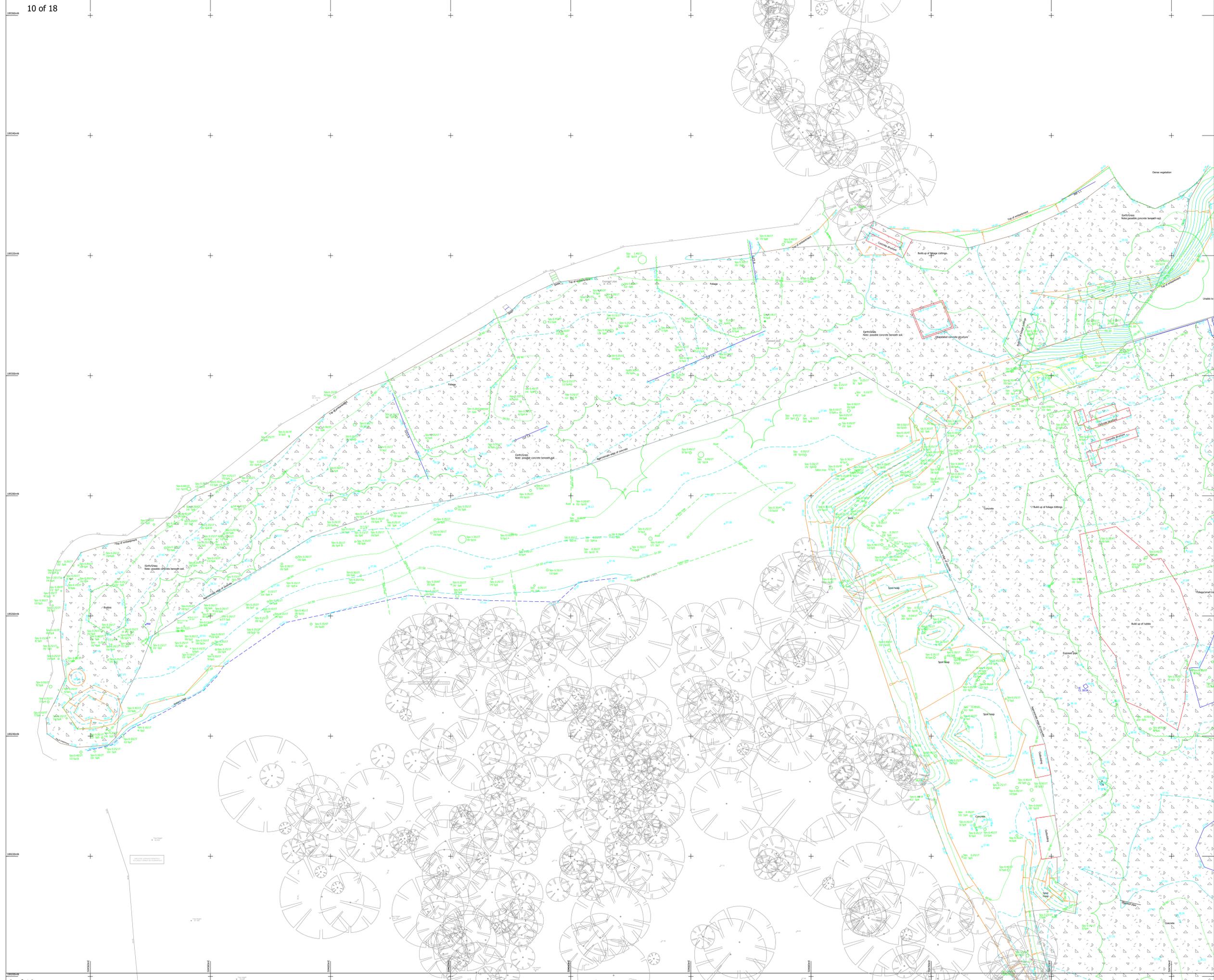
Project
HWSAC
Drawing Title
Extent of Dredging Proposal and Cut

Project No. 2121	Scale @ A1 1:1000	Project Status For Comment
Drawing No. HWSAC-COL-ZZ-XX-DR-L-6362		Revision P07

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APPENDIX C

Topographic Survey



NOTES:
 Drainage: Inspection Covers are lifted where possible and all drainage invert information has been obtained through visual inspection only, with no entry into manholes. Therefore the compliance accuracy cannot be guaranteed. Where drainage is of critical importance we suggest the services of a specialist drainage report be used.
 Trees: Every effort has been made to identify and detail all trees on site but where trees are of critical importance we suggest the use of a specialist such as an arborist. Tree spread and heights are indicative.
 GPS: GPS detail is relative to the time and date of survey. GPS levels and grids are obtained using industry standard procedures and can vary according to the quality of the GPS network at the time of survey. Unless stated otherwise, surveys are Scale Factor 1 and Horizontal and Vertical Datums are established from a central site fix and baseline orientation station utilizing GNSS correction data.
 Survey notes: Survey specification is linked to the original purpose of the survey commissioned at source and is to be used for this purpose only.
 Survey is accurate within limitations of site conditions at the time of survey. In areas difficult to survey due to restricted access, lines of sight or dense vegetation, critical dimensions and positions should be verified following suitable clearance.
 Survey detail obtained and shown is relative to the plotting scale.
 Copyright: This survey information is Copyright Encompass Surveys Ltd (2009). All rights reserved.



LEGEND

TREE SPECIES INFORMATION

ASH	ASH	LOBB	LYC
ASH	ASH	LONGLEAF PINE	LPA
ASH	ASH	MOULDER	MUL
BEECH	BCH	MAPLE	MPL
BIRCH	BIR	MAPLE	MPL
CHERRY	CHY	YEW	YEW
CYPRESS	CYP	POPULAR	POP
ELM	ELM	PRUNUS	PRU
FIR	FIR	SHEDDOCKING BIRCH	SBK
FIR	FIR	SPRING	SPR
HAWTHORN	HAW	SLIVER BIRCH	SBR
HOLLY	HOL	SPRING	SPR
HORNBEAM	HOR	SHORT CRESTED	SCS
HORNBEAM	HOR	SYCAMORE	SYC
LARCH	LAR	WALNUT	WAL
LIME	LIM	WILLOW	WIL
LIME	LIM	YEW	YEW
LIME	LIM	SPECIES UNKNOWN	SUN
LIME	LIM	CORVUS	COP

FENCE INFORMATION

BARBED WIRE FENCE	BWF	BASEMENT LEVEL	BL
CONCRETE BLOCK FENCE	CBF	BEVELLED	BE
CORRUGATED IRON FENCE	CIF	COARSE LEVEL	CL
CORRUGATED IRON FENCE	CIF	CONCRETE COURSE	CC
CHESTNUT PALING	CP	FLOOR LEVEL	FL
CORRUGATED IRON FENCE	CIF	FINEST LEVEL	FL
HANDRAIL	HDL	CENTRAL LEVEL	CL
IRON RAILING	IRF	THICKENED LEVEL	TL
LAWN MOW FENCE	LWF	POOL WATER	PW
PAVING FENCE	PF	SHED WATER	SW
POST AND RAIL FENCE	PAR	UNABLE TO LIFT	UL
POST AND RAIL FENCE	PAR	WATER LEVEL	WL
POST AND RAIL FENCE	PAR		
STOCK WIRE FENCE	SWF		

LEVEL INFORMATION

CONCRETE	CON
BRICK PAVED	BP
PAVING SLABS	PS
RETAINING WALL	RW
TACTILE PAVING	TP

SURFACE INFORMATION

CONCRETE	CON
BRICK PAVED	BP
PAVING SLABS	PS
RETAINING WALL	RW
TACTILE PAVING	TP

FEATURE INFORMATION

BOLLARD	BO	NOTICE BOARD	NB
BRITISH TELECOM BOX	BTB	POST	P
BRITISH TELECOM BOX	BTB	RAIN WATER PIPE	RWP
BUS STOP	BS	RANGE FENCE	RF
CABLE TELEVISION BOX	CTB	ROAD SIGN	RS
CABLE TELEVISION BOX	CTB	ROCKING FIRE	RF
ELECTRICITY CONTROL BOX	ECB	SPECIAL MARKED POST	SMP
ELECTRICITY CABLE PIT	ECP	SOL WENT PIPE	SWP
ELECTRICITY CONTROL BOX	ECB	STOP SIGN	SS
ELECTRICITY CABLE PIT	ECP	STOP SIGN	SS
ELECTRICITY CONTROL BOX	ECB	TELEPHONE CALL BOX	TCB
INSPECTION COVER	IC	TELEPHONE CALL BOX	TCB
LAMP POST	LP	WATER SPINK	WS
LITTER BIN	LB	WATER SPINKS S	WSS
LITTER BIN	LB	WATER TAP	WT
WATER OUTLET	WO	WATER TAP	WT
WATER OUTLET	WO	WATER TAP	WT

Level Datum:
 Levels are related to OSGB15 derived from the GPS network
 OSGB15 derived from the GPS network
 Northpoint:
 The Northpoint position shown on this drawing has been located as accurately as possible, but is only indicative of true North

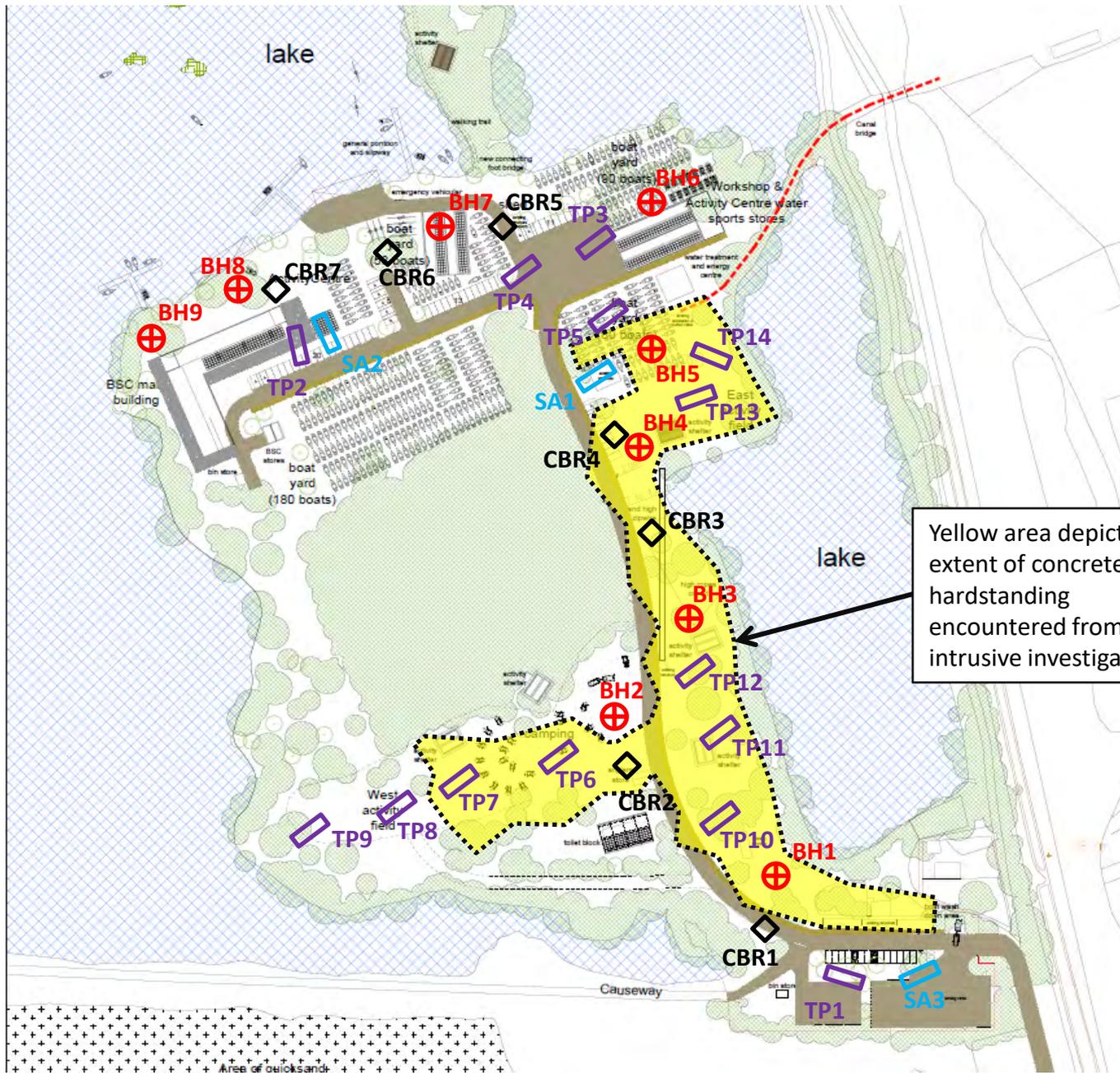
ENCOMPASS SURVEYS

Encompass Surveys Ltd
 Unit 2
 Cobden Business Centre
 Durcan Road
 Park Gate, Southampton
 Hampshire SO31 7GA
 Tel: 023 8663020 Email: info@encompass-surveys.co.uk
 Fax: 023 8667715 Website: encompass-surveys.co.uk

Client: Mace Group
 Survey: Broadwater Lake
 Location: Udbridge UB9 6PE
 Survey type: Topographical Scale: 1:200/40
 Drawing ref: ENC/05/23/2740X1-10 Date: May 2023
 Drawn/QA: SCJ/ZJG/PK: 10 of 18

APPENDIX D

Infiltration Testing
Geo Integrity (February 2023)



- Key**
-  Cable Percussive Boreholes
 -  Soakaway Pits
 -  Trial Pits
 -  Plate Load Test



4 Church Street
Maids Moreton
MK18 1QE

Tel:- 01280 816409
Mob:- 07858 367 125
www. geo-integrity.co.uk

Hardstanding Plan

SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-01-21

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn LA	Checked MB
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Scale: Not To Scale, for indicative purposes only



Geo-Integrity Ltd.
www.geo-integrity.co.uk
murraybateman@geo-integrity.co.uk
07858 367 125
01280 816409



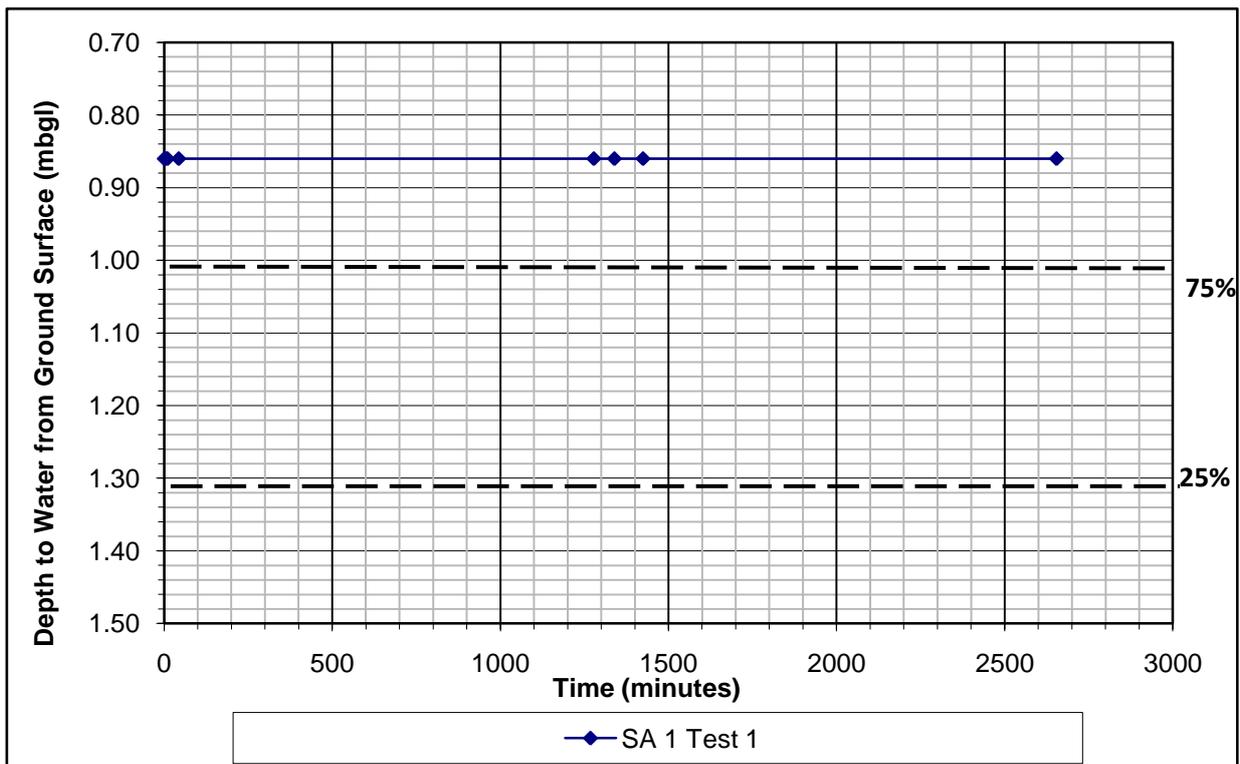
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace **Report No:** 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE **Date Tested:** 15/02/23
Dimensions: 0.60m x 1.50m x 1.47m **Test Location:** SA 1
(width x length x depth)

Test Response Zone Description - : Made Ground/Alluvium

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.86	2654	0.86		
5	0.86				
10	0.86				
43	0.86				
1278	0.86				
1339	0.86				
1424	0.86				

Unable to Calculate Average Soil Infiltration Rate





Geo-Integrity Ltd.
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murraybateman@geo-integrity.co.uk
07858 367 125
01280 816409



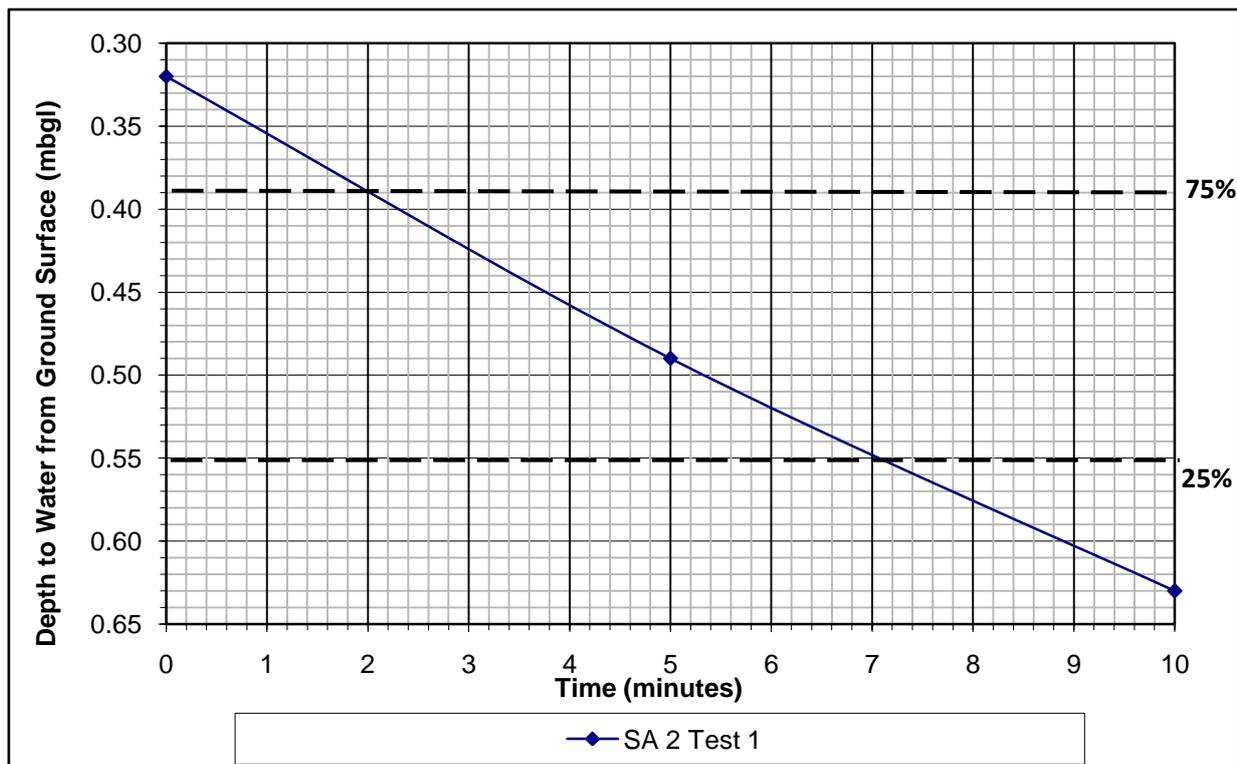
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace **Report No:** 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE **Date Tested:** 15/02/23
Dimensions: 0.60m x 1.30m x 0.63m **Test Location:** SA 2
(width x length x depth)

Test Response Zone Description - : Made Ground

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.32				
5	0.49				
10	0.63				

Average Soil Infiltration Rate = 2.94×10^{-4} m/s



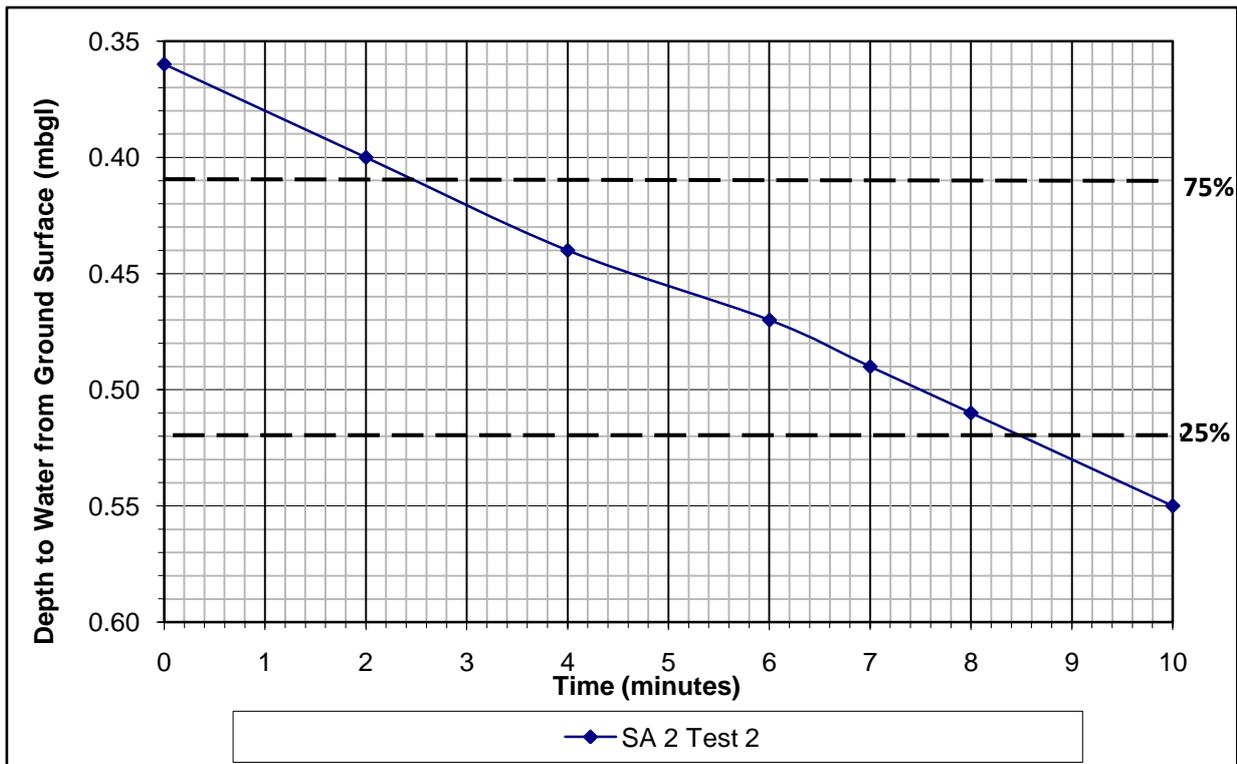
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace	Report No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	Date Tested: 15/02/23
Dimensions: 0.60m x 1.30m x 0.58m (width x length x depth)	Test Location: SA 2

Test Response Zone Description - : MADE GROUND

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.36				
2	0.40				
4	0.44				
6	0.47				
7	0.49				
8	0.51				
10	0.55				

Average Soil Infiltration Rate = 1.99×10^{-4} m/s



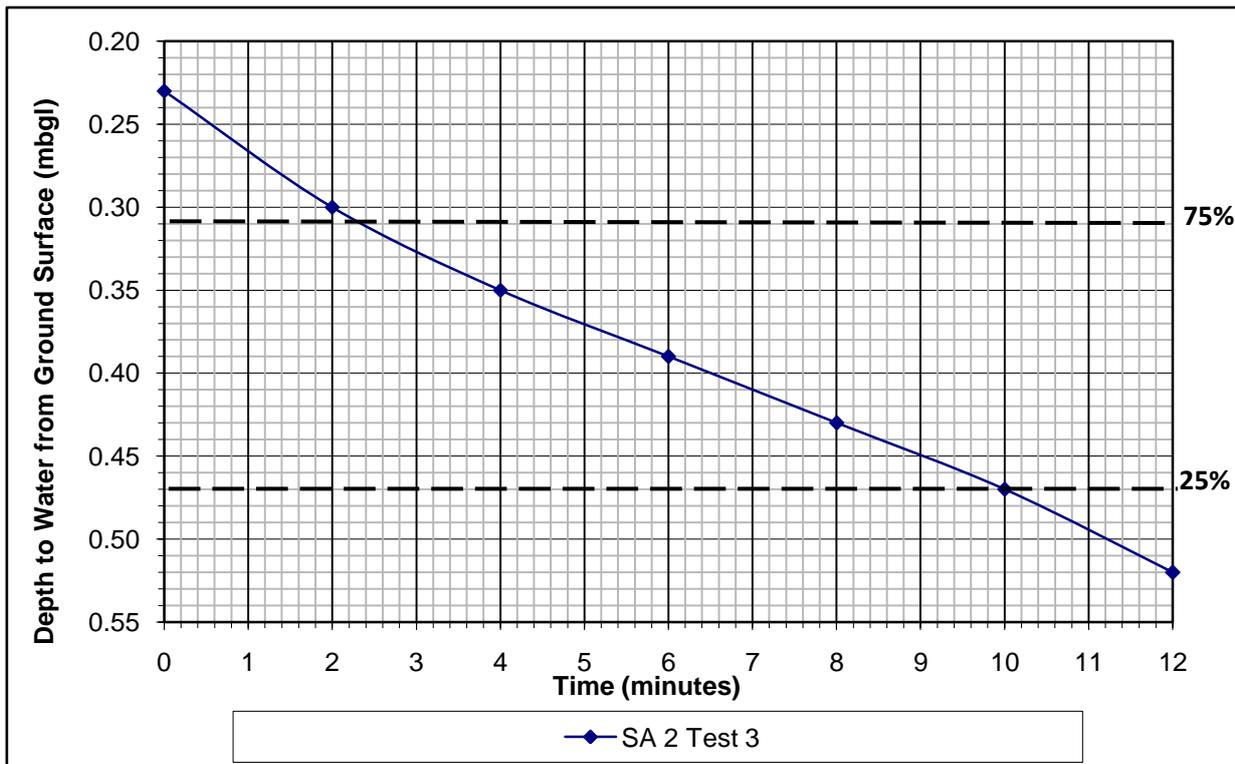
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace	Report No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	Date Tested: 15/02/23
Dimensions: 0.60m x 1.30m x 0.55m (width x length x depth)	Test Location: SA 2

Test Response Zone Description - : MADE GROUND

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.23				
2	0.30				
4	0.35				
6	0.39				
8	0.43				
10	0.47				
12	0.52				

Average Soil Infiltration Rate = 1.95×10^{-4} m/s





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Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace **Report No:** 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE **Date Tested:** 15/02/23
Dimensions: 0.60m x 1.50m x 0.59m **Test Location:** SA 3
(width x length x depth)

Test Response Zone Description - : MADE GROUND

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.34				
2	0.45				
5	0.59				

Average Soil Infiltration Rate = 5.72×10^{-4} m/s



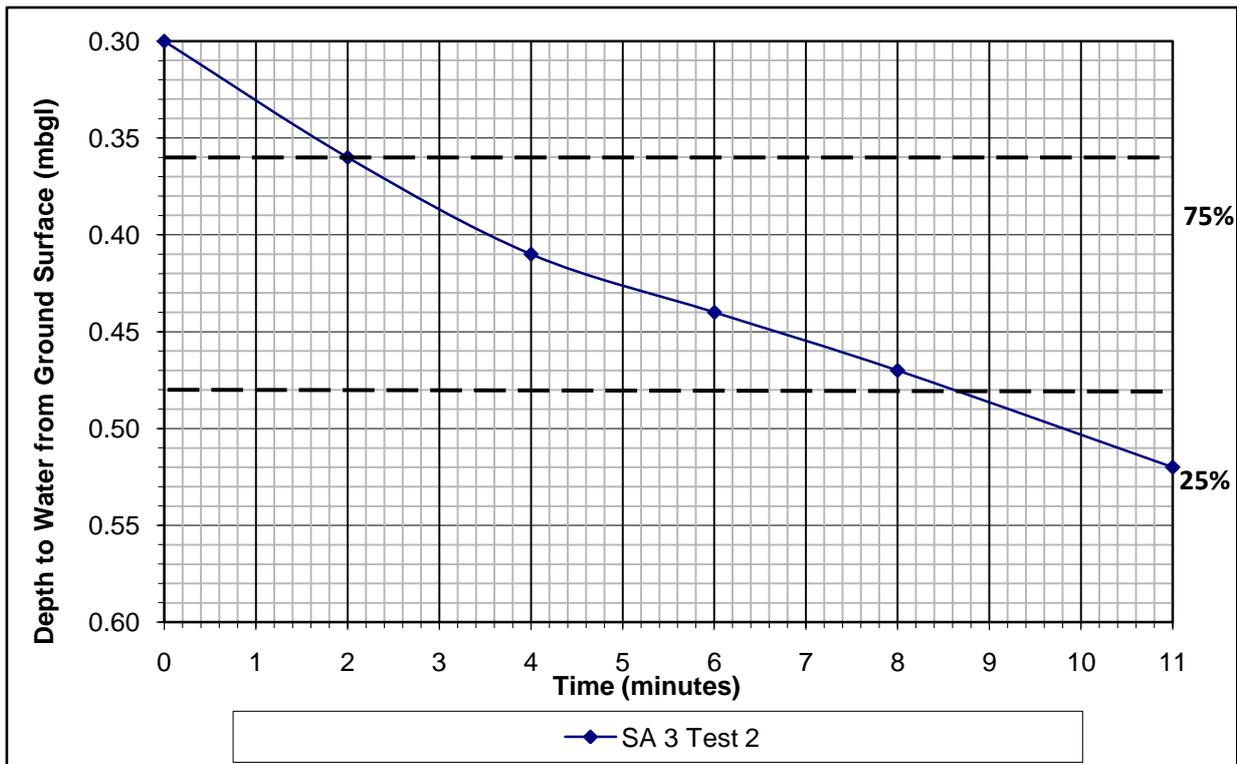
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace	Report No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	Date Tested: 15/02/23
Dimensions: 0.60m x 1.50m x 0.55m (width x length x depth)	Test Location: SA 3

Test Response Zone Description - : MADE GROUND

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.30				
2	0.36				
4	0.41				
6	0.44				
8	0.47				
11	0.52				

Average Soil Infiltration Rate = 1.99×10^{-4} m/s



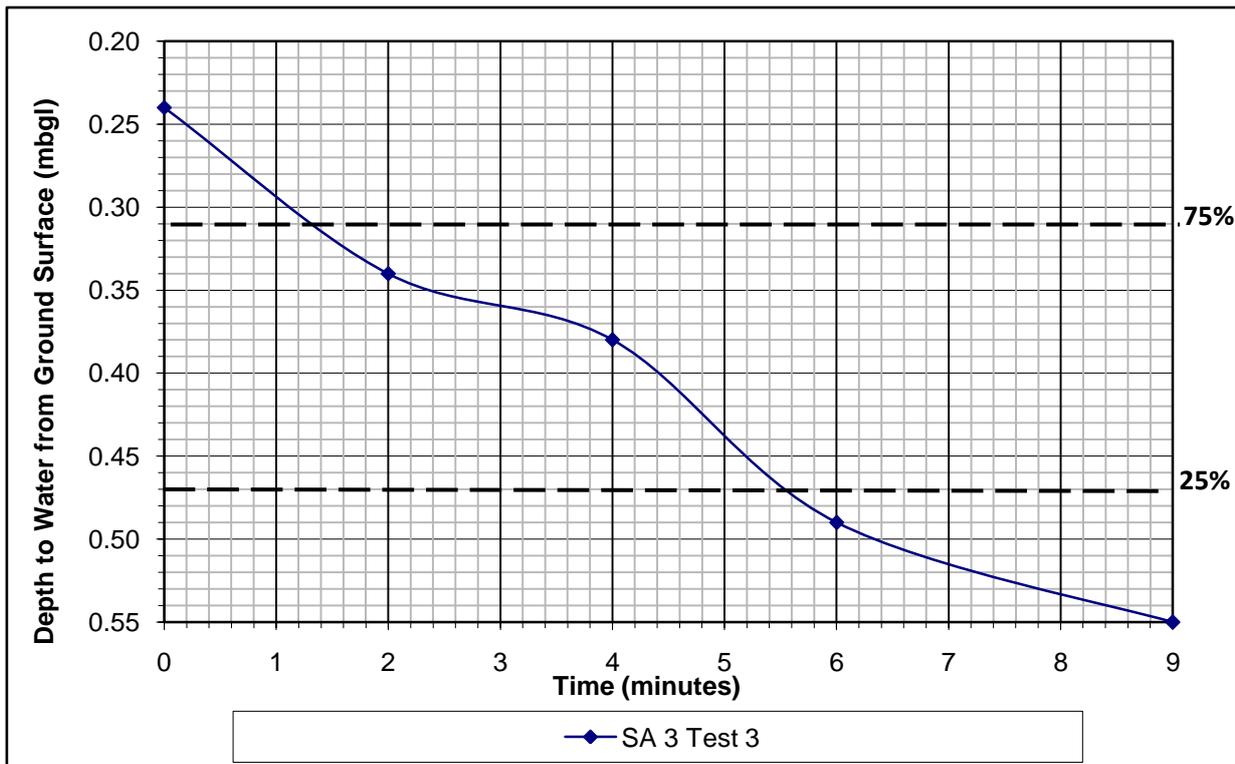
Trial Pit Infiltration Testing to BRE Digest 365

Client: Mace	Report No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	Date Tested: 15/02/23
Dimensions: 0.60m x 1.50m x 0.55m (width x length x depth)	Test Location: SA 3

Test Response Zone Description - : MADE GROUND

Time	Depth BGL	Time	Depth BGL	Time	Depth BGL
0	0.24				
2	0.34				
4	0.38				
6	0.49				
9	0.55				

Average Soil Infiltration Rate = 3.53×10^{-4} m/s



APPENDIX E

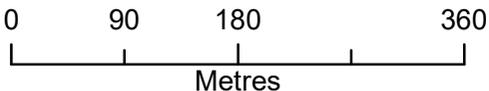
Environment Agency Flood Risk Information

(RFI Ref: HNL294490/AS, January 2023)

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



Legend

- Statutory Main Rivers
- Site location

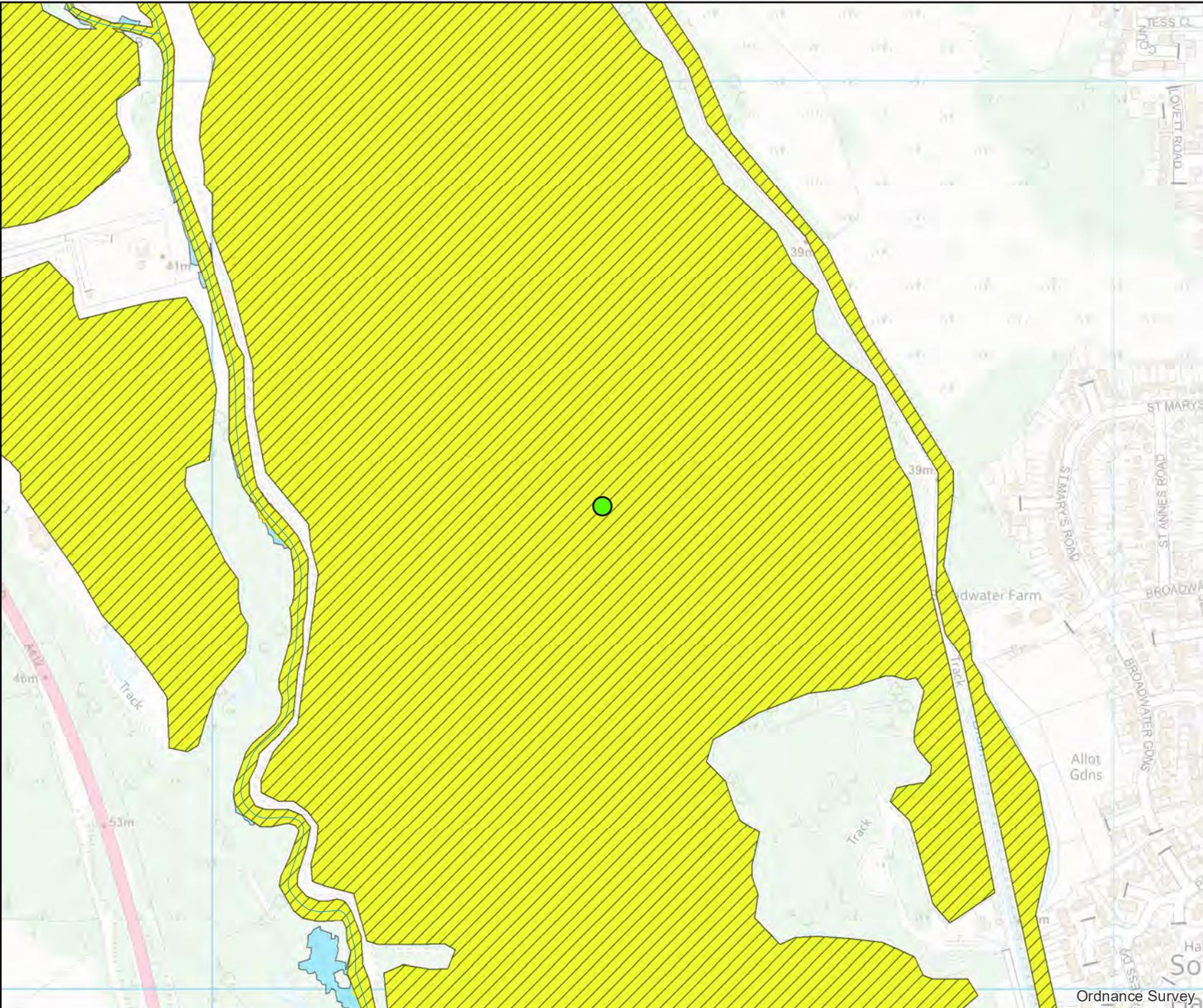
Defended Flood Outlines

- 1 in 2 (50%) Defended
- 1 in 5 (20%) Defended
- 1 in 10 (10%) Defended

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

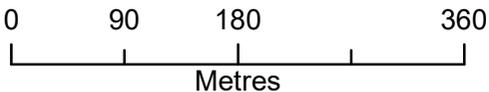


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Detailed FRA centred on: Broadwater Lake, Nearest postcode UB9 6PE - 11/01/2023 - HNL 294490 AS



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



Legend

- Statutory Main Rivers
- Site location

Defended Flood Outlines

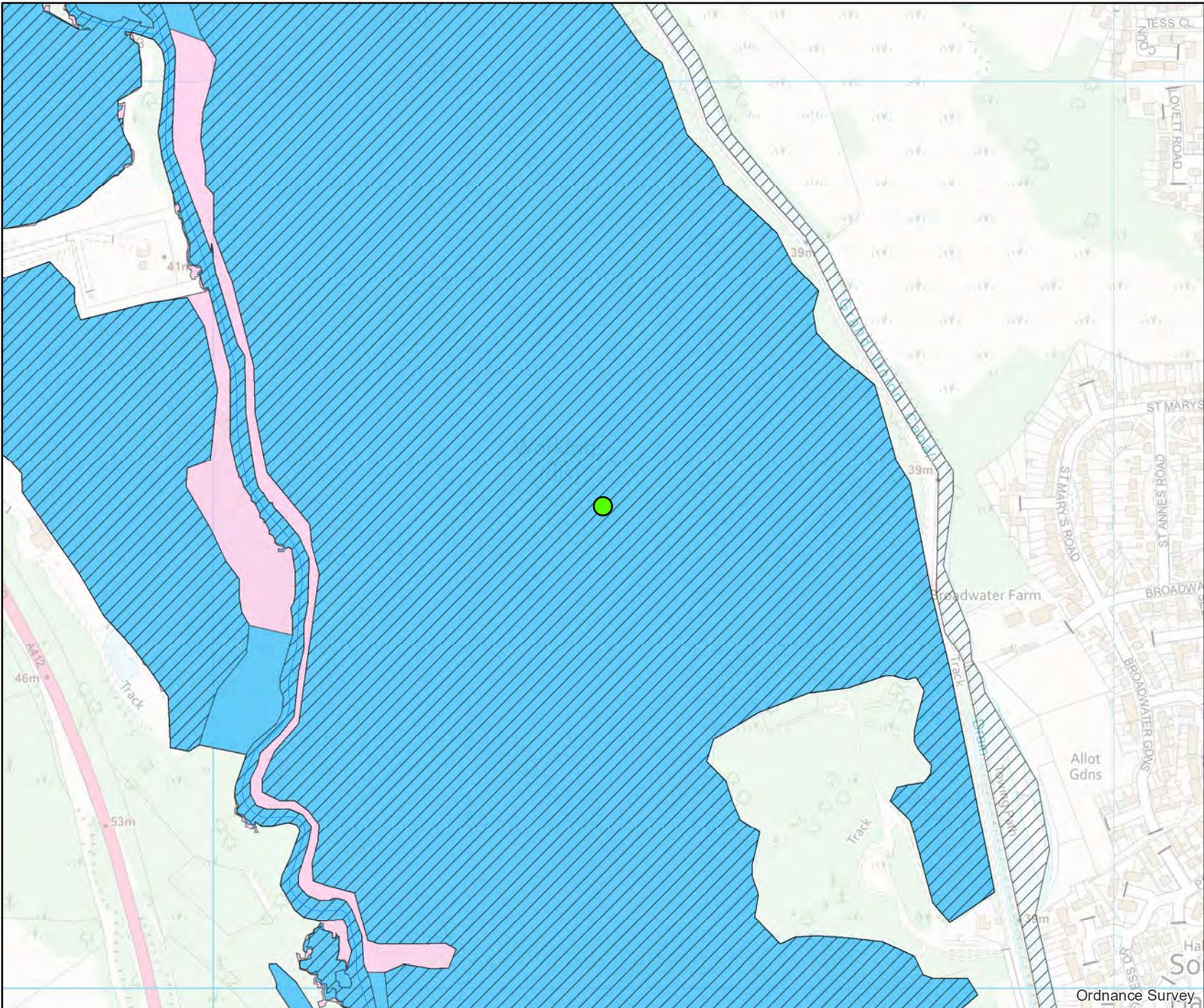
- 1 in 20 (5%) Defended
- 1 in 50 (2%) Defended
- 1 in 100 (1%) Defended

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>

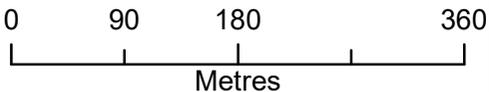
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Detailed FRA centred on: Broadwater Lake, Nearest postcode UB9 6PE - 11/01/2023 - HNL 294490 AS



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



Legend

- Statutory Main Rivers
- Site location

Defended Flood Outlines

- 1 in 200 (0.5%) Defended
- 1 in 100+20% (*CC) Defended
- 1 in 1000 (0.1%) Defended

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>

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