FINAL

London Borough of Hillingdon

Phase II

Geotechnical and Geo-Environmental Report

(First Phase of Intrusive Investigation

Covering Accessible Areas of the Peninsula)

Hillingdon Water Sports Facility and Activity Centre (HWSFAC)

Broadwater Lake

Moorhall Road

Harefield

UB9 6PE

Report No: 23-09-03B

September 2023

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Executive Summary	
Site Location	Land adjacent to Broadwater Lake, Moorhall Road, Harefield, UB9, 6PE
OS Grid Reference	TQ 04741 89189
Development Proposals	Redevelopment of the site to create the Hillingdon Watersports Facility and Activity Centre including demolition of existing Broadwater Lake Sailing Club (BSC) clubhouse at the north of the lake and erection of a building to be occupied by HOAC and BSC including changing facilities, meeting rooms, storage, workshop and seasonal worker accommodation (sui generis), seven activity shelters; three pontoons; two concrete slipways; one boat shed; two equipment storage huts (north of lake and at entrance); boat parking and racking areas; camping area; outdoor activity areas; ecological enhancement throughout the site; new pedestrian routes through the peninsula; landscaping including new woodland, dense vegetation screens and boundary treatment; new access and access road; localised dredging and land reclamation; relocation of existing sailing area and creation of floating and fixed islands within the lake; coach drop off and turning area; vehicle parking; cycle parking; and associated works.
Published Geology	The site is likely underlain by thick Made Ground associated with the historic processing of aggregate on site with some concrete obstructions overlying Alluvium, overlying Shepperton Gravel, overlying Upper Chalk. Groundwater is likely to be between 1m to 2m below ground level.
Site History	The previous desk study indicates that the site has been in agricultural usage from at least 1881 until the 1960's when it started to be exploited for its underlying sand and gravel deposits. Processing of this material occurred towards the southeast of the site, accessed from a trackway leading down to Moorhall Road to the site. Extraction continued until the end of the 1990's. Currently the site area is a Nature Reserve and the lake is used by fishing clubs and the Broadwater Sailing Club, there is also one residential house to the very southeast corner of the main site.
Ground Conditions Encountered	Concrete hardstanding was encountered across the majority of the eastern side of the site and part of the proposed activity field at the southern end of the site, associated with the historic gravel extraction activities. The lateral extent of concrete is shown on the hardstanding plan within Appendix A. Made Ground soils were also encountered across the entire site from ground level and underlying the hardstanding down to depths between 1.00m and 2.00m bgl, however some areas encountered locally deeper Made Ground including BH3 and BH4 down to depths of 2.45m and 3.45m bgl which were located along the eastern side of the site. Reworked soils were located locally along the northern boundary becoming thicker westwards. These reworked natural gravels were encountered down to depths ranging between 2.45m and 3.25m bgl interpreted to reflect the infilling processes which was noted on the historical OS maps from 2001. The first natural soil encountered is a consistent layer of Alluvium which is present across the entire site. Alluvium was encountered down to depths ranging between 1.30m and 4.50m bgl. This was underlain by a consistent medium dense to dense granular layer of superficial gravel known as the Shepperton Gravel Member down to depths ranging between 6.10m and 8.00m bgl. The superficial gravels were underlain by structureless chalk comprising layers of gravelly silt (Grade Dm) and silty gravel (Grade Dc) down to the base of the exploratory holes in excess of 15.00m bgl.
Groundwater Encountered	Groundwater was encountered as water strikes ranging between 1.00m and 4.90m bgl and standing levels between 1.20m and 4.60m bgl within the Made Ground, Alluvium and Shepperton Gravel Member soils across the entire site. Subsequent groundwater monitoring recorded standing water levels between 0.75m and 2.39m bgl. It is considered the groundwater is in continuity with Broadwater Lake.

Contamination	An area of Made Ground impacted by hydrocarbons was encountered at the north of the site, the levels recorded fall below the relevant S4UL for a commercial land-use, however are elevated for a residential land-use. Therefore, remedial measure will be required. An assessment of the risk to controlled waters is described in detail within section 6.4.
Sulphate Attack on Underground Concrete	The following design sulphate class and aggressive chemical environment classification should be applied: Made Ground: DS-1/AC-1 Reworked Ground: DS-2/AC-2 Alluvium: DS-2/AC-2 Shepperton Gravel Member: DS-1/AC-1 Upper Chalk: DS-1/AC-1
Shallow Foundations	Given the poor near surface ground conditions which includes deep Made Ground/Reworked Ground overlying highly compressible alluvial soils with shallow groundwater levels (0.75m bgl) it is considered conventional shallow foundations will not be viable at this site for settlement sensitive buildings. However, advice has been given for raft foundations where settlement is less sensitive.
Pile Foundations	Preliminary working loads for a range of pile sizes, depths are provided for areas and structures within the proposed development. See section 5.3.2 for further details.
Waste Soil Classification	Two sets of Made Ground are considered which are delineated on the Remedial Plan in Appendix A. Impacted Made Ground (Hydrocarbons): 17 05 04 Stable Non-Reactive Hazardous Waste in a Non-hazardous Landfill General Made Ground/Reworked Ground: 17 05 04 Inert Natural Soil: Inert
Recommendations	We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken. Barrier pipe will be required at this site due to elevated levels of hydrocarbons, SVOC's and VOC's within the Made Ground soils. This first phase of intrusive investigation was undertaken solely on the accessible areas of the peninsula. The data collected to date is sufficient to support the conclusions of this report. The surrounding area of the site mainly covered by the lake and islands is not covered by this investigation and it is anticipated further investigation will be required prior to construction works commencing. Given the development proposals have changed this has altered the location of the proposed buildings. It is considered further investigation including boreholes will be required prior to the development works immediately north of the peninsula where it is proposed to extend the peninsula and construct commercial structures. This ground investigation has identified a single hotspot of contamination associated with elevated levels of hydrocarbons identified within two exploratory holes surrounding a concrete bund situated at the north of the peninsula. It is considered remedial measures will be required to protect against the end users of the site which overall is deemed to be commercial with minor residential land-use associated with camping areas. It may be requested to undertake additional testing in areas across the peninsula and the wider site area which were previously inaccessible during this intrusive investigation. It is understood additional intrusive investigations are being undertaken by HydroGeo associated with sampling the lake bed covering the area surrounding the peninsula. A preliminary assessment of the gas regime was undertaken at the site which identified low gas levels indicating a CS1 site, however it may be requested to undertake additional monitoring visits within the standpipes previously installed and/or installation of additional standpipes in the wider site area. The on-site historic landfill recorded in the previous desk study was not found to extend onto the peninsula. Further investigation could be undertaken prior to the development phase to assess the ground conditions below the lake immediately east of the peninsula.

This executive summary must be read in conjunction with the full report text

FACTUAL

1.1 INTRODUCTION

Geo-Integrity Ltd were commissioned by Mace Group via Purchase Order (No. MLIMPD0028877) on the 5th of September to update the existing Phase II Factual and Interpretative Geotechnical and Geo-Environmental Report (23-01-09) for the proposed Hillingdon Water Sports Facility and Activity Centre (HWSFAC), Broadwater Lake, Moorhall Road, Harefield, UB9 6PE in order to inform the design and construction of the proposed development. This updated report has been given a new reference number 23-03-09B. The development proposal has changed and therefore the ground investigation previously undertaken (ref.23-01-09) does not accurately reflect the updated development proposal.

This report describes desk-based searches of geological, environmental and historical information, a summary of the previous Phase I Desk Study (ref. 22-10-12), the fieldwork and laboratory testing undertaken and provides an interpretative section of the geotechnical and geo-environmental data from this investigation to inform the proposed development.

This report should be read in conjunction with the previous Phase I Desk Study Report undertaken by Geo-Integrity Ltd., ref. 22-10-12, dated November 2022.

This ground investigation covers the accessible areas of the peninsula only. It is understood subsequent phases of investigation will be undertaken within the wider site area to aid the proposed development.

This report supersedes the previous Phase II Ground Investigation Report (Ref. 23-01-19) undertaken by Geo-Integrity Ltd. This updated report makes aware further investigation covering the entire site boundary will be undertaken. In addition, amendments to the development proposal have changed the land-use scenario to commercial with some areas of residential therefore the human health risk assessment has been updated and recommendations for further work.

The site is located at National Grid Reference TQ 04741 89189.

The report is likely to be reviewed by Hillingdon Council with reference to the NPPF. The NPPF states that a site must be “suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining”.

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Once the development is completed, and as a minimum, land must not be capable of being determined as 'contaminated land' under the terms of Part IIA of the Environmental Protection Act 1990. However, it also states that "Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the developer and/or landowner."

As such the previous Phase I Desk Study Report (ref. 22-10-12) was the first stage in investigating whether the site is likely to be considered "contaminated", in accordance with clause 183 and 184 of the NPPF.

The objectives of this Phase II Geotechnical and Geo-Environmental Interpretive Report are:-

- To briefly summarise the findings of the previous investigation including historical, geological and environmental information
- To briefly summarise the site development proposals and site setting
- To describe and report the fieldwork undertaken at the site
- To describe and report the geotechnical and chemical laboratory work undertaken on selected samples
- To provide an interpretation of the results of this investigation with regards to the geotechnical properties, and geo-environmental and waste disposal implications for the proposed development

The investigation was performed in accordance with the general requirements of BS 5930:2015, BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant related standards identified below. The fieldwork took place across ten days between the 15th and 28th of February 2023.

1.2 SOURCES OF INFORMATION

The following sources of information have been used to compile this report:-

- Phase I Desk Study Report undertaken by Geo-Integrity Ltd., ref. 22-10-12, dated November 2022
- The British Geological Survey (BGS) and Environment Agency (EA) websites
- A site reconnaissance visit undertaken on the 20th of December 2022
- Information from various internet sites on site history and environmental setting

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1.3 DEVELOPMENT PROPOSALS

The proposed development involves the redevelopment of the site to create the Hillingdon Watersports Facility and Activity Centre including demolition of existing Broadwater Lake Sailing Club (BSC) clubhouse at the north of the lake and erection of a building to be occupied by HOAC and BSC including changing facilities, meeting rooms, storage, workshop and seasonal worker accommodation (sui generis), seven activity shelters; three pontoons; two concrete slipways; one boat shed; two equipment storage huts (north of lake and at entrance); boat parking and racking areas; camping area; outdoor activity areas; ecological enhancement throughout the site; new pedestrian routes through the peninsula; landscaping including new woodland, dense vegetation screens and boundary treatment; new access and access road; localised dredging and land reclamation; relocation of existing sailing area and creation of floating and fixed islands within the lake; coach drop off and turning area; vehicle parking; cycle parking; and associated works.

2 PREVIOUS INVESTIGATION

2.1 PHASE I DESKSTUDY (REF. 22-10-12)

2.1.1 Geotechnical Summary

The previous desk study undertaken by Geo-Integrity Ltd identified the site is likely underlain by thick Made Ground associated with the historic processing of aggregate on site with some concrete obstructions overlying Alluvium, overlying Shepperton Gravel with Chalk strata at approximately 6m below ground level. Groundwater is likely to be between 1m to 2m below ground level.

Given the site is underlain by chalk, which is highly susceptible to dissolution, a natural cavities risk assessment was undertaken by the previous desk study. The score for the site was 28, which means there is predicted to be no anticipated subsidence hazard risk of natural cavities beneath the site (0% occurrence).

From the historic OS maps the site was once mainly open agricultural land with a network of ditches named Harefield Moor, presumably due to the damp nature of the ground. It is noted the site remains undeveloped for some time however by 1960 it can be seen gravel extraction has begun north and south of the site with Harefield Pit and Troy Mill Gravel Pit both having been extracted and shown as lakes. By 1968 it shows the gravel extraction from the main site area had started with the central and western areas having been extracted. It is not until the plan of 2001 that the site boundaries as seen during the walkover are the same, and this involves a large

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amount of refilling to the west of the land promontory on the site (therefore this is not original land). No significant changes are recorded after this time.

Given the findings of the previous desk study the ground conditions are likely to comprise of deep Made Ground soils (more so on the western half of the site where the refilling has taken place), overlying Alluvium, overlying Shepperton Gravel Member, overlying Upper Chalk.

A desk study of the deeper ground conditions indicates the site will likely be underlain by Upper Chalk which comprises of:

- Seaford and Newhaven Chalk Formations (Undifferentiated) down to a depth of 50-60m bgl. Described as soft chalk with sporadic nodular flint beds
- Lewes Nodular Chalk down to a depth of 80-90m bgl. Described as hard white/yellow chalk with sporadic flints and thin marls

This is underlain by the Middle Chalk which comprises of:

- New Pit Chalk down to a depth of 125-135m bgl. Described as soft which chalk with thin marls and sporadic flints.
- Holywell Nodular Chalk down to a depth of 140m to 150m bgl. Described as hard white to pale grey chalk

This is underlain by the Lower Chalk which comprises of:

- Grey Chalk Subgroup down to a depth of 210-220m bgl. Described as grey chalk with interbedded limestone and marl beds

2.1.2 Geo-Environmental Summary

The previous desk study indicates that the site has been in agricultural usage from at least 1881 until the 1960's when it started to be exploited for its underlying sand and gravel deposits. Processing of this material occurred towards the southeast of the site, accessed from a trackway leading down to Moorhall Road to the site. Extraction continued until the end of the 1990's. Currently the site area is a Nature Reserve and the lake is used by fishing clubs and the Broadwater Sailing Club, there is also one residential house to the very southeast corner of the main site.

Given the proposed development of the site as a commercial end usage, it is considered that there is a low to moderate risk to end users. However, the risk of encountered localised pockets of

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contamination is considered to be moderate to high. There is also a perceived moderate risk of encountered contamination sources that may be affecting the Principal groundwater Aquifer beneath the site and as the site is in a Source Protection Zone, this would need to be dealt with as part of the development.

The surrounding uses of the site generally poses no risk of contamination, however, there is a large old landfill site to the east of the site that is undoubtedly a large source of landfill gases.

The majority of the rest of the land use on the site is a nature reserve and as such no potentially contaminative land uses have been identified.

As such the main potential sources of contamination which will be investigated as part of this Phase II investigation include:

- Historic hydrocarbons within the ground from human history in the area of aggregate processing
- Historic asbestos within any made ground from human history in the area of aggregate processing
- Historic metals and PAH's within any made ground from human history in the area of aggregate processing
- Ground gas from on and off-site landfills
- PCB from electricity sub-station

2.2 SITE WALKOVER

A site walkover was undertaken as part of this phase II ground investigation on the 20th of December 2022 with Richard Weston of Hillingdon Council (Client) and Stephanie Harper of Greengage Environmental Ltd. (Ecologist).

The site walkover survey was undertaken to agree the locations of the exploratory holes given the site is a site of special scientific interest (SSSI) and the risk of quicksand arising from the historic processing of aggregate. In addition, it was also agreed which areas required clearing of invasive species such as buddleia to enable access for the drilling rigs and excavator to complete the exploratory holes. The walkover plan showing the agreed areas of investigation is shown in Appendix A (the plan shows the previous development proposal).

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3 PHASE II INTRUSIVE INVESTIGATION

3.1 SITE WORK AND SAMPLING STRATEGY

The fieldwork was undertaken in accordance with BS 5930:2015, BS EN 1997-2 (2007) and BS EN ISO 22475-1 (2006), with the exploratory locations being selected by Geo-Integrity Ltd and agreed by Richard Weston of Hillingdon Council and Stephanie Harper of Greengage Environmental Ltd. (Ecologist). The exploratory hole locations can be seen in the Appendices.

The fieldwork was undertaken across ten days between the 15th and 28th of February 2023. The sitework consisted of nine cable percussive boreholes down to 15.00m bgl (BH1-BH9), three machine excavated infiltration pits (SA1 – SA3) using a JCB 3CX, fourteen machine excavated trial pits (TP1 – TP14), and seven plate load (equivalent CBR) tests (CBR1 – CBR7). In addition, monitoring wells were installed within boreholes BH3, BH6 and BH9 to undertake subsequent groundwater and gas monitoring and groundwater sampling. Standpipes were installed within boreholes positioned to target potential sources of gas:

- BH3 was positioned within the boundary of the on-site historic landfill (shown on the exploratory hole and landfill plan in Appendix A) identified from the previous Phase I Desk Study.
- BH6 was located at the north-east corner of the site the closest point on the peninsula to the off-site historic landfill identified from the previous desk study
- BH9 was positioned at the north-west corner of the peninsula where deeper Reworked Ground (>3m thick) was encountered

Disturbed samples were taken at selected depths down to the base of the exploratory holes for subsequent laboratory testing and inspection. On completion, all trial pits were carefully backfilled with arisings in thin layers, ensuring that excavated material was replaced in the same order as it had been removed.

3.2 LIMITATIONS

The limitations of this ground investigation which may warrant further investigation are as follows.

1) The development proposal plans were altered after the intrusive investigation had been completed. Therefore, this investigation does not cover areas of the updated development

proposal which include new pontoons, a camping ground, an extension of land to the north of peninsula and construction of new islands.

2) The ground investigation was undertaken whilst the site was being cleared of vegetation which limited the extent which could be covered.
3) Unsafe ground conditions including sinking sand and soft wet ground were outlined on a topographical survey (shown in Appendix A) further limiting the areas which could be safely investigated.

A plan showing the area investigated during this ground investigation is shown in Appendix A. The red highlighted area shows the area covered by the investigation. The areas highlighted black were not accessible during the ground investigation due to quick sand to the south and soft ground and dense tree coverage at the centre and north of the site. The wider site area was not covered by this investigation. It is understood HydroGeo are undertaking ground investigation covering the surrounding lake bed.

3.3 GROUND CONDITIONS

3.3.1 Summary

The site and laboratory test work revealed that the general succession of strata can be represented by localised hardstanding, overlying Made Ground, overlying localised Reworked Ground, overlying Alluvium, overlying the Shepperton Gravel Member, overlying the Upper Chalk.

Descriptions of the strata encountered are given on the exploratory hole records and are summarised below. Further information is provided on the exploratory hole logs within the Appendices.

3.3.2 Hardstanding

Hardstanding was encountered as concrete within the southern and eastern areas of the site within exploratory holes (BH1, BH3, BH4, BH5, CBR2, CBR3, TP6, TP7, and TP10 – TP12). Concrete was encountered down to depths ranging between 0.05m and 0.70m bgl.

In addition, in trial pits TP6 and TP7 located within the proposed camping area at the southern end of the site encountered very dense weathered concrete down to depths of 0.80m and 1.60m bgl upon which the trial pits refused. The ‘weathered concrete’ is considered to be sourced from the

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refilling process indicated by the desk study information. A plan showing the areas of concrete hardstanding is shown in Appendix A.

3.3.3 Made Ground

Encountered in each of the exploratory holes from depths ranging between ground level and 0.70m bgl down to depths ranging between 0.30m and 3.45m bgl.

The material was generally encountered as loose, orange, brown, silty, sandy gravel, gravel is fine to coarse brick, flint, concrete, ash, slag, slate, and quartz with occasional cobbles and boulder size fragments of concrete.

Localised layers of soft to firm, dark brown, beige, silty, slightly gravelly clay (less than 1m in thickness) were encountered at the north-west and southern areas of the site covered by BH2, TP2, TP8, TP9, TP10 and CBR6.

Distinct hydrocarbon staining and odour was encountered within the Made Ground soils surrounding the historic concrete bund located at the north of the site covered by TP4 and CBR5. Additional trial pits were undertaken around the historic concrete bund which did not encounter hydrocarbon staining and odour these include TP3, TP5, BH7. As such, it is considered the main impact from hydrocarbons is localised to the immediate west side of the historic bund.

3.3.4 Reworked Ground

Encountered locally at the north-west area of the site within exploratory holes BH6 – BH7 underlying the Made Ground soils from depths ranging between 0.30m and 0.45m bgl down to depths ranging between 2.45m and 3.25m bgl. The material was encountered as medium dense to dense, light brown, sandy gravel, gravels being fine to coarse flint and quartz.

Particle size distribution test undertaken on a representative sample recorded the following grain size percentages: Fines:-3%, Sand:- 38%, Gravel:- 59%. These percentages indicate the material is predominantly a gravel with lesser amounts of sand and fines, respectively.

SPT tests undertaken within this material recorded ‘N’ values between 19 and 32 indicating a medium dense to dense granular soil.

3.3.5 Alluvium

Encountered within the majority of the exploratory holes except the shallow ones including the CBR pits and those located at the south-west area of the site. It is considered Alluvium is encountered

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across the entire site at depth, which from this investigation has been proven at depths from 0.60m and 3.45m bgl down to depths ranging between 1.30m and 4.50m bgl. The material was encountered as very soft, dark brown, black, grey, green, highly organic, silty, slightly gravelly clay with peat and plant debris. Gravels were encountered as fine to coarse flint.

Laboratory tests undertaken on representative samples revealed a moisture content range between 66% and 112% and a modified plasticity index range of 11% to 18% which equates to a low shrinkage soil in accordance with NHBC guidelines. The extremely high recorded moisture content indicates the high organic content within this material, as organic matter characteristically enables high water retention. Given the high organic content this material is considered to be highly compressible and unsuitable as a founding stratum due to unacceptable settlements.

SPT tests undertaken within this material recorded ‘N’ values between 3 and 7 indicating very soft cohesive soil.

3.3.6 Shepperton Gravel Member

Encountered only in the majority of the deeper exploratory holes (BH1 – BH9, TP11 – TP14) from depths ranging between 0.50m bgl and 4.50m bgl down to depths ranging between 6.10m and 8.00m bgl. The material was encountered as medium dense to dense, dark grey, orange, brown, sandy gravel, gravels being fine to coarse, sub-angular to sub-rounded flint and quartz. Local layers of loose granular material was also located within BH5

Particle size distribution tests undertaken on representative samples recorded the following grain size percentages: Fines:- 0% - 3%, Sand:- 6% - 38%, Gravel:- 59% - 94%. Cobbles were also recorded within two samples however these were excluded from the total percentage as they are not representative of the material.

SPT tests undertaken within this material recorded ‘N’ values generally between 17 and 50 indicating a medium dense to very dense granular soil. Some lower ‘N’ values were also recorded between 6 and 9 which corresponded to the top of the formation in BH5 and the bottom of the formation within BH2 and BH4. It is considered the lower ‘N’ values likely reflect transitional water softened soils given the lower values are located at the top and base of the formation.

3.3.7 Upper Chalk

Encountered only in the deep cable percussive boreholes (BH1 – BH9) at a depth of 4.50m bgl down to the base of the exploratory holes in excess of 19.95m bgl. The material was encountered

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at depths ranging between 6.10m and 8.00m bgl down to the base of the exploratory holes in excess of 15.00m bgl. The material was encountered as structureless off-white chalk comprising both gravelly silt (Grade Dm) and silty gravel (Grade Dc).

Laboratory tests undertaken on representative samples of the coarse chalk gravel recorded saturated moisture contents between 21% and 27%, intact dry density between 1.57 and 1.73mg/m^3 and intact bulk density between 1.97 and 2.09mg/m^3. This equates to medium to high density chalk in accordance with CIRIA C574.

SPT tests undertaken within this material generally recorded 'N' values between 10 and 35 with values increasing with depth. The only variation was recorded within BH1 which recorded 'N' values of 0 and 4 at depths of 7.00m and 8.50m bgl, respectively. The value of 0 indicates the SPT fell under its own weight and is considered to be a localised zone of weakness at the top of the formation in this area. The 'N' values increased to >10 below 10.00m bgl.

3.3.8 Sulphate and pH Tests

Soluble sulphate and pH tests were carried out on samples of Made Ground recovered from depths ranging between of 0.10m and 1.65m bgl, the Reworked Ground recovered from depths ranging between 0.30m and 1.65m bgl, Alluvium recovered from depths ranging between 1.20m and 3.45m bgl, the Shepperton Gravel Member recovered from depths ranging between 5.00m and 5.45m bgl and the Upper Chalk from depths ranging between 7.00m and 7.45m bgl. In addition, total sulphur and acid soluble sulphate tests were undertaken on Alluvial samples as sulphates may found in locally significant concentrations in Alluvium and Peat.

These recorded values are shown in the table below:

Parameter	**Range**
Soluble Sulphate (g/l)	<0.010 – 0.52
pH units	8.5 – 9.8
Acid Soluble (Alluvium)	0.044 – 0.097
Total Sulphur (Alluvium)	0.10 – 0.18

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3.3.9 Groundwater

Groundwater was encountered during the intrusive investigation within the majority of the exploratory holes with water strikes ranging between 1.00m and 4.90m bgl and standing levels between 1.20m and 4.60m bgl within the Made Ground, Alluvium and Shepperton Gravel Member soils.

Subsequent groundwater monitoring undertaken between 09/03/2023 and 29/03/2023 within the standpipes installed within BH3, BH6 and BH9 recorded standing water levels between 0.75m and 2.39m bgl.

Spot heights using GPS were taken to provide accurate elevations for the groundwater levels to estimate the general direction of groundwater flow. It is considered the elevation collected for BH9 is inaccurate due to tree canopy cover and therefore has been discarded. The following table presents the groundwater levels recorded for BH3 and BH6.

Borehole	**Groundwater Levels (mOD)**		
	09/03/2023	**15/03/2023**	**29/03/2023**
BH3	38.56	38.65	38.65
BH6	38.67	38.82	38.82

The results indicate groundwater levels are consistently lower within BH3 which is located south of BH6. Therefore, the general direction of groundwater is considered to be to the south which corresponds to the direction of the River Colne.

3.3.10 Infiltration Tests

Infiltration testing was carried out in three locations (SA1 – SA3). The soakaway tests were excavated down to depths ranging between 0.50m to 1.50m bgl within the Made Ground and Alluvium. Given the high water table and general depth to natural soils it was not possible to undertake infiltration testing within the natural soils. Therefore, infiltration tests were undertaken within the near surface Made Ground soils covered by SA2 and SA3 and Alluvium within SA1. Currently rainwater is continuously percolating through the Made Ground soils so the proposed development is unlikely to impact this. However, as part of this investigation leachate tests have also been undertaken on Made Ground soils to assess the risk of conventional soakaways within

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Made Ground to controlled waters given the proximity to Broadwater Lake and the underlying Principle Aquifer. The results of the leachate tests are discussed within section 6.4.

The general methods set out in BRE 365 Digest were followed and the infiltration rates for each BRE 365 test are presented below and the graphs are shown in Appendix B.

Test Location	**Infiltration Rates (m/s)**			
	Test 1	Test 2	Test 3	Average
SA1	No recorded drop in water level over 44 hours	-	-	-
SA2	$2.94x10^{-4}$	$1.99x10^{-4}$	$1.95x10^{-4}$	$2.29x10^{-4}$
SA3	$5.72x10^{-4}$	$1.99x10^{-4}$	$3.53x10^{-4}$	$3.74x10^{-4}$

The results indicate three repeat infiltration tests were completed within the Made Ground soils of SA2 and SA3 as required by the guidance within BRE 365 Digest.

The infiltration test undertaken within the Alluvium (SA1) recorded no drop in water level over a period of 44 hours.

3.3.11 Plate Load (Equivalent CBR) Tests and Laboratory CBR Tests

Seven Plate Load (equivalent CBR) Tests were undertaken at depths ranging between 0.10m and 0.45m bgl. Three plate load tests were undertaken on the concrete including CBR2 – CBR4 at depths ranging between 0.10m and 0.20m bgl and recorded equivalent CBR values between 9.95% and 41.87%.

The remaining four plate load tests were undertaken within the Made Ground soils and recorded equivalent CBR values between 5.24% and 19.47%.

Laboratory CBR tests were undertaken on selected near surface samples including two samples from the Made Ground taken at depths of 0.10m bgl and 0.50m bgl and two samples of the Reworked Ground taken at a consistent depth of 0.50m bgl.

The Made Ground samples recorded CBR values between 0.5% and 22.1% and the Reworked Ground samples recorded CBR values between 35.3% and 73.4%.

3.3.12 Ground Gas

Four gas monitoring visits were undertaken alongside groundwater monitoring within BH3, BH6 and BH9 to confirm the ground gas regime at the site between 09/03/2023 and 29/03/2023. Methane was recorded between below detection limits and 0.6% in all visits with lower explosive limits between 13.6% and 15.7%; carbon dioxide was recorded between 0.1% and 0.8% with oxygen between 0.6% and 19.3%. Peak flow was recorded at 0.27l/h and atmospheric pressure was recorded between 986mb to 1011mb.

3.3.13 Evidence of Contamination

Some obvious signs of contamination were identified locally within the Made Ground soils encountered during the field work. This relates to significant hydrocarbon staining and odour within two trial pits (TP4 and CBR5) positioned next to a historic concrete bund situated at the north of the site. In addition, some man-made materials were encountered within the Made Ground such as brick, concrete, ash, slag and slate with occasional cobbles and boulder size fragments of concrete.

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4 GEO-ENVIRONMENTAL TESTING

Geo-environmental laboratory testing was scheduled by Geo-Integrity on thirteen soil samples recovered during the fieldwork. The testing was carried out at a MCERTS and UKAS accredited laboratory. The results are presented in the Appendices.

Thirteen soil samples were tested for a varied suite containing the following:

- Metals and inorganic substances
- Speciated Polyaromatic Hydrocarbons (PAH)
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX)
- Total Petroleum Hydrocarbons (TPH), with eight band split
- In addition, the three Made Ground samples were tested for the presence of asbestos

Two samples of Made Ground taken from TP4 which identified significant hydrocarbon staining and odour were specifically tested for aliphatic and aromatic petroleum hydrocarbons.

Two samples of Made Ground taken from trial pits situated adjacent to the two soakaway pits SA2 and SA3 were tested for leachates to aid with the risk assessment to controlled waters.

Four samples were tested for a suite of hydrocarbons, volatile organic compounds (VOCs), Semi-volatile organic compounds (SVOCs) as part of the UKWIR Suite to assess whether barrier pipe is required for underground water pipes.

Three groundwater samples were collected and tested for a suite of chemicals in accord with the environmental quality standards for fresh water including a range of heavy metals, TPH, a range of PAH's, dissolved organic carbon, pH, a range of essential minerals including calcium, potassium, magnesium and sodium and chemical oxygen demand to assess the risk to controlled waters.

In addition, WAC testing was undertaken on two near surface samples of Made Ground to aid with waste classification.

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5 GEOTECHNICAL INTERPRETIVE SECTION

5.1 GENERAL GROUND CONDITIONS INTERPRETATION

This intrusive investigation identified concrete hardstanding across the majority of the eastern side of the site and part of the proposed activity field at the southern end of the site, associated with the historic gravel extraction activities. The lateral extent of concrete is shown on the hardstanding plan within Appendix A. The thickness of the concrete ranged from 0.05m and 0.70m.

Made Ground soils were also encountered across the entire site from ground level and underlying the hardstanding. Made Ground soils were generally recorded down to depths between 1.00m and 2.00m bgl, however some areas encountered locally deeper Made Ground including BH3 and BH4 down to depths of 2.45m and 3.45m bgl which were located along the eastern side of the site.

Reworked soils were located locally along the northern boundary becoming thicker westwards. These reworked natural gravels were encountered down to depths ranging between 2.45m and 3.25m bgl interpreted to reflect the infilling processes which was noted on the historical OS maps from 2001.

The first natural soil encountered is a consistent layer of Alluvium which is present across the entire site. Alluvium was encountered down to depths ranging between 1.30m and 4.50m bgl. Given the high organic content this material is considered to be highly compressible and unsuitable as a founding stratum due to unacceptable settlements.

This was underlain by a consistent medium dense to dense granular layer of superficial gravel known as the Shepperton Gravel Member down to depths ranging between 6.10m and 8.00m bgl.

The superficial gravels were underlain by structureless chalk comprising layers of gravelly silt (Grade Dm) and silty gravel (Grade Dc) down to the base of the exploratory holes in excess of 15.00m bgl. BH1 encountered a weak zone between 7.00m and 8.50m bgl indicated by low SPT ‘N’ values of 0 and 4 interpreted localised zone of weakness at the top of the formation in this area. No other significant zones of weakness were encountered across the site within this material which supports the conclusions of the natural cavities risk assessment that there is no anticipated risk of subsidence from natural cavities beneath the site.

Groundwater was encountered as water strikes ranging between 1.00m and 4.90m bgl and standing levels between 1.20m and 4.60m bgl within the Made Ground, Alluvium and Shepperton Gravel Member soils across the entire site. Subsequent groundwater monitoring recorded standing

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water levels between 0.75m and 2.39m bgl. It is considered the groundwater is in continuity with Broadwater Lake.

5.2 EXCAVATIONS

Conventional plant should be sufficient for the excavation of the underlying soils at the site, however breaking equipment will be required within the areas highlighted yellow on the hardstanding plan. Given the granular nature of the Made Ground soils it is likely shallow excavations will be unstable in the short term, therefore likely requiring trench support.

Excavations should remain dry down to a depth of 0.75m bgl, taken from the shallowest groundwater reading during winter when it is considered the wettest period of the year.

5.3 FOUNDATIONS

This ground investigation has identified variably deep Made Ground and Reworked Ground overlying highly compressible soft Alluvium accompanied with shallow groundwater levels of which is considered to be in continuity with the adjacent lake. Therefore, the ground conditions listed above will be problematic for shallow foundations and it is likely alternative foundations such as piles will be required for the proposed development.

The deep boreholes (BH1-BH9) undertaken as part of this ground investigation were positioned in areas where proposed structures were proposed to aid with foundation design. However, given the development proposal has changed the majority of the larger structures are proposed to be constructed on proposed reclaimed land forming the extension to the north of the peninsula. This area was not covered by this intrusive investigation. Therefore, it is considered further ground investigation will be required to form an accurate foundation solution. Further deep boreholes in this area to locate the depth of the underlying chalk will be required.

5.3.1 Shallow Foundations

Given the presence of thick near surface Made Ground, Reworked Ground and Alluvial soils it is considered shallow foundations will be unsuitable for settlement sensitive structures due to unacceptable total and differential settlements under applied foundations loadings.

Shallow reinforced raft foundations may be considered for small, low-bearing structures where a small amount of settlement can be tolerated, while keeping differential settlement to a minimum. A reinforced raft foundation could be considered founded within the underlying near surface Made

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Ground or Reworked Ground. The following measures should be taken prior to construction of the raft:-

- Excavation of the underlying soil to a depth of 1.00m with heavy proof rolling of the resultant sub-grade.
- Making up the void with a Type 1 aggregate, properly rolled and reinforced with geotextile at 0.30m centres.
- Engineer designed reinforced raft foundation in accordance with NHBC Standards Chapter 4.4.

The amount of settlement will be reflective of the properties of the engineered fill. Consideration should also be given to the shallow groundwater levels (~0.75m bgl) which further limit the suitability of shallow foundations.

5.3.2 Piled Foundations

This intrusive investigation was tailored to the previous development proposal and therefore preliminary working loads for piles were calculated for specific areas of the peninsula where structures were proposed. The updated development proposal (shown in Appendix A) indicates the majority of the structures are located on a proposed extension to the northern side of the peninsula. As discussed above further investigation will be required to form a suitable foundation design in this area of reclaimed land.

However, for reference the preliminary working loads for specific areas of the peninsula investigated by this investigation are provided below.

Given the variable near surface ground conditions located across the peninsula, working loads for a range of pile depths and sizes have been calculated using specific boreholes as shown in the table below.

Location	**Boreholes**
North-west corner	BH8 and BH9
Centrally along the northern boundary	BH7
North-east corner	BH5 and BH6
Centrally along the southern boundary	BH2
Centrally along the eastern boundary	BH3 and BH4

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Piles would extend through the Made Ground, Reworked Ground, Alluvium and Shepperton Gravel Member and terminate within the underlying Upper Chalk.

The advice of specialist piling contractors should be sought to formulate a suitable piling technique and type for the ground conditions encountered at this site, before commencement of the works.

It is anticipated that a CFA pile system will be the most appropriate on this site given the ground conditions. The ground water is likely to be relatively static given the fact it is considered to be in continuity with the adjacent lake. However, care should be taken to ensure that washing away of concrete does not take place which could weaken the pile, also known as 'necking'.

The following table provides working loads for a range pile diameters and depths for the specified areas. The working loads are based on the skin friction of the superficial gravel and the base resistance of the Upper Chalk. The Made Ground and Reworked Ground soils have been ignored as part of the calculations and a negative skin friction has been applied to the Alluvial soils.

(Location)	Depth of the pile (m bgl)	Founding Stratum	Pile Working Loads (kN)		
			Pile diameter 300mm	Pile diameter 450mm	Pile diameter 600mm
North-west corner (BH8 and BH9)	7.5	Upper Chalk	35	85	150
	10	Upper Chalk	35	85	150
	12.5	Upper Chalk	65	150	270
Centrally north (BH7)	7.5	Upper Chalk	30	80	140
	10	Upper Chalk	60	140	260
	12.5	Upper Chalk	60	140	260
North-east corner (BH5 and BH6)	7.5	Upper Chalk	45	95	175
	10	Upper Chalk	55	130	230
	12.5	Upper Chalk	70	160	280
Centrally south (BH2)	7.5	Upper Chalk	25	70	140
	10	Upper Chalk	35	85	160
	12.5	Upper Chalk	35	100	185
Centrally east (BH3 and BH4)	7.5	Upper Chalk	40	90	160
	10	Upper Chalk	50	120	220
	12.5	Upper Chalk	65	160	280

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An overall FOS of 3.0 has been applied

The proposed development indicates there are no buildings structures located within the area surrounding BH1. However, should the proposed development change to including buildings structures in this area further investigation is likely to be required given the zone of weakness identified between 7.00m and 8.50m bgl.

5.4 FLOOR SLAB DESIGN

Floor slabs at the site should be suspended given the general depth of Made Ground across the site.

The advice given within the NHBC Standards regarding the construction of floor slabs should be followed.

5.5 SULPHATE ATTACK ON UNDERGROUND CONCRETE

Sulphate tests were undertaken to give an indication of the aggressivity of the ground in relation to buried concrete, as set out in the Building Research Establishment (BRE) Special Digest 1 (2005) Concrete in Aggressive Ground, Part 1: Assessing the aggressive chemical environment.

Therefore in accordance with the BRE Special Digest, these results have been given in the table below, in relation to strata type and required Design Sulphate Class and site Aggressive Chemical Environment Classification (ACEC)**.**

Strata	Design Sulphate Class	Aggressive Chemical Environment Classification
Made Ground	**DS-1**	**AC-1**
Reworked Ground	**DS-2**	**AC-2**
Alluvium	**DS-2**	**AC-2**
Shepperton Gravel Member	**DS-1**	**AC-1**
Upper Chalk	**DS-1**	**AC-1**

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5.6 ACCESS ROADS AND PARKING

Seven Plate Load (equivalent CBR) Tests were undertaken at depths ranging between 0.10m and 0.45m bgl. Three plate load tests were undertaken on the concrete including CBR2 – CBR4 at depths ranging between 0.10m and 0.20m bgl and recorded equivalent CBR values between 9.95% and 41.87%.

The remaining four plate load tests were undertaken within the Made Ground soils and recorded equivalent CBR values between 5.24% and 19.47%.

Laboratory CBR tests were undertaken on selected near surface samples. The Made Ground samples recorded CBR values between 0.5% and 22.1% and the Reworked Ground samples recorded CBR values between 35.3% and 73.4%.

Made Ground has been proven across the site, and given the unknown origin of the soil, its variability and the likelihood and proven possibility for soft-spots, we recommend that any areas of soft or deleterious material should be excavated, replaced with a properly compacted coarse-grained fill and proof rolled prior to construction.

In addition, to avoid uneven and excessive settlement in hard-standing areas it is recommended that the following precautions are taken:-

- Heavy proof-rolling of the exposed sub-grade strata
- Excavation of soft spots encountered and replacement with well compacted granular material
- The usage of a geo-textile separator layer above the sub-grade.
- A design CBR value of 5% is adopted

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5.7 INFILTRATION

Appropriately designed sustainable drainage systems (SuDS) are more sustainable than using piped drainage to local sewer systems. However, infiltration measures close to buildings may result in undermining of foundations and softening of soils leading to instability. Attenuation measures should be located at suitable distances from foundations and infrastructure.

Given the high water table and general depth to natural soils it was not possible to undertake infiltration testing within the natural soils. Therefore, infiltration tests were undertaken within the near surface Made Ground soils covered by SA2 and SA3 and Alluvium within SA1.

Currently rainwater is continuously infiltrating through the Made Ground soils so the proposed development is unlikely to impact this. However, as part of this investigation leachate testing has also been undertaken on Made Ground soils to assess the risk of conventional soakaways within Made Ground to controlled waters given the proximity to Broadwater Lake and the underlying principle aquifer. The results of the leachate tests are discussed within section 6.2.

The general methods set out in BRE 365 Digest were followed and the infiltration rates for each BRE 365 test are presented below and the graphs are shown in Appendix B.

Test Location	**Infiltration Rates (m/s)**			
	Test 1	Test 2	Test 3	Average
SA1	No recorded drop in water level over 44 hours	-	-	-
SA2	$2.94x10^{-4}$	$1.99x10^{-4}$	$1.95x10^{-4}$	$2.29x10^{-4}$
SA3	$5.72x10^{-4}$	$1.99x10^{-4}$	$3.53x10^{-4}$	$3.74x10^{-4}$

The results indicate three repeat infiltration tests were completed within the Made Ground soils of SA2 and SA3 as required by the guidance within BRE 365 Digest. As such it is considered conventional soakaways are viable at this site within the Made Ground soils.

The results are presented in Appendix B.

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Given the water table is located well above the chalk interface and there is no evidence of dissolution features at this site the risk of soakaways reactivating existing dissolution features is considered to be negligible.

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5.8 GAS PROTECTION

The risk of ground gases impacting the site was assessed by reference to the paper “A pragmatic approach to ground gas risk assessment for the 21st Century” Card and Wilson, 2011. And determined that the site may be at risk from ground gases should deepened Made Ground soils be encountered.

Four gas monitoring visits were undertaken alongside groundwater monitoring within BH3, BH6 and BH9 to provide a preliminary review of the ground gas regime at the site between 09/03/2023 and 29/03/2023. Methane was recorded between below detection limits and 0.6% in all visits with lower exposure limits between 13.6% and 15.7%; carbon dioxide was recorded between 0.1% and 0.8% with oxygen between 0.6% and 19.3%. Peak flow was recorded at 0.27l/h and atmospheric pressure was recorded between 986mb to 1011mb.

Therefore, the worst-case gas screening value (GSV) is 0.00216.

Based on the conditions measured during the monitoring visits carried out to date, in accordance with BS8485:2015 and CIRIA C665, 2007 this would be considered as a Characteristic Situation 1 (CS1) due to no significantly elevated levels recorded.

It is considered further investigation may be required given the potential sources of gas present both on-site and off-site. Further investigation will likely involve additional monitoring visits within the standpipes already installed. Additional monitoring wells may also be requested in the wider site area.

The site is located in an area where less than 1% of homes exceed the action level of 200Bq/m^3 for radon gas, and therefore no radon protection measures are necessary in the construction of new dwellings or extensions.

The area of Made Ground impacted by hydrocarbons may cause a vapour risk, however given this area is proposed to be a mixture of hardstanding and soft landscaping with no proposed structures as such there is currently no risk to the end users. Should the proposed development change to include buildings in this area where vapours can enter confined rooms further assessment by a suitably qualified engineer should be undertaken.

Full details of gas concentrations and gas flow data recorded during the monitoring visits are given in Appendices.

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6 GEO-ENVIRONMENTAL INTERPRETATIVE SECTION

6.1 RISKS TO HUMAN HEALTH

6.1.1 Introduction

Environment Agency guidance LCRM *Land Contamination: Risk Management*, (EA, 2019), states that human health risk assessment should be undertaken by a tiered approach using the source-pathway-receptor principle. A desk study constitutes the first tier, and this was previously undertaken by Geo-integrity Ltd., ref. 22-10-12, dated November 2022.

The conclusions of this phase were that:-

"Given the proposed development of the site will be mainly commercial with some minor residential end usage, it is considered that there is a low to moderate risk to end users. However, the risk of encountered localised pockets of contamination is considered to be moderate to high. There is also a perceived moderate risk of contamination sources that may be affecting the Principal groundwater Aquifer beneath the site and as the site is in a Source Protection Zone, this would need to be dealt with as part of the development."

It was determined that there are several primary potential sources of contamination on-site relating to:

- *"Historical Hydrocarbons within the ground from the human history in the area of aggregate processing*
- *Historic asbestos within any made ground from human history in the area of aggregate processing*
- *Historic metals and PAH's within any made ground from human history in the area of aggregate processing*
- *PCB's from the on-site electricity sub-station*
- *Ground gas from on and off-site landfill sites*
- *Elevated levels of contaminants associated with the on-site landfill"*

Results are analysed under the second tier, known as a Generic Quantitative Risk Assessment (GQRA), which uses generic guideline values to compare site chemical data against, and the final tier would be a Detailed Quantitative Risk Assessment (DQRA), which use data derived from the ground investigation to assess risks to identified receptors.

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The assessment included in this report comprises a GQRA, which is undertaken by comparing soil contaminant concentrations from this investigation with conservative Generic Assessment Criteria (GAC). GAC for various land use and exposure scenarios have been selected from the following sources:

- CL:AIRE Category 4 Screening Levels (C4SL);
- LQM Suitable for Use Levels (S4UL);
- CL:AIRE/EIC/AGS GAC

The GAC have been derived using the Environment Agency Contaminated Land Exposure Assessment (CLEA) model, for a range of land uses and exposure scenarios, including:

- Residential with the consumption of home-grown produce;
- Residential without the consumption of home-grown produce;
- Commercial;
- Allotments;
- Public Open Space near residential housing (POS_{resi}); and
- Public Open Space public park scenario (POS_{park})

Given the proposed development will be mainly commercial with some minor residential end-use both a “Commercial” and “residential with the consumption of home-grown produce” land-use scenario has been selected, for this assessment.

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6.2 RESULTS OF CHEMICAL TESTING

Thirteen near surface soil samples were chemically tested the details of which are specified in section 4. The samples tested include:

Made Ground Samples:

- TP1 at a depth of 0.50m bgl
- TP10 at a depth of 0.80m bgl
- TP12 at a depth of 0.80m bgl
- TP6 at a depth of 0.50m bgl
- TP9 at a depth of 1.40m bgl
- TP14 at a depth of 0.60m bgl
- TP5 at a depth of 0.50m bgl
- TP3 at a depth of 1.20m bgl
- TP4 at a depth of 0.75m bgl
- TP4 at a depth of 2.00m bgl
- CBR5 at a depth of 0.75m bgl
- TP2 at a depth of 0.50m bgl

Natural Soil Sample

- TP13 at a depth of 1.30m bgl

The above samples were screened against the relevant GAC for a ‘Commercial’ land use scenario as described above and identified no significantly elevated levels.

The above samples were also screened against the relevant GAC for a “residential with the consumption of home-grown produce” land-use scenario and identified elevated levels of polyaromatic hydrocarbons (not deemed a risk see section 6.2.3) within four Made Ground samples and total petroleum hydrocarbons within three Made Ground Samples.

6.2.1 Asbestos

Screening for the presence of asbestos indicated no asbestos was present within each of the twelve Made Ground samples tested.

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6.2.2 Total Petroleum Hydrocarbons

The intrusive investigation identified a localised area of hydrocarbon odour and staining within TP4 and CBR5 situated adjacent to a historic concrete bund located at the north of the site. As such specific testing including an assessment of both aromatic and aliphatic hydrocarbons was undertaken on three representative samples. When compared to the relevant S4UL's for a 'Commercial' land-use scenario no significantly elevated levels were recorded.

Hydrocarbon levels were much higher within the Made Ground soil samples taken from TP4 and CBR5 compared to the rest of the site, being located adjacent to the historic bund identified at the north of the site. The levels were below the relevant S4UL's for a 'Commercial' land-use scenario and therefore there is no risk to the end users for a proposed commercial site.

However, when compared to a "residential with the consumption of home-grown produce" land-use scenario elevated levels of TPH were encountered within TP4 and CBR5.

A total of three samples recorded elevated levels of total petroleum hydrocarbons including two samples taken from TP4 at depths of 0.75m and 2.00m bgl and one sample taken from CBR5 at a depth of 0.75m bgl. Elevated levels of TPH C8 – C10, TPH C10 – C12, TPH C12 – C16, TPH C16 – C21, TPH C21 – C35. The table below shows the range of elevated levels, the number of samples elevated and the relevant GAC.

TPH Band	No. of samples exceeded (out of thirteen)	Recorded Elevation Range (mg/kg)	Relevant GAC (mg/kg)
TPH C8 – C10	2	76 - 86	27
TPH C10 – C12	2	400 - 490	74
TPH C12 – C16	3	600 – 4500	140
TPH C16 – C21	3	1000 – 6900	260
TPH C21 – C35	1	3400	1100

6.2.3 Polyaromatic Hydrocarbons (PAHs)

Elevated levels of polyaromatic hydrocarbons were encountered within four out of the thirteen samples tested when compared to the GAC for a “residential with the consumption of home-grown produce” land-use scenario. Four sample recorded elevated levels of dibenz(a,h)anthracene and one sample recorded elevated levels of three PAHs including benzo(b)fluoranthene, benzo(a)pyrene and dibenz(a,h)anthracene.

Dibenz(a,h)anthracene was recorded to be elevated within four samples taken from TP5 at a depth of 0.50m bgl, TP14 at a depth of 0.60m bgl, TP4 at a depth of 2.00m bgl and CBR5 at a depth of 0.75m bgl. Elevated levels ranged between 0.25mg/kg and 1.2mg/kg.

Three PAH’s were elevated within one sample taken from CBR5 at a depth of 0.75m bgl. Thes included dibenz(a,h)anthracene recorded at 1.2mg/kg, benzo(b)fluoranthene recorded at 6.1mg/kg with the relevant GAC being 2.6mg/kg and benzo(a)pyrene recorded at 4.7mg/kg with the relevant GAC being 2.2mg/kg.

Due to the conservative approach to calculating the S4UL‟s we have decided to use the C4SL for BaP as a surrogate marker for the PAH mixture encountered on site. In order to do this the three criteria below need to be met:-

- The SM (BaP) must be present in all soil samples.
- The profile of the different PAH relative to BaP should be similar in all samples.
- The PAH profile in the soil samples should be similar to that used in the pivotal toxicity study on which HBGV was based i.e. the Culp study.

This was the case within all samples where PAHs were encountered and the soil concentration of BaP in all cases was less than the relevant C4SL of 5mg/kg. Therefore, it is considered that the risk to end users of the site was below the C4SL level which is defined as “there is no risk that land poses a significant possibility of significant harm”, therefore in line with DEFRA authorised guidance we consider that the PAHs do not cause a risk to end users across the site. The BaP Surrogate Marker calculation sheets are including in Appendix C.

6.2.4 Polychlorinated Biphenyls

One sample of Made Ground taken from TP14, positioned adjacent to the on-site electricity substation, at a depth of 0.60m was tested for PCB’s and recorded below detectable limits for each of the twelve congeners.

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6.2.5 Natural Soil

The natural soil sample recovered from the underlying Alluvium recorded no significantly elevated levels of contaminants and therefore poses no significant risk to human health or the environment.

6.2.6 On-site Landfill

The previous desk study identified an unregistered historic landfill which covers the south-east corner of the peninsula (a landfill plan is shown in Appendix A) and extends eastwards where a lake currently exists . Exploratory holes BH3, TP12, TP11 and TP10 were positioned within the boundary along the eastern side of the peninsula to assess the ground conditions and collect samples for laboratory testing.

The ground condition indicated Made Ground soils down to a maximum depth of 2.45m bgl comprising loose sandy gravels with some anthropogenic material including brick, concrete with some slag and ash. The composition of the Made Ground and depth gave no clear indication that a historic landfill is still present along the east side of the peninsula. In addition, no significantly elevated levels of contaminants were recorded within the Made Ground samples taken from TP10 at a depth of 0.80m bgl and TP12 at a depth of 0.80m bgl.

6.3 RISK TO END USERS

Given the findings of the desk study, walkover survey, intrusive investigation and laboratory testing it is considered that the risk of contamination to construction workers, end users and surrounding residents from the proposed commercial development at this site is low. However, given the updated development proposal will include minor residential land-uses including camping areas it is considered there may be a risk to the end users from localised hotspots of contamination. This ground investigation identified elevated levels of hydrocarbons locally at the north of the peninsula surrounding a historic bund. Given the limitations outlined within section 3.2 it is considered there may be additional hotspots of contamination within both the peninsula and the wider site area.

Therefore, it is considered some remedial measures may be required to protect the end users of the site. Currently a single hotspot has been identified surrounding the concrete bund shown on the remedial plan.

The on-site landfill indicated by the previous desk study located at the south-east corner of the peninsula was investigated with a deep borehole and trial pits. No significant evidence of landfill material was encountered. The desk study information indicates it was run between 1993 and 2004

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and was used to dispose non-biodegradable waste therefore the risk of elevated levels of contaminants is unlikely to be significant. The historic landfill does extend eastwards underlying a lake. Further investigation could be undertaken to assess the ground conditions below the lake immediately east of the peninsula.

We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development.

6.3.1 Reducing Risk to End Users

To break the exposure pathways to site users, it is considered that the pathway between the zoned area of impacted Made Ground soils and the end users needs to be broken (area shown on the remedial plan in Appendix A).

To remediate the zoned area of Made Ground impacted by hydrocarbons shown on the remedial plan, a cover system could be engineered within areas of soft landscaping where there is a risk. It is considered that any disturbance or intermixing of soils is unlikely to exceed 600mm depth from earthworm activity, double digging and root depth as stated in “Cover Systems for Land Regeneration" prepared by RSK ENSR Ltd. Therefore, a cover system would require 600mm layer of clean cover, consisting of at least 150mm of topsoil and 450mm of clean imported clay. This cover system is not required in areas of hardstanding (driveways, paving areas and under the building), where this will break the pathway between contaminated soils and site users.

During the development it is recommended that this process of placing the cover layer is tightly monitored and recorded (soil tests, photographs, depth measurements etc) as a verification report will be required to prove its existence to Local Authorities or financing organisations (mortgage companies etc).

6.3.2 Reducing Risk to Construction Workers

For the construction workers, remedial measures would not be in place when they undertake the site work and therefore different measures should be taken to reduce the risk of coming into contact with the soil and break the pollutant linkage with these receptors.

To reduce the risk to as low as reasonably practicable for the construction workers it is recommended that high standards of personal hygiene should be maintained amongst the site personnel at all times. All personnel coming into contact with the soil, ground workers in particular, should be instructed to use gloves when on site to avoid dermal contact and restrict inadvertent

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hand-to-mouth ingestion. Washing facilities should be provided for the site staff to use, and should be used prior to eating or smoking. Reference should be made to the HSE Document, “Protection of Workers and the General Public during Development of Contaminated Land”.

It is however recommended that a watching brief for undiscovered contamination is included in the Works Method Statement. Given the long human history of the surrounding area, it is always possible that some previously undiscovered contamination may be encountered. If this is the case, the area should be isolated and contact be made to a suitably qualified professional for further advice. This is particularly important if the contamination is possibly ACM or liquid based.

6.4 POST REMEDIATION VERIFICATION

Any remedial measures undertaken at the site will require independent verification once completed to satisfy the relevant regulatory authorities and other interested parties, including future owners of the site, banks, insurers, and mortgage companies. This usually involves a small validation investigation to confirm that the recommended work has been successful.

6.5 RISK TO CONTROLLED WATERS

6.5.1 Preliminary Analysis

The assessment of risks to controlled waters follows guidance provided by the Environment Agency and DEFRA in association with the Contaminated Land (England) Regulations 2000 (SI 2000/227). This guidance is Environment Agency’s Remedial Targets Methodology Hydrogeological risk assessment for contaminated land (2006), as such these procedures have been followed.

The previous phase I desk study (ref. 22-10-12) identified the following:

- The site is underlain by a “Secondary A” Aquifer associated with the Superficial Aquifer, overlying a Principal Aquifer associated with the Upper Chalk
- The site is located within a source protection zone (SPZ1 – Inner Catchment)
- The nearest active groundwater abstraction licenses are within 100m south of the site run by Affinity Water at Northmoor Pumping Station
- There are no surface water abstraction licenses recorded within 1000m of the site
- The fieldwork undertaken by this phase II investigation indicated that groundwater levels were recorded at a shallowest depth of 0.75m bgl and it is considered the groundwater is in continuity with Broadwater Lake

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The previous desk study indicated there is a moderate risk of contamination sources that may be affecting the Principal Aquifer beneath the site. Therefore, as part of this investigation groundwater monitoring, sampling and testing has been undertaken.

The groundwater monitoring has indicated groundwater generally flows south.

6.5.2 Chemical Testing

Leachate tests were undertaken on two Made Ground samples taken from TP1 at a depth of 0.50m and TP2 at a depth of 0.50m bgl. Leachate tests were undertaken as part of the controlled waters risk assessment to investigate the risk of placing soakaways in the granular Made Ground soils. The results indicated marginally elevated levels of chromium, copper, nickel, lead and zinc when compared to the EQS values for fresh water, however when compared to the limit values for United Kingdom Drinking Water Standards (UKDWS) none were significantly elevated.

Groundwater samples taken from BH3, BH6 and BH9 were tested for a general suite of contaminants including heavy metals, TPH, a range of PAH's, dissolved organic carbon, pH, a range of essential minerals including calcium, potassium, magnesium and sodium and chemical oxygen demand to assess the risk to controlled waters.

The results were compared to EQS for freshwaters and screening values from the UKDWS. The majority of the determinants were recorded below their respective screening values when compared to both the EQS and UKDWS and were generally below the limit of detection.

Marginally elevated levels of heavy metals were encountered including copper, manganese and nickel as shown in the table below:

Heavy Metal	**Recorded Value Range (µg/l)**	**Number Exceedences**	**EQS Freshwater (µg/l)**	**UKDWS (µg/l)**
Copper	<0.50 – 1.80	1	1(bioavailable)	2000
Manganese	150 - 760	3	123(bioavailable)	50
Nickel	3.2 – 4.8	2	4(bioavailable)	20

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6.5.3 The Metal Bioavailability Assessment Tool (M-BAT)

To assess the bioavailability we have used The Metal Bioavailability Assessment Tool (M-BAT), the results are shown in Appendix C. The results show the bioavailable nickel falls below the site-specific PNEC for dissolved nickel.

The results for manganese show one of the levels now falls below the specific PNEC for dissolved manganese. The bioavailable manganese concentrations have been reduced to between 135µg/l and 350µg/l with the specific PNEC for dissolved manganese ranging between 123µg/l and 266µg/l. Therefore, it can be seen the levels of manganese are only marginally elevated.

The results show copper is still very marginally elevated above the specific PNEC for dissolved Copper. The bioavailable copper concentration remained 1.80µg/l with the specific PNEC for dissolved copper being 1µg/l.

6.5.4 Risk to Controlled Waters Conclusions

Underlying Principal Aquifer

Given the results of the chemical testing it is considered the proposed development is unlikely to pose a significant risk of significant harm to the underlying principal aquifer. This is based on evidence that from the leachate tests no significantly elevated levels were recorded when compared to the UKDWS. In addition, the groundwater samples also recorded no significantly elevated levels of contaminants when compared to the UKDWS other than manganese.

Manganese occurs naturally in many waters but is usually removed during treatment. Black deposits of manganese dioxide can cause discoloured water and the standard is set by UKDWS for aesthetic reasons. Therefore, the overall risk to the underlying principal aquifer from the proposed development is considered to be very low.

Broadwater Lake

Given the results of the chemical testing it is considered the proposed development is unlikely to pose a significant risk of significant harm to the adjacent freshwater lake (Broadwater Lake).

The leachate tests recorded marginally elevated levels of heavy metals including chromium, copper, nickel, lead and zinc when compared to the EQS values for fresh water. In addition, copper and manganese were also marginally elevated within the groundwater samples.

The leachate tests have proved the Made Ground contains quantities of five leachable heavy metals. However, the number of elevated levels recorded within the underlying groundwater which is considered to be in continuity with the adjacent lake were limited to just two heavy metals including copper and manganese which were only marginally elevated once the bioavailability assessment had been completed.

To say there is no risk at all would not be accurate however based on the fact the site has and is currently allowing rainwater to percolate through the near surface soils it is considered the proposed developed will pose no additional risk to the adjacent lake. In fact the proposed commercial development is likely to improve the overall site conditions by removing parts of the Made Ground, during the excavation of soils from the construction of foundations, roads and pavements. The proposed increased hardstanding cover will also reduce leaching activity within the near surface Made Ground soils.

Therefore, the overall risk to the adjacent freshwater lake (Broadwater Lake) from the proposed development is considered to be low.

The Environment Agency is the regulatory body charged with protection of controlled waters and may be a consultee in the planning process. We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development. It is possible the local authority may request further testing given marginally elevated levels of heavy metals have been recorded.

Suitability of Conventional Soakaways

Based on the findings of the chemical testing it is considered there are some quantities of leachable heavy metals within the near surface Made Ground soils. Therefore, it is considered conventional soakaways are not suitable within the near surface soils as this will increase leaching activity.

OR

Based on the findings of the chemical testing it is considered there are some quantities of leachable heavy metals within the near surface Made Ground soils. However, given the fact the site actively allows rainwater to percolate through the near surface soils constructing conventional soakaways within the near surface soils will pose no additional risk to controlled waters. Therefore, it is considered conventional soakaways are suitable within the near surface soils.

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The Environment Agency is the regulatory body charged with protection of controlled waters and may be a consultee in the planning process. We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development.

6.6 RISK TO UNDERGROUND WATER SUPPLY PIPES

Based upon the guidance document from the UK Water Industry Research (UK WIR), 'Contaminated Land Assessment Guidance', February 2014, and the results of the samples tested from the site, it is considered that conventional PE water pipes will not be suitable at this site due to elevated levels of hydrocarbons within the Made Ground soils as shown in the table below.

Test Group	PE Threshold	Range of Elevated Levels	Number of exceedances
EC10-16 TPH	10mg/kg	10 – 4990mg/kg	7
EC16-40 TPH	500mg/kg	2100 – 10300mg/kg	
VOC	2µg/kg	31µg/kg	1
SVOC	2mg/kg	10.06mg/kg	1

Therefore, it is recommended barrier pipe is used across the site. This should be confirmed with the local water company as not all authorities use this guidance.

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7 WASTE DISPOSAL CLASSIFICATION

7.1 INTRODUCTION

Excavation for foundations or services will produce waste soil and possibly other waste streams. As a waste producer you have a duty of care under section 34 of the Environmental Protection Act 1990 to ensure, amongst other things that these wastes are:-

- Correctly stored
- Correctly classify
- Handed only to an authorised person
- Disposed of properly.

To aid with these obligations we have used HazWasteOnline to undertake the Hazard Assessment Screen as part of this investigation, to establish whether the sampled soils should be considered as either hazardous or non-hazardous waste. This classification process is in line with the Environment Agency's guidance WM3 "Guidance on the classification and assessment of waste", Version 1.2,2021.

7.2 RESULTS OF HAZARD ASSESSMENT

The twelve Made Ground samples and one natural sample analysed for the human health risk assessment, listed in section 7.2, have been classified using HazWasteOnline. This intrusive investigation identified three Made Ground soil types across the site which have all been sampled and tested to provide a waste classification for landfill disposal.

The full results of the HazWasteOnline analyses can be seen in the Appendices.

The HazWasteOnline classification summary sheet from this investigation provides a waste classification of non-hazardous waste for ten soil samples including nine Made Ground samples and one natural soil sample. However, three Made Ground soil samples provided a waste classification of hazardous waste.

The three Made Ground samples which were classified as hazardous were taken from TP4 and CBR5 where significant hydrocarbon staining and odour was encountered. The hazwaste online assessment has declared these three samples contain three hazardous properties including:

- HP3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

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- HP7: Carcinogenic "waste which induces cancer or increases its incidence"
- HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

7.2.1 Waste Acceptance Criteria (WAC) Testing Results

To further classify the waste soil for landfill disposal, Waste Acceptance Criteria (WAC) testing has been carried out on one worst case Made Ground sample taken from TP4 within soils impacted by hydrocarbons at a depth of 0.75m. In addition, WAC testing was undertaken on a representative Made Ground sample taken from TP12 at a depth of 0.80m bgl.

The Made Ground soils impacted by hydrocarbons identified within TP4 and CBR5 were originally classified as hazardous waste from the hazwasteonline assessment. The second stage in classification utilises the WAC test results to determine whether the material is classified as either stable non-reactive hazardous waste in a non-hazardous landfill or hazardous waste. The WAC test results indicate there are no elevated levels when compared to the limit values for stable non-reactive hazardous waste. A remedial plan showing the area comprising Made Ground soils impacted by hydrocarbons is shown in Appendix A.

The remaining near surface Made Ground soils have been originally classified as non-hazardous waste from the hazwasteonline assessment. The second stage in classification utilises the WAC test results to determine whether the material is classified as either inert or non-hazardous waste. The WAC testing has recorded no significantly elevated levels and therefore the near surface Made Ground soils can be classified as inert.

Additionally, it is considered that the underlying natural soils beneath the site qualify in accordance with EU Council Decision 2003/33/EC para. 2.1.1. “uncontaminated soil can be classified as inert without testing”.

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As such, given the testing results, currently the underlying soils from the site are considered to be classified as follows:-

Strata	Description of Material	Classification	List of Waste code	Recommended Landfill Tax Rate
Made Ground/Reworked Ground	Naturally occurring soils and stones with man-made materials including brick	Inert	17 05 04	Lower Rate
Made Ground (Locally impacted by Hydrocarbons, area shown on plan in Appendix A)	Naturally occurring soils and stones with man-made materials including brick and trace amounts of asbestos (0.001%)	Stable Non-reactive hazardous waste in non-hazardous landfill	17 05 03	Standard Rate
Natural Soil	Naturally occurring soils and stones (subsoil)	Inert	17 05 04	Lower Rate

All wastes removed from site should be consigned, transported and disposed of in full accordance with all relevant UK legislation.

7.3 RE-USE OF MATERIAL ON SITE

Currently, if surplus arisings are ‘fit for re-use’ on the site and have not been treated, its re-use is allowed within the planning law. If it needs treating prior to re-use, exemptions can be sought from the Environment Agency to allow this activity.

Based upon the human health and groundwater risk assessments, the underlying Made Ground soil is currently considered to be suitable for re-use on a commercial/residential land-use scenario. However, the locally impacted Made Ground is not suitable for re-use, the extent of this material is shown in Appendix A on the remedial plan. This analysis is, however, dependent on the agreement of the Local Authority.

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8 CONCLUSIONS AND RECOMMENDATIONS

We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken.

Barrier pipe will be required at this site due to elevated levels of hydrocarbons, SVOC's and VOC's within the Made Ground soils.

This first phase of intrusive investigation was undertaken solely on the accessible areas of the peninsula. The data collected to date is sufficient to support the conclusions of this report. The surrounding area of the site mainly covered by the lake and islands is not covered by this investigation and it is anticipated further investigation will be required prior to construction works commencing.

Given the development proposals have changed this has altered the location of the proposed buildings. It is considered further investigation including boreholes will be required prior to the development works immediately north of the peninsula where it is proposed to extend the peninsula and construct commercial structures.

This ground investigation has identified a single hotspot of contamination associated with elevated levels of hydrocarbons identified within two exploratory holes surrounding a concrete bund situated at the north of the peninsula. It is considered remedial measures will be required to protect against the end users of the site which overall is deemed to be commercial with minor residential land-use associated with camping areas. It may be requested to undertake additional testing in areas across the peninsula and the wider site area which were previously inaccessible during this intrusive investigation. It is understood additional intrusive investigations are being undertaken by HydroGeo associated with sampling the lake bed covering the area surrounding the peninsula.

A preliminary assessment of the gas regime was undertaken at the site which identified low gas levels indicating a CS1 site, however it may be requested to undertake additional monitoring visits within the standpipes previously installed and/or installation of additional standpipes in the wider site area.

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The on-site historic landfill recorded in the previous desk study was not found to extend onto the peninsula. Further investigation could be undertaken prior to the development phase to assess the ground conditions below the lake immediately east of the peninsula.

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APPENDIX A

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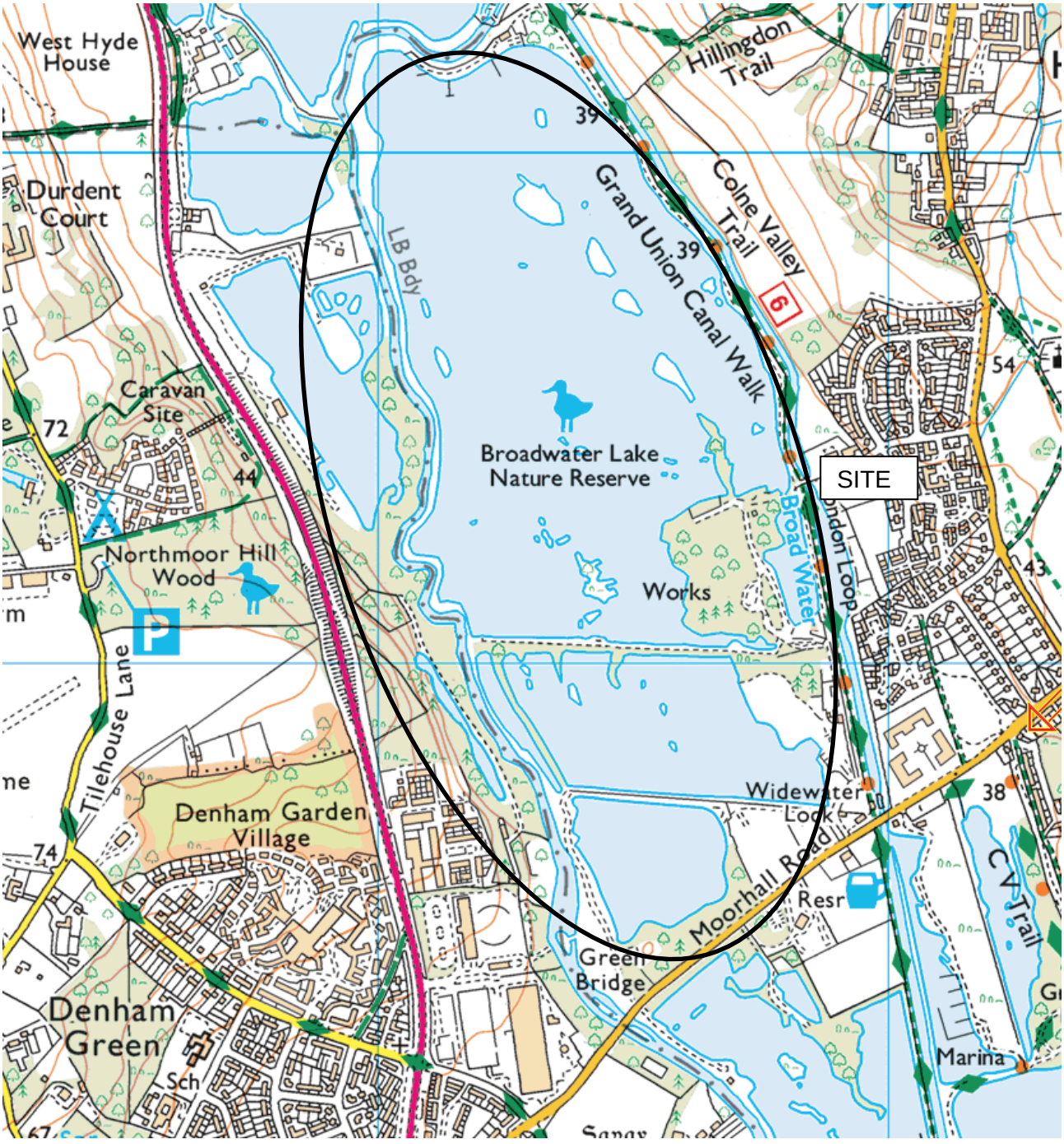
Site Plan



September 2023 **SITE LOCATION PLAN** Report No:- 23-09-03B

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TP1

TP2

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TP3

TP3

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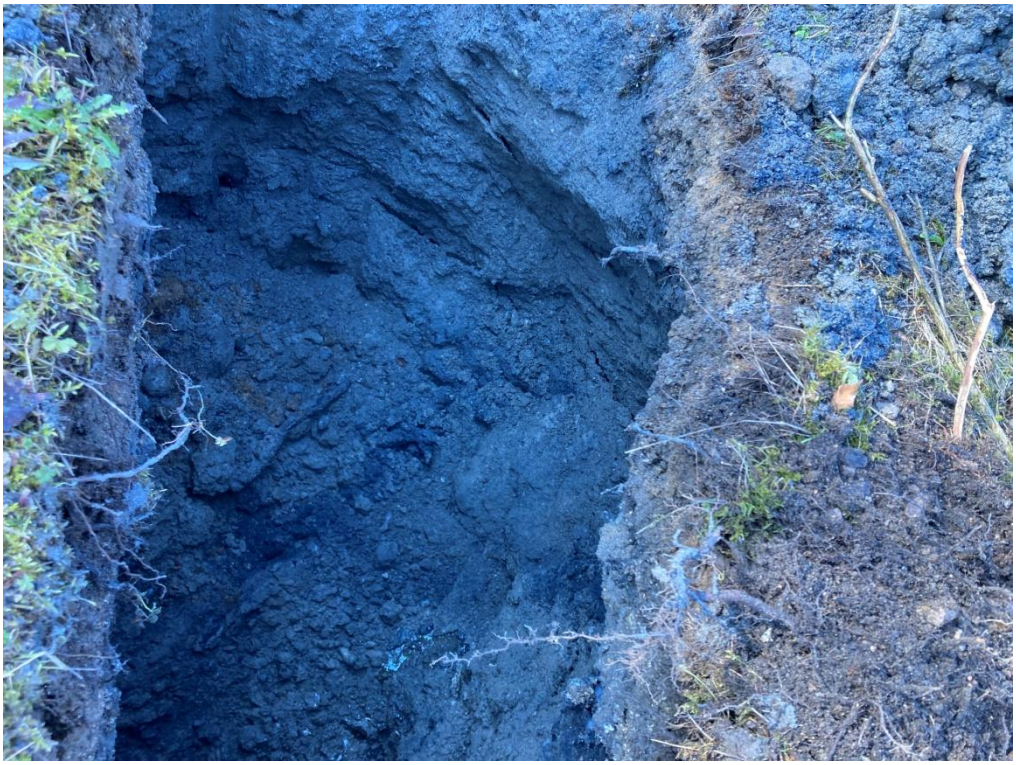
TP4



TP4

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TP4 and historic bund

TP5

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TP6

TP7

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TP8

TP9

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TP10

TP12

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TP12

SA1

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SA2

SA3

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CBR1

CBR2

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CBR3

CBR4

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CBR5

CBR5

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CBR6

CBR7

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BH1

BH2

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BH3

BH3 Monitoring Well

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Location of BH4

Location of BH5 and TP14

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BH6 Monitoring Well

Location of BH7

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Location of BH8

Location of BH9

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BH9 Monitoring Well

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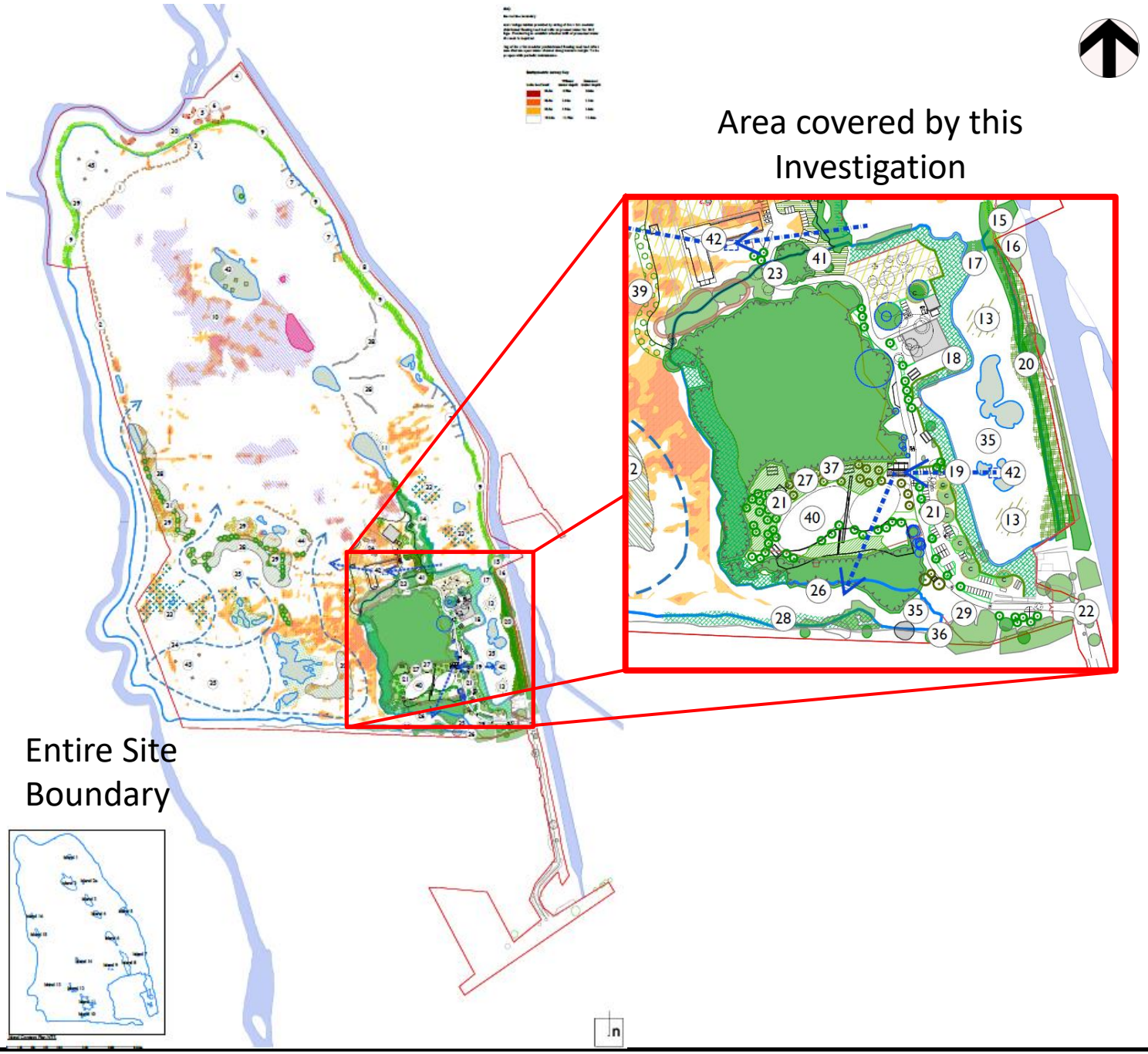

GEO INTEGRITY

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Site Boundary Plan

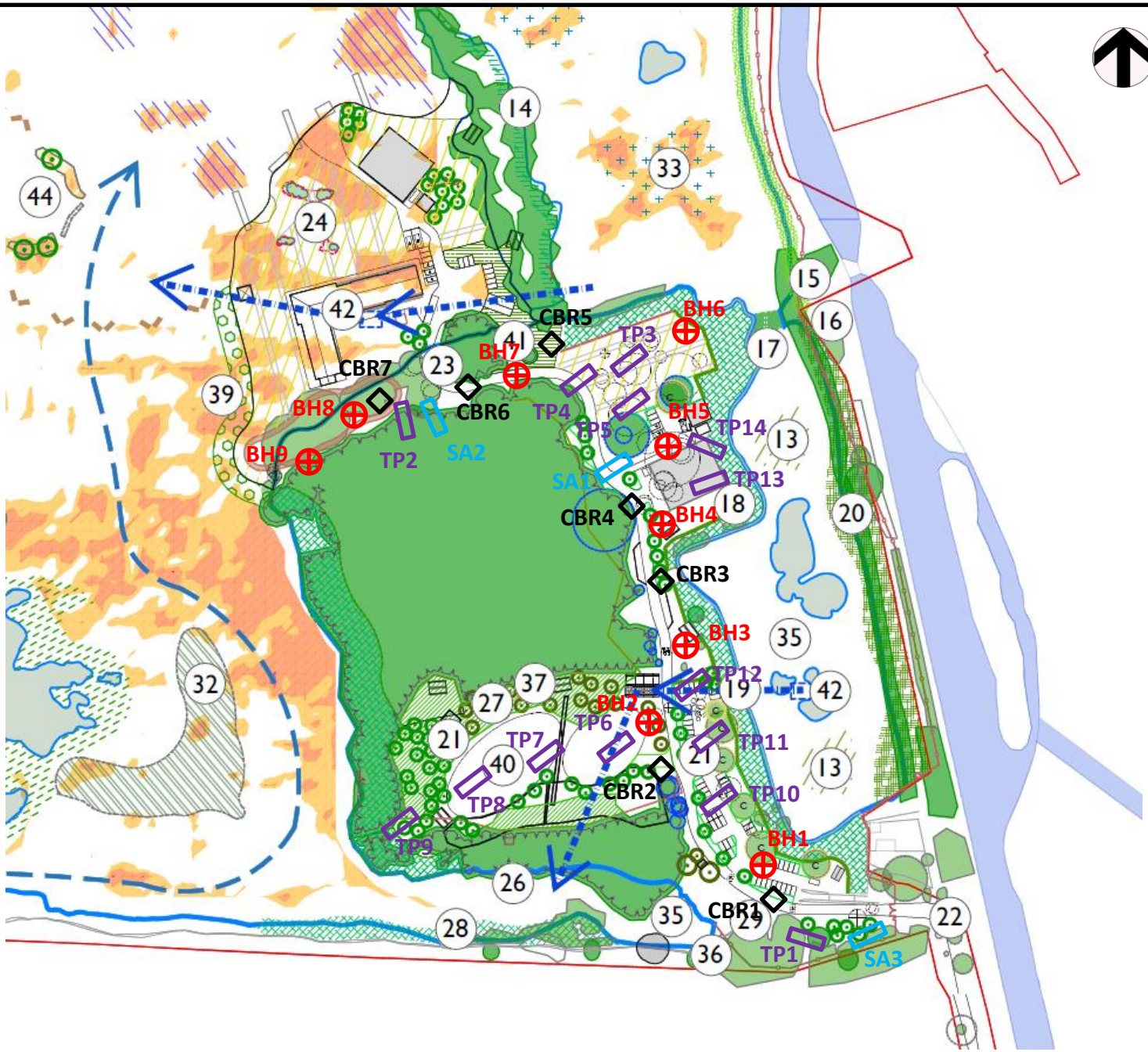
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only



Key

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

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Exploratory Hole Location Plan

SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only

ıke)

te red line boundary

ual / refuge habitat provided by string of 5m x 2m modular
fabricated floating reed bed rafts to protect water for bird
uge. Monitoring to establish whether infill of protected water
h reeds is required.

ing of 5m x 2m modular prefabricated floating reed bed rafts t
ate discrete open water channel along western margin. To be
t open with periodic maintenance

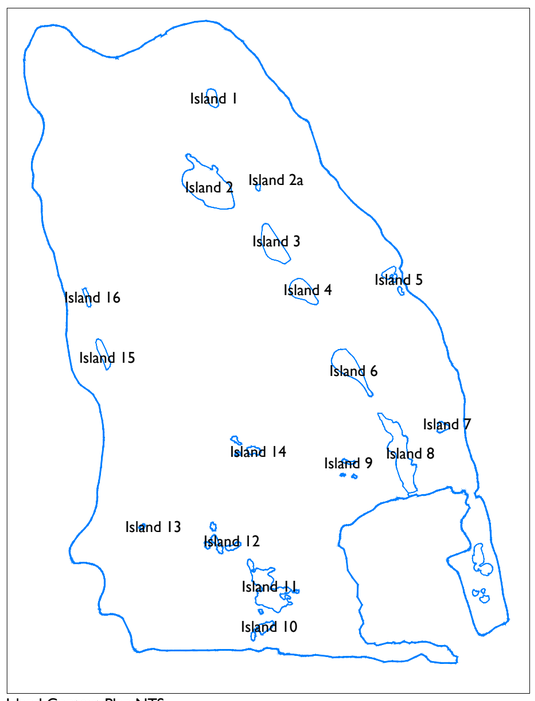
Bathymetric survey Key

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
	<35.5m	>1.96m	>1.64m

Key (Lake)

Site red line boundary

1. Visual / refuge habitat provided by string of 5m x 2m modular prefabricated floating reed bed rafts to protect water for bird refuge. Monitoring to establish whether infill of protected water with reeds is required.
2. String of 5m x 2m modular prefabricated floating reed bed rafts to create discrete open water channel along western margin. To be kept open with periodic maintenance
3. Extend existing jetty for emergency access (remove adjacent jetties)
4. Keep existing entrance to Broadwater Lake Sailing Club for emergency access & retain track to jetty
5. Remove existing structures :
   - Include two parallel hedgerows 10m apart to create a sheltered grassland 'ride' for bats to forage and commute along (running east-west) and providing a sheltered area for nesting birds, mammals, otter couches etc
   - create a series of inviting mounds of varied orientation, shade and openness with aim for badger setts
   - grassland creation and enhancement in open areas to increase wildflowers
   - include small pond if possible (away from gas main)
   - care to be taken in this area with minimal digging due to the existing underground gas main
6. Anglers' WC to be connected to existing waste water in the location of the Broadwater Sailing Club
7. Floating reedbeds creating bays for young fish and sheltered angling stations.
8. Secure site boundary with Grand Union Canal using a bespoke fence sensitively located amongst existing trees, mindful of root protection zones and augmented with thorned native planting species depending on light conditions. Sections will include fence panel sections, thorny shrub planting, wire fences and trellises, to infill the open areas and strengthen more permeable vegetation. Repair and replace derelict hedgerows with laying / dry hedging techniques dependent on condition and light levels. This approaches retains habitat connectivity and desirable existing light levels
9. Enhance ground flora along the lake margin where reeds aren't proposed. Inland from here include areas of enhanced terrestrial ground flora. Enhancement of ground flora with biodiverse species (both sun loving and shade loving) for invertebrates, bats and birds. Installation of bat and bird boxes on trees in this area. Keep the access road mostly as a dark corridor for wildlife movement, with at least the one sunny spot.
10. Reprofile sediments area to required 2m depth for sailing with turbidity curtain to limit water quality effects until sediment settled
11. Diversify existing habitats on island with perimeter emergent vegetation
12. Number Not in Use
13. Enhance shallows as nursery habitat for coarse fish with artificial reefs
14. Dense barrier vegetation to visually screen eastern shore of islands and the reclaimed land from the north. Wind modeling of the lake and agreement of a minimum distance of natural wind trajectory from jetties should be agreed with sailing club
15. Maintain habitat connectivity with refurbishments or replacement of bridge over canal. Otter spraint was found beneath suggesting it is a landmark used by otters. Implement a watching brief during construction to ensure there is no harm to otters. No mitigation or enhancement for otters is needed or recommended.
16. Bat boxes on trees - here and throughout for maximum benefit
17. Bales of Christmas trees to keep out predatory fish. Monitor water flow and potentially enhance connectivity if climate change adversely reduces water levels.
18. Currently there are mature willows around much of the lagoon edge at the water line (with dense buddleia around and behind) and there are areas of high ground with unsafe steep slopes down to the water edge. High areas to be lowered to approximately 2m above water level and steep slopes reprofiled to 45degrees. Non-native buddleia to be removed and replaced with further willows. A border around the lagoon will be densely planted with native flowering, fruiting and thorny shrubs to prevent visual disturbance or direct human access to the lagoon (discrete viewing will be provided through bird hides). Woven willow panels will be used for instant screening while new planting establishes.
19. Proposed 2 m high thorn hedge to back of car park
20. Restoration to an undisturbed marginal vegetation
21. Break up existing concrete in places for root penetration
22. Main controlled access point for site
23. Existing B category tree group avoided
24. Reclaimed land with scattered native trees to visually break up views of existing building and low fertility dry well drained grass community to boatyards. The seed and plant mix for reclaimed land would only serve to make this area attractive. Although it has low potential to benefit bats (due to lighting), green walls and green roofs if feasible could be installed on buildings for invertebrates and to integrate buildings into the landscape. Judiciously located nectar providing planting would enhance the area although openness is important to minimise potential sheltering of wind for sailing.
25. Number not in use.
26. Up to 10 m wide buffer to prevent access, width will vary depending on existing vegetation, topography, presence of concrete surface, substrate and extent of land available
27. Native fruit trees as orchard / fruit walks within camping and activity area. Create an open mosaic habitat for invertebrates here and elsewhere wherever possible
28. Heron Inlet. Protect and enhance backwater with thorny planting and protective fence as required for the inlet to the south west of the peninsula to remain safe for bird and otter passage. Include some emergent vegetation and some grassland patches going down to the water for water vole and sleeping spots for birds or deer
29. Low key approach to drainage with ditches and filtering attenuation through site. Boatwash to go to foul drainage system
30. Grassland and wildflower enhancement in open areas and alongside paths of activity centre
31. Create islands in shallowest parts of the lake to create protective water to the west of the lake. These will include trees and scrub planting
32. Proposed HS2 floating mitigation island
33. Enhance as dabbling areas for birds with submerged coir matresses
34. Deeper channels for water circulation
35. Include tethered habitat rafts with solar panel to power bubbling aerators in areas of semi-enclosed water. Integrated into the masterplan for climate adaptation based on monitoring of the dissolved oxygen levels across the lake over a period of months / years
36. Restrict access to causeway to avoid public safety hazard of quicksand and disturbance to quiet backwater
37. Wildlife pond for invertebrates and dipping activities on north side of cleaving in sun
38. Floating reedbeds provide shelter for water birds
39. Concrete caissons submerged and filled with silt / substrate and planted with vegetation tolerant of submersion such as reeds and willow
40. Species rich amenity grass
41. Zone for assisted natural regeneration
42. Waterpump for circulation
43. Hot water pump
44. New Island
45. Tern rafts within open water
46. Remodel existing island based on:
    a) retain 4 existing trees
    b) create muddy scrape in north of island at same level as the shingle finger the extends north (Summer water levels)
    c) Artificial Sand Marten habitat



Island Context Plan NTS

0 25 50 75 100 150 200 250m

Rev	Amendments	Date	Drwn	Chkd
10	Updated following comments	22.08.23	DB	PO
09	Updated following comments	16.08.23	DB	PO
08	Updated following workshop on 28.07.23 at LBH, Uxbridge	08.08.23	DB	PO
07	Final QA	22.06.23	JR	PO
06	Amendments to the masterplan	21.06.23	JR	PO
05	Amendments to the masterplan	15.06.23	JR	PO
04	Amendments to the masterplan	30.05.23	JR	PO
03	Amendments to the key	23.03.23	JR	PO
02	Amendments to the key	22.03.23	JR	PO
01	First Issue	16.03.23	TK	PO

Project
HWSFAC

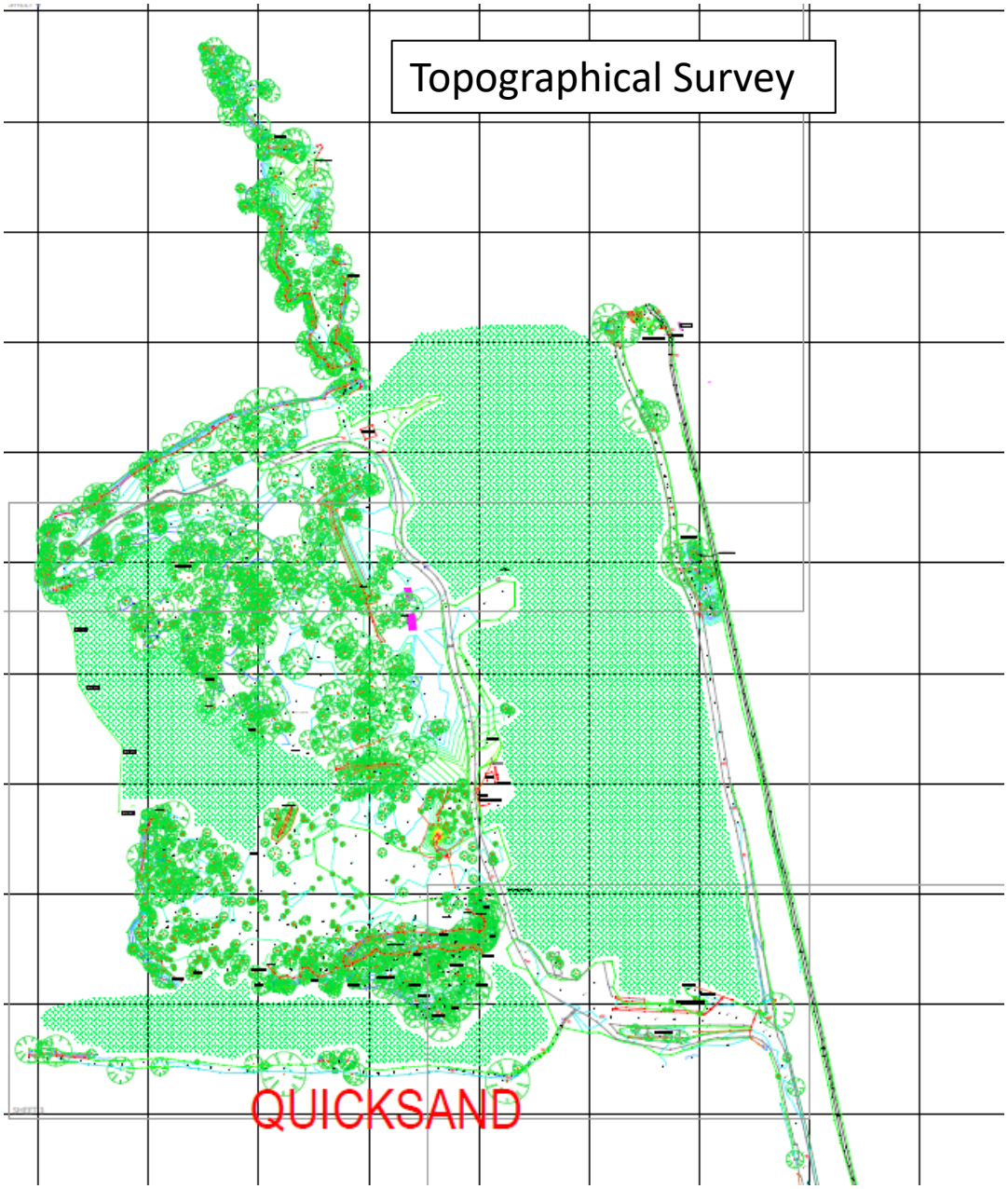
Drawing Title

Ecological Mitigation - Lake

Project No. 2121
Scale @ A1 1:2500
Project Status For planning
Drawing No. HWSFAC-COL-00-XX-DR-L-1010
Revision 10

London 0203 924 9888
Newcastle 0191 24 24 224
York 01904 925 888
colour-udl.com

colour



Key

GEO INTEGRITY

4 Church Street
Maids Moreton
MK18 1QE

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

Topographical Survey

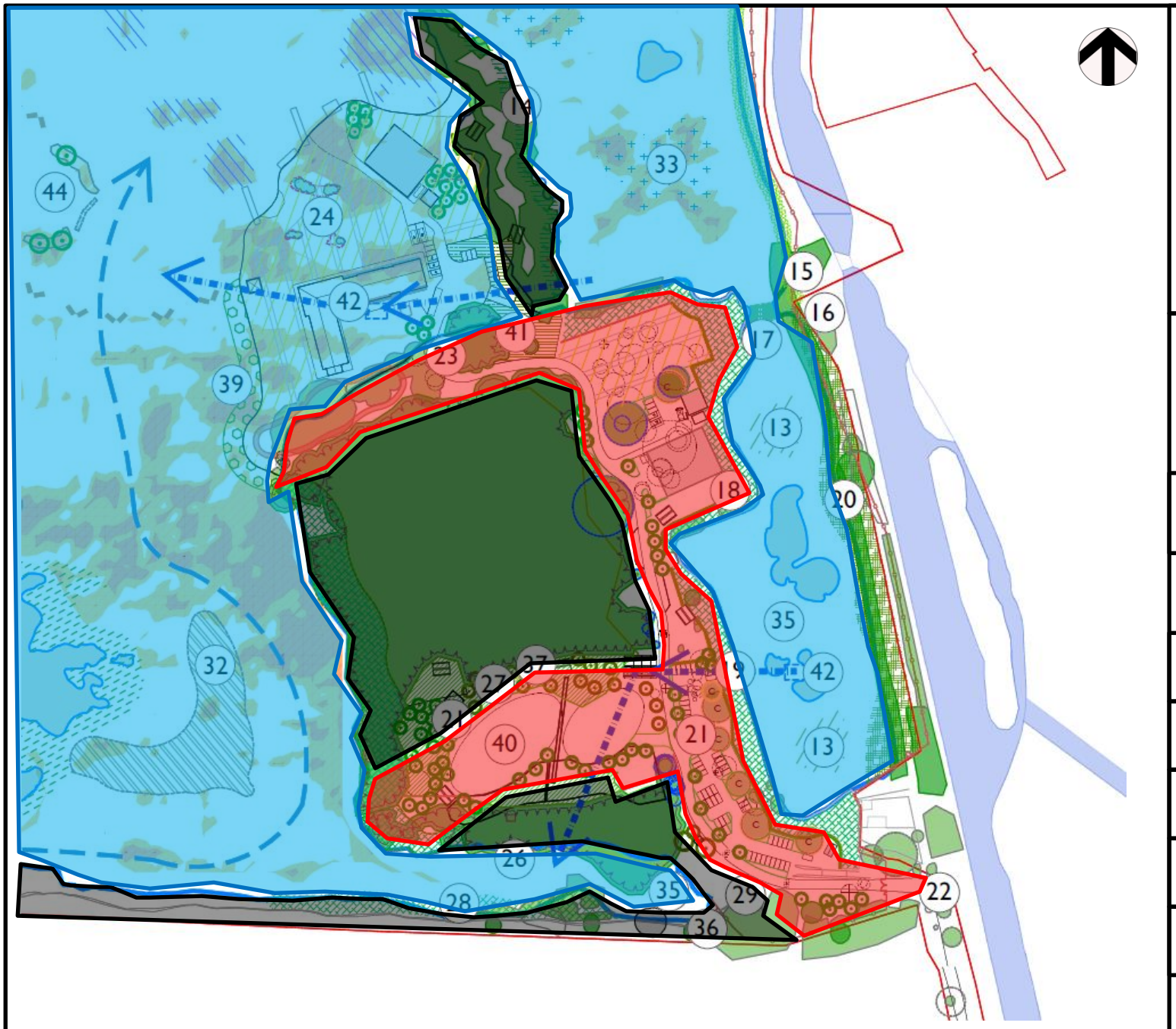
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only



Key

- Accessible Areas
- Areas not accessible
- Lake (Not Investigated)

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Area of Investigation Plan

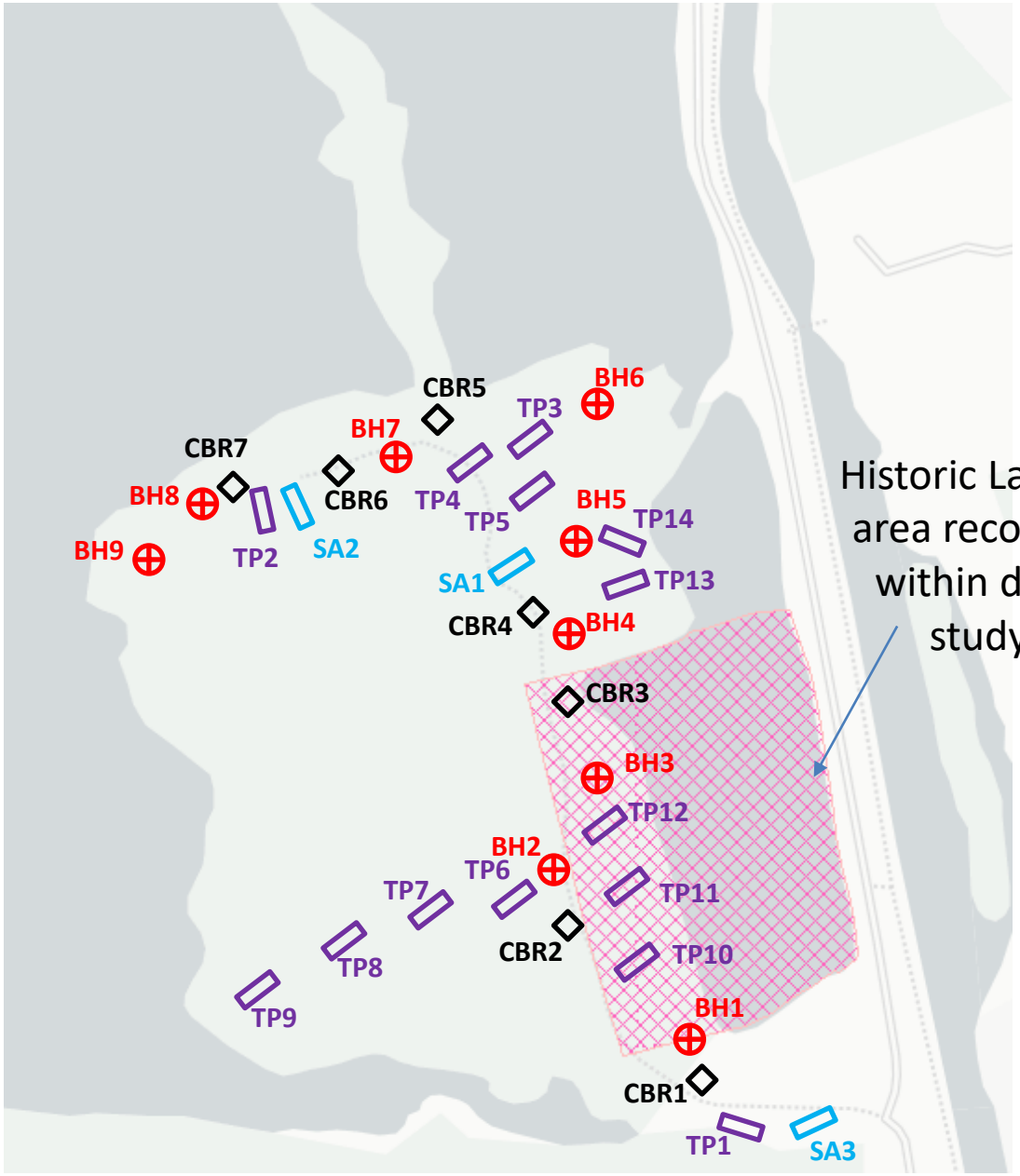
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only



Key

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

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Exploratory Hole Location and Historic Landfill Plan

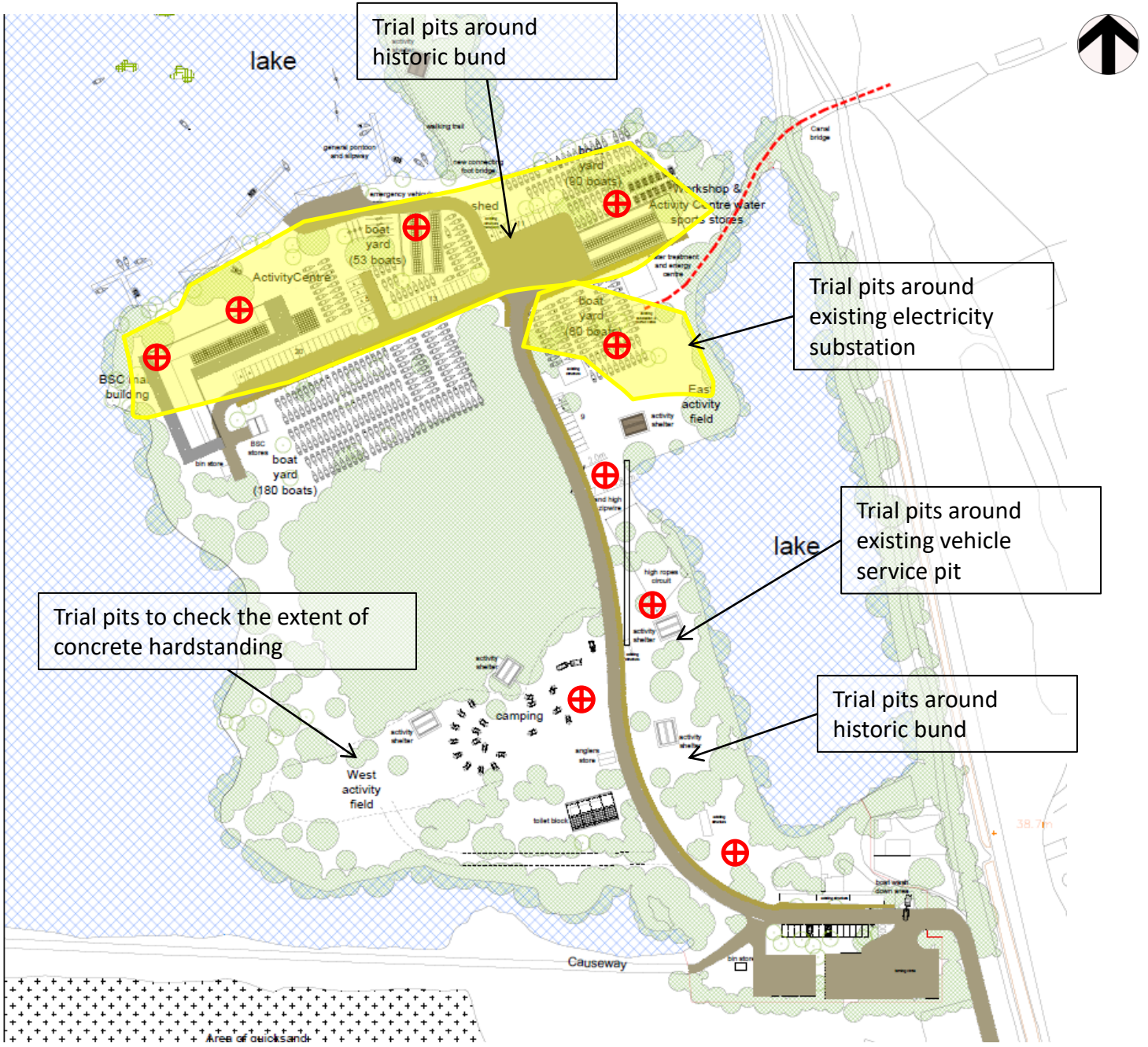
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only



Key

Agreed Locations of Cable Percussive Boreholes

Areas which require clearing of invasive species to allow access

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Walkover Plan

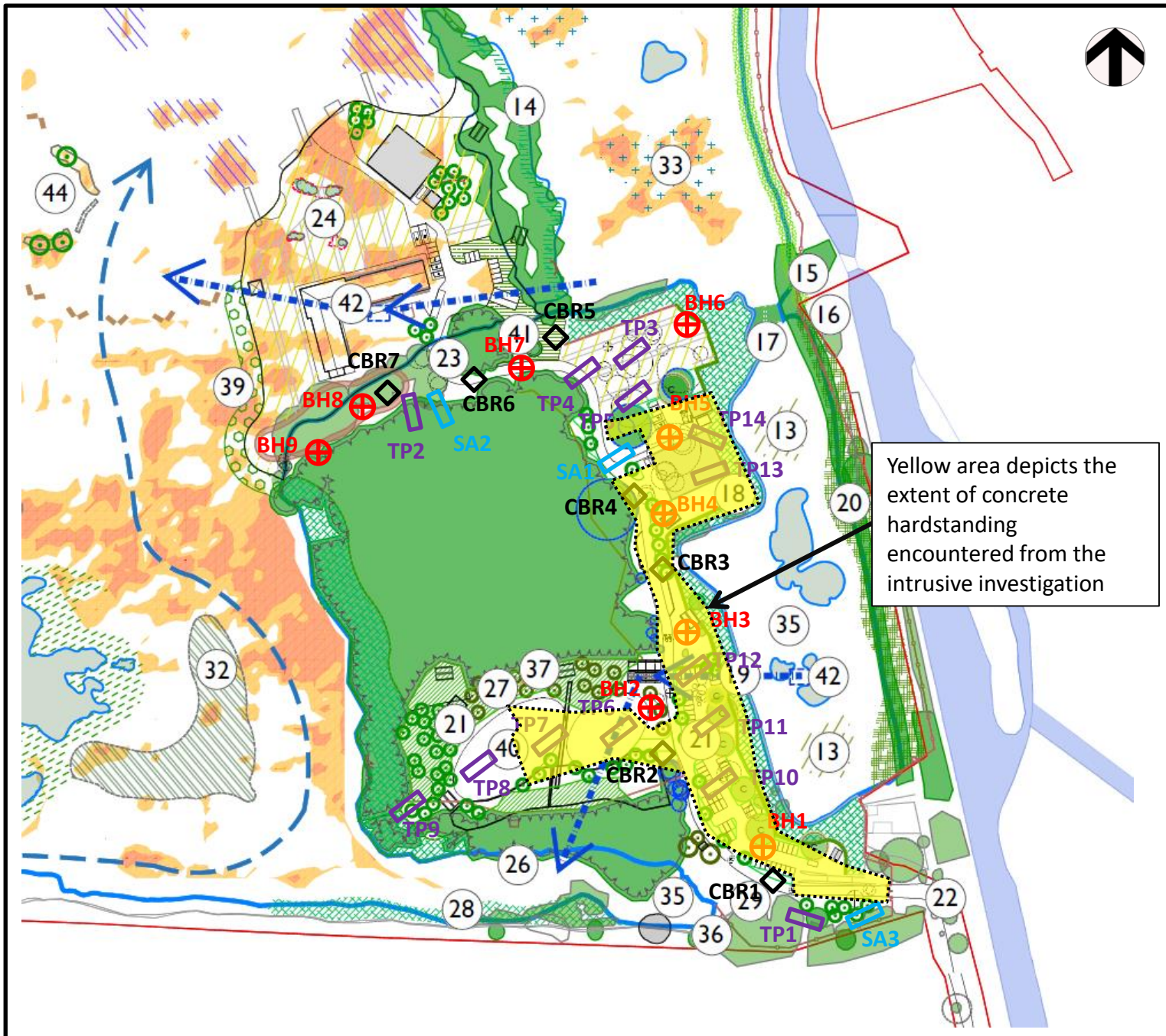
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-01-21

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	DL

Scale: Not To Scale, for indicative purposes only



Key

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

GEO INTEGRITY

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Hardstanding Plan

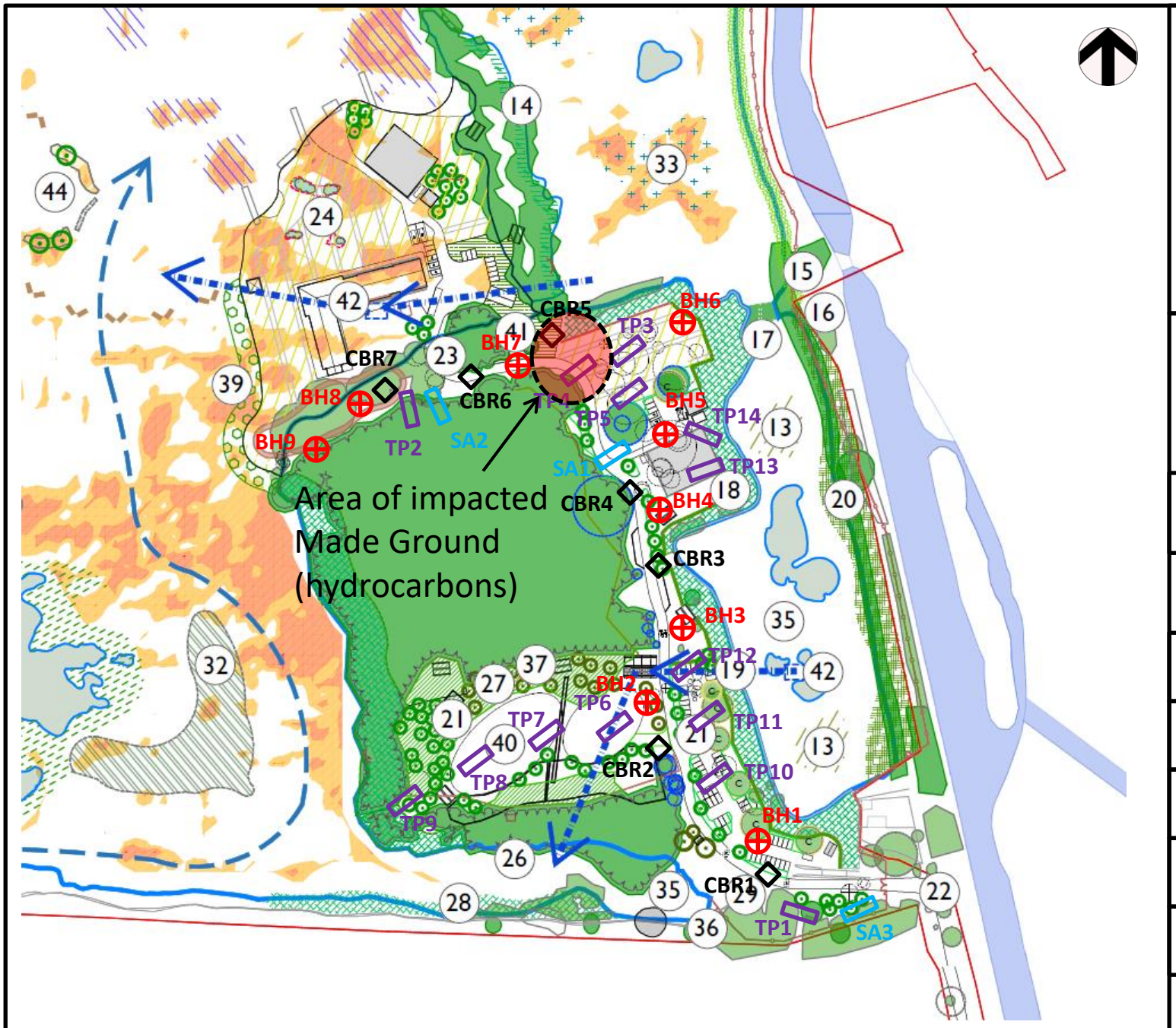
SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only



Key

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

GEO INTEGRITY

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Remedial Plan

SITE:- Broadwater Lake, Harefield

JOB NO.:- 23-09-03B

CLIENT:- Mace Group and Hillingdon Borough Council

Drawn	Checked
LA	MB

Scale: Not To Scale, for indicative purposes only

APPENDIX B

Geo-Integrity, - 07858 367 125 Email:- murraybateman@geo-integrity.co.uk

INTEGRITY
www.geo-integrity.co.uk
info@geo-integrity.co.uk
01280 816409

Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 1

Machine : Dando 3000
Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
39.39

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504807.9 E 189071.93 N

Dates
16/02/2023

Project Contractor
Geo-Integrity

Sheet
1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					39.29	0.10 (0.20)	TARMAC		
0.10-0.20	D				39.09	0.30 (0.20)	MADE GROUND Loose dark brown silty sandy GRAVEL. Gravel is flint, brick, quartz, ash and coal		
0.10-0.30	B				38.89	0.50 (0.50)	MADE GROUND CONCRETE SLAB		
0.80-0.90	D								
0.80-1.00	B				38.39	1.00	MADE GROUND Loose brown black slightly clayey silty sandy GRAVEL. Gravel is fine to coarse concrete, brick, flint and glass		
1.00-1.10	D								
1.00-1.10	D								
1.00-1.20	B								
1.20-1.65	SPT N=4			1,1/1,1,1,1			ALLUVIUM Very soft dark brown black slightly gravelly organic CLAY with peat horizons		▼1
1.20-1.65	B					(1.10)			
2.00-2.45	SPT N=24			3,4/5,5,6,8	37.29	2.10	SHEPPERTON GRAVEL MEMBER Medium dense to dense dark grey sandy GRAVEL		▽1
2.00-2.45	B	2.00		Water strike(1) at 2.10m, rose to 1.57m in 20 mins.		(0.90)			
3.00-3.45	SPT(C) N=25			1,4/4,5,7,9	36.39	3.00	SHEPPERTON GRAVEL MEMBER Medium dense to dense orange brown slightly sandy fine to coarse GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded flint and quartz		
3.00-3.45	B	3.00	2.10						
4.00-4.45	SPT(C) N=29			2,3/4,7,9,9					
4.00-4.45	B	4.00	1.80			(3.10)			
5.00-5.45	SPT(C) N=20			2,3/4,4,5,7					
5.00-5.45	B	5.00	2.25						
6.00	D				33.29	6.10	UPPER CHALK Structureless off-white CHALK comprising slightly gravelly SILT (Grade Dm)		
6.30-6.40	D								
6.40-6.70	B								
7.00-7.45	SPT(C) N=0			1/					
						(2.90)			
8.00-8.10	D								
8.50-8.95	SPT N=4			1,1/1,1,1,1					
8.50-8.95	B	8.00	4.10						
					30.39	9.00	UPPER CHALK Structureless off-white CHALK comprising silty GRAVEL (Grade Dc)		
9.50-9.60	D								
10.00-10.45	SPT N=10			1,2/2,2,3,3					

Remarks

Scale (approx)
1:50

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LA

Figure No.
23-01-21.BH 1

AGS

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 1

Machine / Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Machine : Dando 3000 Method : Cable Percussion	150mm to 15.0m	39.39	Mace	23-01-21
	Location (Handheld GPS) 504807.9 E 189071.93 N	**Dates** 16/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
11.00-11.10	D	11.00	5.40						
11.50-11.95	SPT N=14			3,3/3,3,4,4					
						(6.00)			
12.50	D	12.00	6.10						
13.00-13.45	SPT N=21			3,4/4,5,5,7					
14.00-14.10	D								
14.50-14.95	SPT N=31			4,4/6,8,8,9					
14.90-15.00	D	12.00	6.00		24.39	15.00	Complete at 15.00m		

Remarks

Scale (approx)	Logged By
1:50	LA

Figure No.
23-01-21.BH 1

AGS

GEO INTEGRITY www.geo-integrity.co.uk info@geo-integrity.co.uk 01280 816409		**Site** Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	**Borehole Number** **BH 2**
Machine : Dando 3000 **Method :** Cable Percussion	**Casing Diameter** 150mm to 15.0m	**Ground Level (mOD)** 39.58	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504744.01 E 189115.55 N	**Dates** 17/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20 0.10-0.30	D B					(0.60)	MADE GROUND Loose brown silty sandy GRAVEL. Gravel is fine to coarse sub-angular to sub-rounded brick, concrete, flint and ash		
					38.98	0.60			
0.60-0.70 0.60-1.00	D B					(0.40)	MADE GROUND Loose beige gravelly SILT. Weathered concrete with gravels of flint, brick and concrete		
					38.58	1.00			
1.20-1.65 1.20-1.65	SPT(C) N=4 B			2,4/1,1,1,1		(0.65)	MADE GROUND Very soft beige brown silty sandy gravelly slightly organic CLAY. Gravel is concrete, flint and brick		
					37.93	1.65			
1.80-1.90 1.80-2.00 2.00-2.45	D B B						ALLUVIUM Very soft dark brown grey silty slightly organic CLAY. Occasional peat horizons		
3.00-3.45	B					(2.80)			▼1
4.00-4.45	SPT N=5			1,1/1,1,1,2					
					35.13	4.45			▽1
4.50-4.60 4.50-4.95	D B	5.00	3.70	Water strike(1) at 4.50m, rose to 3.60m in 20 mins.			SHEPPERTON GRAVEL MEMBER Medium dense to dense beige brown sandy GRAVEL. Gravel is fine to coarse flint and quartz		
5.00-5.45	SPT(C) N=36			3,5/8,9,9,10					
						(2.55)			
6.00-6.10	D								
6.50-6.95	SPT(C) N=9			3,3/2,2,2,3					
6.90-6.95	B	6.40	4.20		32.58	7.00	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT. Gravels are fine to coarse chalk and flint (Grade Dm)		
7.20-7.30	D	7.60	4.50						
8.00-8.45	SPT N=25			1,3/5,5,7,8		(2.00)			
					30.58	9.00			
9.00-9.10	D	9.00	5.00				UPPER CHALK Structureless off-white CHALK comprising silty GRAVEL. Gravel is coarse chalk (Grade Dc)		
9.50-9.95	SPT N=19			2,3/4,4,5,6					

Remarks

Scale (approx)	Logged By
1:50	LA

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Figure No.
23-01-21.BH 2

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info@geo-integrity.co.uk
01280 816409

Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 2

Machine / Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Machine : Dando 3000 Method : Cable Percussion	150mm to 15.0m	39.58	Mace	23-01-21
	Location (Handheld GPS) 504744.01 E 189115.55 N	**Dates** 17/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.60	D	10.00	6.30						
11.00-11.45	SPT N=19			3,4/4,5,5,5					
12.00-12.10	D	12.00	6.00			(6.00)			
12.50-12.95	SPT N=24			1,3/5,5,6,8					
13.50-13.60	D								
14.00-14.45	SPT N=29			2,4/6,6,8,9					
14.00-14.45	B	14.00	6.35						
14.90-15.00	D								
					24.58	15.00	Complete at 15.00m		

Remarks

Scale (approx)	Logged By
1:50	LA

Figure No.
23-01-21.BH 2

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01280 816409

Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 3

Machine : Dando 3000
Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
40.95

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504753.63 E 189171.17 N

Dates
20/02/2023

Project Contractor
Geo-Integrity

Sheet
1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.30)	CONCRETE			
0.20-0.30	D				40.65	0.30	MADE GROUND medium dense brown sandy GRAVEL. Gravel is fine to coarse flint, quartz and concrete			
0.50-1.00	B									
1.20-1.65	SPT(C) N=23			3,4/4,6,6,7		(2.15)				
1.20-1.65	D									
2.00-2.45	SPT(C) N=25			3,3/5,5,7,8						
2.00-2.45	D									
					38.50	2.45	ALLUVIUM very soft dark brown slightly gravelly organic silty CLAY			
2.80-3.30	B									
3.00-3.45	SPT N=3			0,1/0,1,1,1		(1.05)				
3.00-3.45	D									
					37.45	3.50	SHEPPERTON GRAVEL MEMBER Medium dense to dense grey brown slightly sandy GRAVEL Gravel is fine to coarse sub-rounded. Gravel is flint and quartz			
4.00-4.45	SPT(C) N=29			4,5/6,6,8,9						
4.00-4.45	D									
4.50-5.00	B								▼1	
5.00-5.45	D	5.00	4.25	Water strike(1) at 4.90m, rose to 4.60m in 20 mins.					▽1	
5.00-5.45	SPT(C) N=36			4,6/7,9,9,11		(3.70)				
6.00-6.10	D									
6.50-6.95	SPT(C) N=27			4,5/6,6,7,8						
6.50-6.95	D	6.50	4.00							
					33.75	7.20	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT (Grade Dm)			
7.50-7.60	D									
8.00-8.45	SPT N=17			2,2/3,3,5,6						
8.00-8.45	D	8.00	4.20							
9.00-9.10	D					(3.80)				
9.50-9.95	SPT N=20			2,2/4,5,5,6						
9.50-9.95	D	9.50	4.50							

Remarks

Scale (approx)
1:50

Logged By
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Figure No.
23-01-21.BH 3

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01280 816409

Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 3

Machine	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	40.95	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504753.63 E 189171.17 N	**Dates** 20/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50-10.60	D									
11.00-11.45	SPT N=24			4,4/5,6,6,7	29.95	11.00	UPPER CHALK Structureless yellow brown CHALK comprising silty GRAVEL (Grade Dc)			
11.00-11.45	D	11.00	4.50							
12.00-12.10	D									
12.50-12.95	SPT N=25			3,4/5,6,6,8						
12.50-12.95	D	12.50	4.50			(4.00)				
13.50-13.60	D	13.00	4.50							
14.00-14.45	SPT N=29			3,5/6,7,7,9						
14.00-14.45	D									
14.50-15.00	B									
15.00-15.45	SPT N=33			4,5/7,8,8,10	25.95	15.00	Complete at 15.45m			
15.00-15.45	D									

Remarks

Scale (approx)	Logged By
1:50	LA

Figure No. 23-01-21.BH 3

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 4

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	39.35	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504742.13 E 189228.83 N	**Dates** 21/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10-0.20	D					(0.30)	CONCRETE		
					39.05	0.30	MADE GROUND Loose brown slightly sandy GRAVEL. Gravel is fine to coarse flint, brick, quartz and coal		
0.50-1.00	B								
1.20-1.65	SPT(C) N=25			3,3/5,6,6,8					
1.20-1.65	D								
						(3.15)			
2.00-2.45	SPT(C) N=25			3,4/5,5,7,8					
2.00-2.45	D								
3.00-3.45	SPT N=4			3,3/3,0,0,1					
3.00-3.45	D								
					35.90	3.45	ALLUVIUM Very soft brown silty organic CLAY with occasional peat		
4.00-4.45	SPT N=31			3,5/6,8,8,9		(1.05)			
4.00-4.45	D								▼1
					34.85	4.50	SHEPPERTON GRAVEL MEMBER Medium dense to dense grey brown slightly sandy GRAVEL. Gravel is fine to coarse flint and quartz		▽1
				Water strike(1) at 4.60m, rose to 4.35m in 20 mins.					
5.00-5.45	SPT(C) N=26			2,4/5,5,8,8					
5.00-5.45	D	5.00	4.80						
						(2.50)			
6.00-6.50	B								
6.50-6.95	SPT(C) N=9			3,4/2,2,2,3					
6.50-6.95	D	6.50	5.00						
					32.35	7.00	UPPER CHALK Structureless off-white yellow CHALK comprising silty GRAVEL. Gravel is fine to coase chalk and flint (Garde Dc)		
7.50-7.60	D								
8.00-8.45	SPT N=19			2,3/3,3,6,7					
8.00-8.45	D	8.00	5.00						
8.50-9.00	B								
9.50-9.95	SPT N=25			2,2/4,6,6,9					
9.50-9.95	D	9.50	5.00						
9.50-9.95	D								

Remarks

Scale (approx)	Logged By
1:50	LA

Figure No. 23-01-21.BH 4

AGS

GEO INTEGRITY
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01280 816409

Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 4

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	39.35	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504742.13 E 189228.83 N	**Dates** 21/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.60	D								
11.00-11.45	SPT N=29			3,3/6,6,8,9		(8.00)			
11.00-11.45	D	11.00	5.00						
12.00-12.10	D								
12.50-12.95	SPT N=27			3,3/5,6,6,10					
12.50-12.95	D	12.50	5.50						
13.50-13.60	D	13.00	5.80						
14.00-14.45	SPT N=29			3,4/5,7,7,10					
14.00-14.45	D	13.00	6.00						
15.00-15.45	SPT N=29			3,3/6,6,8,9	24.35	15.00	Complete at 15.45m		
15.00-15.45	D								

Remarks

Scale (approx)	Logged By
1:50	LA

Figure No. 23-01-21.BH 4

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01280 816409

Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 5

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm 15.0m to 15.0m	39.44	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504742.11 E 189290.21 N	**Dates** 22/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.30)	CONCRETE		
					39.14	0.30			
						(0.20)	MADE GROUND Loose dark brown slightly clayey silty GRAVEL. Gravel is concrete, flint and occasional peat		
0.50-0.60	D	1.20	0.80		38.94	0.50			
							SHEPPERTON GRAVEL MEMBER Dense grey brown slightly sandy GRAVEL. Gravel is fine to coarse flint, quartz and sandstone		
1.20-1.65	SPT(C) N=6			1,3/1,1,2,2					
1.20-2.00	B	3.00	1.80						
1.70-1.80	D	4.00	1.90						
2.00-2.43	SPT(C) 50/280			7,11/6,11,15,18					
						(3.50)			
2.50-2.60	D	5.00	2.20						
3.00-3.37	SPT(C) 50/220			10,11/15,18,17,0					▼1
3.50-3.60	D	6.50	5.50						
				Water strike(1) at 4.00m, rose to 3.00m in 20 mins.	35.44	4.00	SHEPPERTON GRAVEL MEMBER Dense grey brown slightly sandy GRAVEL with traces of alluvium. Gravel is fine to coarse flint and quartz		▽1
4.00-4.45	SPT(C) N=8			2,1/1,2,2,3					
4.50-4.60	D	8.00	3.00						
5.00-5.45	SPT(C) N=20			3,4/4,4,5,7					
						(4.00)			
6.00-6.10	D	9.50	5.50						
6.50-6.95	SPT(C) N=17			3,3/3,4,5,5					
7.00-7.10	D	11.00	4.90						
8.00-8.45	SPT(C) N=24			3,5/5,5,7,7	31.44	8.00	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT. Gravel is chalk and flint		
8.00-9.00	B	12.50	9.80						
9.00-9.10	D	14.00	12.00						
9.50-9.95	SPT(C) N=14			2,2/2,3,4,5					

Remarks

Scale (approx)	Logged By
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Figure No. 23-01-21.BH 5

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 5

Machine : Dando 3000 Method : Cable Percussion	Casing Diameter 150mm 15.0m to 15.0m	Ground Level (mOD) 39.44	Client Mace	Job Number 23-01-21
	Location (Handheld GPS) 504742.11 E 189290.21 N	Dates 22/02/2023	Project Contractor Geo-Integrity	Sheet 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.00-10.10	D								
11.00-11.45	SPT(C) N=20			4,4/5,5,5,5					
						(7.00)			
12.00-12.10	D								
12.50-12.95	SPT(C) N=24			2,3/5,6,6,7					
13.00-13.10	D								
14.00-14.45	SPT(C) N=27			1,3/5,6,7,9					
15.00	D				24.44	15.00	Complete at 15.00m		

Remarks

Scale (approx)	Logged By
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Figure No. 23-01-21.BH 5

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Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 6

Machine : Dando 3000
Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
40.94

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504730.87 E 189330.98 N

Dates
23/02/2023

Project Contractor
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Sheet
1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.30)	MADE GROUND TOPSOIL			
0.30-0.40	D	5.00	4.70		40.64	0.30	REWORKED GROUND Dense brown slightly sandy fine to coarse GRAVEL. is fine to coarse quartz and flint			
0.50-1.00	B	6.50	5.00							
1.20-1.65	SPT(C) N=30			3,6/6,6,9,9						
1.20-1.65	D	8.00	5.00			(2.30)				
2.00-2.45	SPT(C) N=26			4,5/6,6,6,8						
2.00-2.45	D	9.50	5.20							
					38.34	2.60	ALLUVIUM Very soft dark brown black organic CLAY			
3.00-3.45	SPT N=3			1,0/0,1,1,1		(0.85)				
3.00-3.45	D	11.00	5.20							
					37.49	3.45	SHEPPERTON GRAVEL MEMBER Dense light brown grey GRAVEL. Gravel is fine to coarse flint and quartz			
4.00-4.45	SPT(C) N=29			4,5/6,6,8,9						
4.00-4.45	D	12.50	5.00							
5.00-5.45	SPT(C) N=33			5,5/7,8,8,10		(3.15)				
5.00-5.45	D	13.00	5.00							
6.00-6.10	D	13.00	5.10							
6.50-6.95	SPT(C) N=28			3,6/6,6,8,8	34.34	6.60	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT. Gravel is flint and chalk (Grade Dm)			
6.50-6.95	D									
7.50-7.60	D									
8.00-8.45	SPT N=19			2,3/3,5,5,6						
8.00-8.45	D									
9.00-9.10	D									
9.50-9.95	SPT N=23			2,4/4,5,7,7						
9.50-9.95	D									

Remarks

Scale (approx)
1:50

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Figure No.
23-01-21.BH 6

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Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 6

Machine : Dando 3000
Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
40.94

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504730.87 E 189330.98 N

Dates
23/02/2023

Project Contractor
Geo-Integrity

Sheet
2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50-10.60	D									
						(8.40)				
11.00-11.45	SPT N=26			3,4/5,5,8,8						
11.00-11.45	D									
12.00-12.10	D									
12.50-12.95	SPT N=29			3,3/5,7,8,9						
12.50-12.95	D									
13.50-13.60	D									
14.00-14.45	SPT N=26			3,4/5,5,8,8						
14.00-14.45	D									
15.00-15.45	SPT N=33			4,5/5,8,9,11	25.94	15.00	Complete at 15.45m			
15.00-15.45	D									

Remarks

Scale (approx)
1:50

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Figure No.
23-01-21.BH 6

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 7

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	39.67	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504673.94 E 189305.85 N	**Dates** 24/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					39.57	0.10 (0.20)	MADE GROUND TOPSOIL		
0.20-0.30	D	4.00	3.80		39.37	0.30	MADE GROUND Soft brown silty gravelly CLAY. Gravel is fine to coarse brick, flint and coal		
							REWORKED GROUND Medium dense to dense light brown grey sandy GRAVEL. Gravel is fine to coarse flint and quartz		
1.20-1.65	SPT(C) N=26			2,2/5,5,8,8		(2.15)			
1.20-1.65	D	5.00	4.40						
1.65-2.00	D	6.50	4.80						
2.00-2.45	SPT(C) N=32			3,5/5,8,9,10					
2.00-2.45	D	8.00	4.80						
					37.22	2.45	ALLUVIUM Very soft dark brown organic silty CLAY. Horizons of peat throughout		
3.00-3.45	SPT(C) N=4			3,5/2,1,0,1					
3.00-3.45	D	9.50	5.00			(1.75)			▼1
4.00-4.45	D	11.00	5.20	Slow(1) at 4.00m, rose to 3.55m in 20 mins.					▽1
					35.47	4.20	SHEPPERTON GRAVEL MEMBER Medium dense to dense GRAVEL. Gravel is coarse rounded to sub-rounded flint		
4.00-4.45	SPT N=23			1,2/4,6,6,7					
5.00-5.45	SPT(C) N=29			3,3/6,6,8,9					
5.00-5.45	D	12.50	5.20			(2.00)			
6.00-6.10	D	12.50	5.40						
					33.47	6.20	UPPER CHALK Structureless off-white CHALK comprising silty GRAVEL. Gravel is chalk and flint (Grade Dc)		
6.50-6.95	SPT(C) N=11			2,2/2,3,3,3					
6.50-6.95	D	12.50	5.50						
7.00-7.50	B								
8.00-8.45	SPT N=18			3,3/3,4,5,6					
9.00-9.10	D								
9.50-9.95	SPT N=25			3,4/6,6,6,7					
9.50-9.95	D								

Remarks

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Figure No. 23-01-21.BH 7

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 7

Machine / Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Machine : Dando 3000 Method : Cable Percussion	150mm to 15.0m	39.67	Mace	23-01-21
	Location (Handheld GPS) 504673.94 E 189305.85 N	**Dates** 24/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.60	D					(8.80)			
11.00-11.45	SPT N=27			3,4/5,5,8,9					
11.00-11.45	D								
12.00-12.10	D								
12.50-12.95	SPT N=28			2,4/4,7,7,10					
12.50-12.95	D								
13.50-13.60	D								
14.00-14.45	SPT N=31			3,4/6,6,9,10					
14.00-14.45	D								
15.00-15.45	SPT N=35			4,4/6,8,10,11	24.67	15.00	Complete at 15.45m		
15.00-15.45	D								

Remarks

Scale (approx)	Logged By
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Figure No.
23-01-21.BH 7

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 8

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	41.29	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504595.54 E 189286.92 N	**Dates** 27/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-0.30	D	4.00	3.60			(0.45)	MADE GROUND RED BRICK		
0.50-1.00	B	5.00	4.50		40.84	0.45	REWORKED GROUND Medium dense to dense light brown sandy GRAVEL. Gravel is fine to coarse flint and quartz		
1.20-1.65	SPT(C) N=19			3,3/3,5,5,6					
1.20-1.65	D	6.50	4.80			(2.45)			
2.00-2.45	SPT(C) N=27			3,4/6,6,7,8					
2.00-2.45	D	8.00	5.00						
3.00-3.45	SPT N=7			1,0/0,1,1,5	38.39	2.90	ALLUVIUM Very soft dark brown black green slightly gravelly organic CLAY (Peat). Gravel is fine to coarse flint		▼1
3.00-3.45	D	9.50	5.10						
				Water strike(1) at 3.60m, rose to 3.00m in 20 mins.		(1.55)			▽1
4.00-4.45	SPT(C) N=30			3,5/5,8,8,9					
4.00-4.45	D	11.00	5.30		36.84	4.45	SHEPPERTON GRAVEL MEMBER Dense medium to coarse GRAVEL. Gravel is fine to coarse flint and quartz		
5.00-5.45	SPT(C) N=32			4,5/5,8,9,10					
5.00-5.45	D	12.00	5.30			(2.35)			
6.00-6.10	D	12.00	5.50						
6.50-6.95	SPT(C) N=30			3,5/5,8,8,9					
6.50-6.95	D	12.00	5.60		34.49	6.80	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT. Gravel is fine to coarse chalk and flint (Grade Dm)		
7.00-7.50	B								
8.00-8.45	SPT N=16			2,2/3,3,5,5					
8.00-8.45	D								
9.00-9.10	D								
9.50-9.95	SPT N=20			3,3/3,5,6,6					
9.50-9.95	D					(5.70)			

Remarks

Scale (approx)	Logged By
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Figure No. 23-01-21.BH 8

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Site	Borehole Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	BH 8

Machine :	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dando 3000	150mm to 15.0m	41.29	Mace	23-01-21
Method : Cable Percussion	**Location** (Handheld GPS) 504595.54 E 189286.92 N	**Dates** 27/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	D								
11.00-11.45	SPT N=25			3,3/5,5,7,8					
11.00-11.45	D								
12.00-12.95	D								
12.50-12.95	SPT N=27			4,4/4,7,8,8	28.79	12.50	UPPER CHALK Structureless off-white CHALK comprising silty GRAVEL. Gravel is fine to coarse chalk and flint (Grade Dc)		
13.50-13.60	D					(2.50)			
14.00-14.45	SPT N=35			4,5/8,8,9,10					
14.00-14.45	D								
15.00-15.45	SPT N=37			4,5/6,9,10,12	26.29	15.00	Complete at 15.45m		
15.00-15.45	D								

Remarks

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Figure No. 23-01-21.BH 8

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Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 9

Machine : Dando 3000
Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
42.96

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504570.97 E 189263.99 N

Dates
28/02/2023

Project Contractor
Geo-Integrity

Sheet
1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
						(0.30)	MADE GROUND			
					42.66	0.30				
0.40-0.50	D	5.00	4.50				REWORKED GROUND Medium dense to dense GRAVEL. Gravel is fine to medium flint and quartz			
						(0.90)				
					41.76	1.20				
1.20-1.65	SPT N=23			2,5/5,6,6,6			REWORKED GROUND Medium dense GRAVEL. Gravel is coarse sub-rounded flint			
1.20-1.65	D	6.50	4.70							
2.00-2.45	SPT(C) N=25			3,5/5,5,7,8						
2.00-2.45	D	8.00	4.80			(2.05)				
3.00-3.45	SPT(C) N=14			3,4/4,5,4,1						
3.00-3.45	D	9.50	5.00		39.71	3.25	ALLUVIUM Very soft dark brown organic CLAY		▼1	
				Water strike(1) at 3.80m, rose to 3.40m in 20 mins.		(1.20)			▽1	
4.00-4.45	D	11.00	5.00							
4.00-4.45	SPT N=22			2,3/3,6,6,7						
					38.51	4.45	SHEPPERTON GRAVEL MEMBER Medium dense to dense GRAVEL. Gravel is coarse sub-rounded flint			
5.00-5.45	SPT(C) N=27			4,4/5,5,8,9						
5.00-5.45	D	12.00	5.20			(1.85)				
6.00-6.10	D	12.00	5.20							
					36.66	6.30	UPPER CHALK Structureless off-white CHALK comprising gravelly SILT. Gravel is fine to coarse chalk and flint (Grade Dm)			
6.50-6.95	SPT(C) N=30			3,5/5,8,8,9						
7.50-8.00	B	12.00	5.30							
8.00-8.45	SPT N=14			2,3/3,3,4,4						
8.00-8.45	D									
9.00-9.10	D									
9.50-9.95	SPT N=21			3,4/4,5,6,6						
9.50-9.95	D									

Remarks

Scale (approx)
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Figure No.
23-01-21.BH 9

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Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Borehole Number
BH 9

Machine : Dando 3000

Method : Cable Percussion

Casing Diameter
150mm to 15.0m

Ground Level (mOD)
42.96

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504570.97 E 189263.99 N

Dates
28/02/2023

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Sheet
2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
10.50-10.60	D					(8.70)				
11.00-11.45	SPT N=31			3,5/6,8,8,9						
11.00-11.45	D									
12.00-12.10	D									
12.50-12.95	SPT N=27			4,4/5,5,8,9						
12.50-12.95	D									
13.50-13.60	D									
14.00-14.45	SPT N=33			3,5/7,7,9,10						
14.00-14.45	D									
15.00-15.45	SPT N=34			5,5/6,8,9,11	27.96	15.00	Complete at 15.45m			
15.00-15.45	D									

Remarks

Scale (approx)
1:50

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Figure No.
23-01-21.BH 9

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 1

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.39	Mace	23-01-21
	Location (Handheld GPS) 504835.68 E 189033.61 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				39.34	0.05	MADE GROUND Loose dark brown clayey gravelly sandy SILT. Gravel is flint, brick, coal, ash and slag		
						MADE GROUND Loose brown orange silty sandy GRAVEL. Gravel is flint, ash, brick, quartz and slag		
					(0.75)			
0.50	D							
0.80	D			38.59	0.80	MADE GROUND Loose brown silty sandy cobbly slightly bouldery GRAVEL. Gravel is flint, quartz, slag, concrete with boulders of concrete		
					(0.70)			
			Water strike(1) at 1.30m, fell to 2.10m in 5 mins.					▽1
1.50	D			37.89	1.50	ALLUVIUM Very soft dark brown black grey silty slightly gravelly organic CLAY. Gravel is fine to coarse flint		
					(0.80)			
2.00	D							▼1
				37.09	2.30	Complete at 2.30m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 1

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 2

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		40.67	Mace	23-01-21
	Location (Handheld GPS) 504609.54 E 189281.43 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND Loose dark brown clayey gravelly organic SILT. Gravel is brick, flint, concrete and quartz		
				40.47	0.20			
0.50	D				(1.00)	MADE GROUND Loose light brown slightly silty gravelly SAND. Gravel is flint and quartz. Occasional boulders of concrete and brick		
1.20	D			39.47	1.20			
					(0.70)	MADE GROUND Soft to firm brown grey silty sandy gravelly CLAY. Gravel is flint and brick		▼1 ▽1
1.90	D		Water strike(1) at 1.80m, rose to 1.70m in 5 mins.	38.77	1.90			
						Complete at 1.90m		

Plan

Remarks

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Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 2

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 3

Machine : JCb 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		40.60	Mace	23-01-21
	Location (Handheld GPS) 504714.7 E 189322.4 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND Loose brown orange silty SAND AND GRAVEL. Gravel is fine to coarse flint, brick and concrete		
0.20	D			40.30	0.30			
					(1.30)	MADE GROUND Very dense weathered concrete comprising silty sandy GRAVEL. Gravel is fine to coarse brick, flint, slate, concrete and rare fragments of wood		
1.20	D							
			Refusal at 1.60m	39.00	1.60	Complete at 1.60m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 3

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** TP 4
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.91	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504696.86 E 189316.11 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND Loose brown silty slightly clayey sandy GRAVEL. Gravel is fine to coarse flint, brick and ash		
0.20	D			39.61	0.30			
					(0.70)	MADE GROUND Loose grey gravelly sandy SILT. Gravel is fine to coarse flint and brick. Distinct hydrocarbon odour and significant staining		
0.75	D			38.91	1.00			
					(1.00)	MADE GROUND Loose grey silty sandy GRAVEL. Gravel is fine to coarse flint and brick with pieces of metal loose boulders of cement and brick. Distinct hydrocarbon odour and signifcant staining		
1.20	D							
2.00	D			37.91	2.00	Complete at 2.00m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 4

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 5

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.98	Mace	23-01-21
	Location (Handheld GPS) 504710.04 E 189309.74 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	D				(1.00)	MADE GROUND Loose dark grey silty sandy GRAVEL. Gravel is fine to coarse flint, brick and slag with weathered concrete		
				38.98	1.00	Complete at 1.00m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 5

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 6

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.54	Mace	23-01-21
	Location (Handheld GPS) 504726.99 E 189118.96 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				39.49	0.05	MADE GROUND CONCRETE		
						MADE GROUND Dense light brown beige slightly clayey sandy gravelly SILT. (Weathered concrete)		
0.50	D				(1.05)			
			Water strike(1) at 1.00m.					▽1
				38.44	1.10	Complete at 1.10m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 6

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 7

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.83	Mace	23-01-21
	Location (Handheld GPS) 504685.83 E 189099.52 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	CONCRETE		
				39.53	0.30	MADE GROUND Dense light brown beige slightly clayey sandy gravelly SILT. (Weathered concrete)		
0.50	D				(0.50)			
				39.03	0.80	Complete at 0.80m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 7

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** TP 8
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.70	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504658.26 E 189095.62 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D				(0.20)	MADE GROUND Soft light brown silty gravelly organic CLAY. Gravel is flint, concrete and brick		
				39.50	0.20			
0.50	D				(0.70)	MADE GROUND Dense light bron beige sandy gravelly SILT. Gravel is concrete, flint and brick (concrete matrix)		
				38.80	0.90			
			Water strike(1) at 1.00m, fell to 1.20m in 20 mins.			MADE GROUND Loose orange brown silty sandy GRAVEL. Gravel is flint, quartz, sandstone and rare cobbles of concrete		▽1 ▼1
					(0.70)			
1.40	D							
				38.10	1.60	Complete at 1.60m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 8

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 9

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		42.16	Mace	23-01-21
	Location (Handheld GPS) 504621.91 E 189080.64 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				42.11	0.05	MADE GROUND Soft dark brown silty sandy gravelly organic CLAY. Gravel is flint, brick and concrete		
						Loose light brown beige sandy gravelly SILT. Gravel is flint, concrete, brick in a matrix of weathered concrete		
					(0.65)			
0.50	D			41.46	0.70	MADE GROUND Soft to firm dark brown black green silty gravelly CLAY. Gravel is fine to coarse concrete, flint, slate, fragments of wood		
					(0.95)			
1.40	D			40.51	1.65	Complete at 1.65m		

Plan

Remarks

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Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 9

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 10

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		40.15	Mace	23-01-21
	Location (Handheld GPS) 504776.78 E 189107.98 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	CONCRETE		
				39.45	0.70			
0.80	D				(0.30)	MADE GROUND Soft to firm brown grey silty sandy gravelly CLAY. Gravel is fine to coarse flint, iron, brick and slag		
				39.15	1.00			
						Complete at 1.00m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 10

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** TP 11
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.61	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504759.44 E 189133.45 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	CONCRETE		
				39.11	0.50	MADE GROUND Loose grey orange brown silty sandy GRAVEL. Gravel is fine to coarse flint, bick, concrete and ash		
0.75	D				(0.40)			
				38.71	0.90	ALLUVIUM Very soft dark brown grey green organic silty slightly gravelly CLAY with peat		
1.20	D		Water strike(1) at 1.40m.		(1.20)			▽1
1.80	D							
				37.51	2.10	SHEPPERTON GRAVEL MEMBER Loose grey slightly silty sandy GRAVEL. Gravel is fine to coarse flint and quartz		
2.20	D				(0.20)			
				37.31	2.30	Complete at 2.30m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 11

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** TP 12
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.55	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504756.27 E 189148.68 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	CONCRETE		
				39.40	0.15	MADE GROUND Loose orange brown silty sandy GRAVEL. Gravel is fine to coarse brick, flint, concrete with occasional boulders of concrete		
					(0.95)			
0.80	D							
				38.45	1.10	ALLUVIUM Very soft dark brown black green grey organic silty slightly gravelly CLAY with peat roots and tree debris. Gravel is fine to coarse flint		▽1
			Water strike(1) at 1.20m.					
					(0.70)			
1.50	D							
				37.75	1.80			
					(0.10)	SHEPPERTON GRAVEL MEMBER Loose grey slightly silty sandy GRAVEL. Gravel is fine to coarse flint and quartz		
				37.65	1.90			
						Complete at 1.90m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 12

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** TP 13
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.52	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504761.42 E 189243.06 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	CONCRETE		
				38.92	0.60	ALLUVIUM Very soft dark brown black grey organic silty slightly gravelly CLAY with peat and plat??? debris. Gravel is fine to coarse flint		
			Water strike(1) at 1.30m.		(0.70)			▽1
				38.22	1.30	SHEPPERTON GRAVEL MEMBER Loose grey slightly silty sandy GRAVEL. Gravel is fine to coarse flint quartz and chalk		
					(0.30)			
				37.92	1.60	Complete at 1.60m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.TP 13

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	TP 14

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.47	Mace	23-01-21
	Location (Handheld GPS) 504752.33 E 189282.42 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	CONCRETE		
				39.17	0.30	MADE GROUND Loose brown slightly clayey silty sandy GRAVEL. Gravel is fine to coarse flint, brick and concrete		
0.60	D				(0.50)			
				38.67	0.80	ALLUVIUM Very soft dark brown black grey green organic silty slightly gravelly CLAY with peat and plant debris. Gravel is fine to coarse flint		
			Water strike(1) at 1.20m.		(0.80)			▽1 ▼2
1.40	D		Water strike(2) at 1.50m, rose to 1.30m in 5 mins.					▽2
				37.87	1.60	SHEPPERTON GRAVEL MEMBER Loose grey silty sandy GRAVEL. Gravel is fine to coarse flint, quartz and chalk		
					(0.30)			
1.80	D			37.57	1.90	Complete at 1.90m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	lee Ashworth	23-01-21.TP 14

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** SA 1
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions** 0.60m x 1.50m x 1.50m	**Ground Level (mOD)** 39.39	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504719.3 E 189280.9 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND Loose orange brown silty sandy GRAVEL. Gravel is flint and brick		
				39.19	0.20			
0.40	D				(0.40)	MADE GROUND Loose dark grey brown black silty sandy GRAVEL. Gravel is fine to coarse flint, ceramic, tarmac and brick		
				38.79	0.60			
1.00	D				(0.90)	POSSIBLE MADE GROUND/ALLUVIUM Very soft dark brown silty slightly gravelly organic CLAY. Gravel is flint and wood with frequent branches and roots		
1.40	D			37.89	1.50			
						Complete at 1.50m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.SA 1

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	SA 2

Machine / Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine : JCB 3CX Method : Trial Pit	0.60m x 1.30m x 0.65m	42.74	Mace	23-01-21
	Location (Handheld GPS) 504614.8 E 189285.19 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND Loose dark brown clayey gravelly organic SILT. Gravel is brick, flint, concrete and quartz		
				42.54	0.20			
					(0.45)	MADE GROUND Loose light brown slightly silty gravelly SAND. Gravel is flint and quartz. Occasional boulders of concrete and brick		
0.50	D							
				42.09	0.65	Complete at 0.65m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.SA 2

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Site
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Trial Pit Number
SA 3

Machine : JCB 3CX
Method : Trial Pit

Dimensions
0.60m x 1.50m x 0.55m

Ground Level (mOD)
39.24

Client
Mace

Job Number
23-01-21

Location (Handheld GPS)
504844.26 E 189034.16 N

Dates
15/02/2023

Project Contractor
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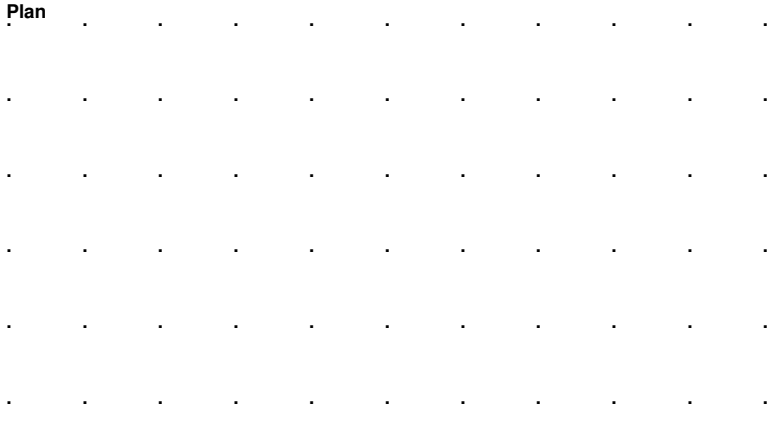
Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	MADE GROUND Loose dark brown slightly clayey sandy gravelly SILT. Gravel is flint, slag, brick and coal		
0.50	D			38.74	0.50	Complete at 0.50m		

Plan



Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	Lee Ashworth	23-01-21.SA 3

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Trial Pit Infiltration Testing to BRE Digest 365

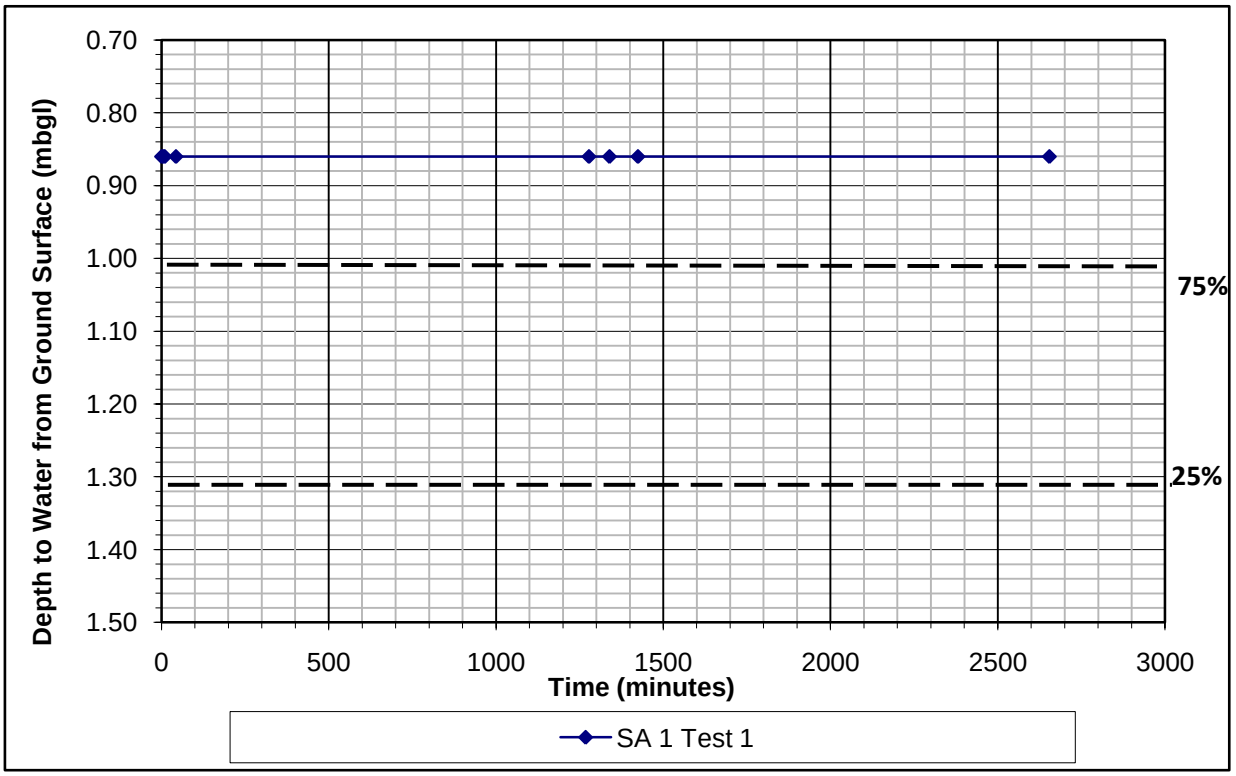
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.50m x 1.47m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
Test Location: SA 1

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



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Trial Pit Infiltration Testing to BRE Digest 365

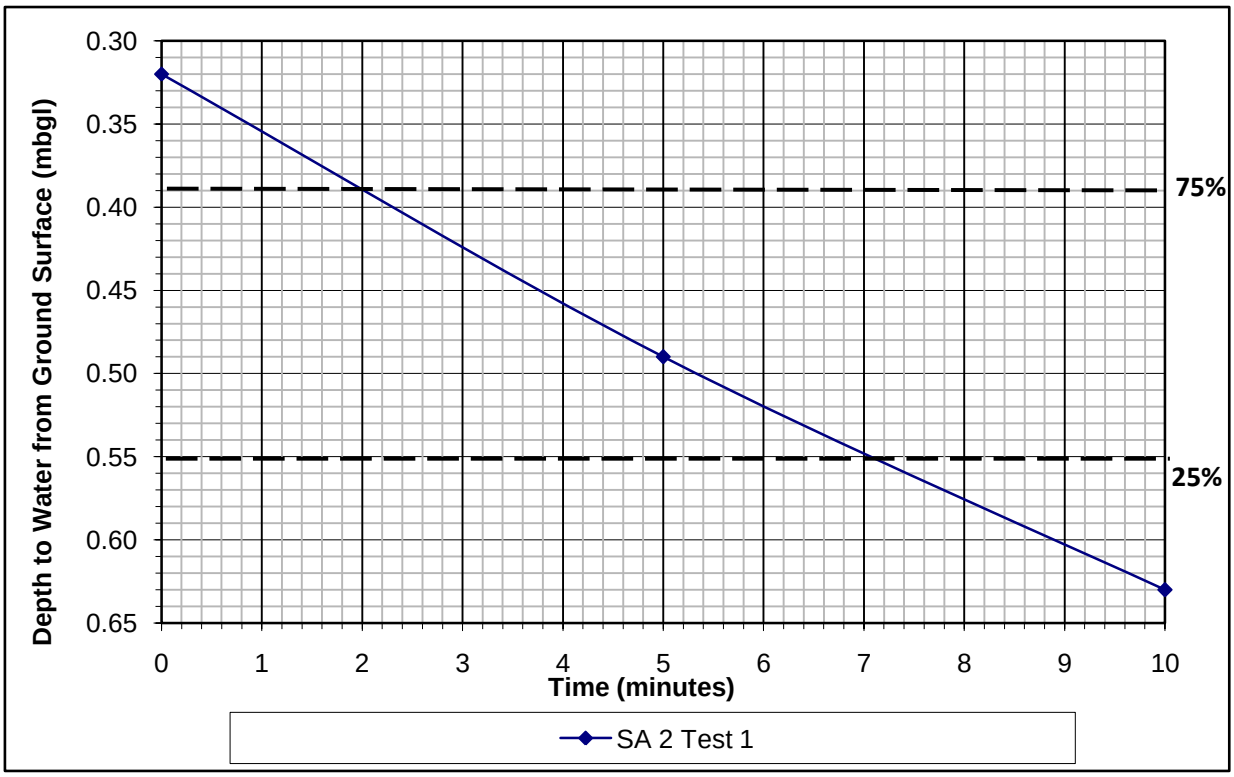
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.30m x 0.63m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
Test Location: SA 2

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 x 10^{-4} m/s



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Trial Pit Infiltration Testing to BRE Digest 365

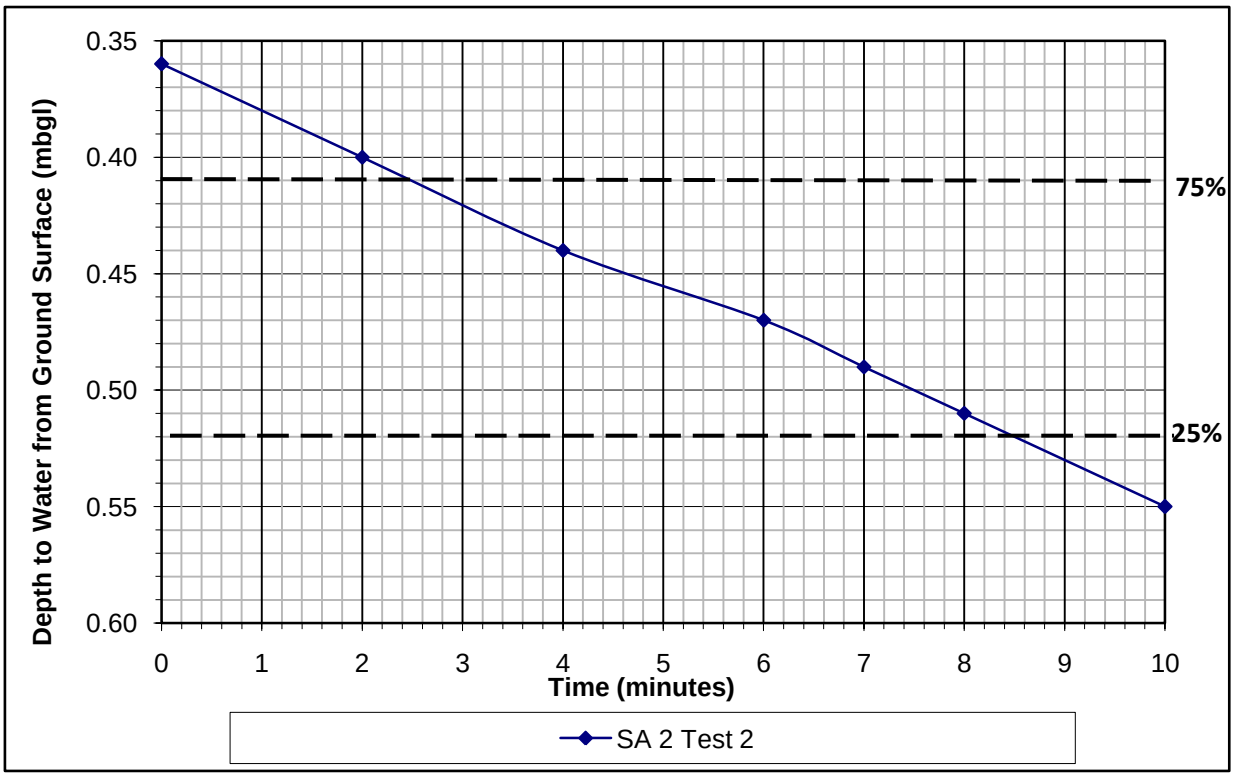
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.30m x 0.58m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
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 x 10^{-4} m/s



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Trial Pit Infiltration Testing to BRE Digest 365

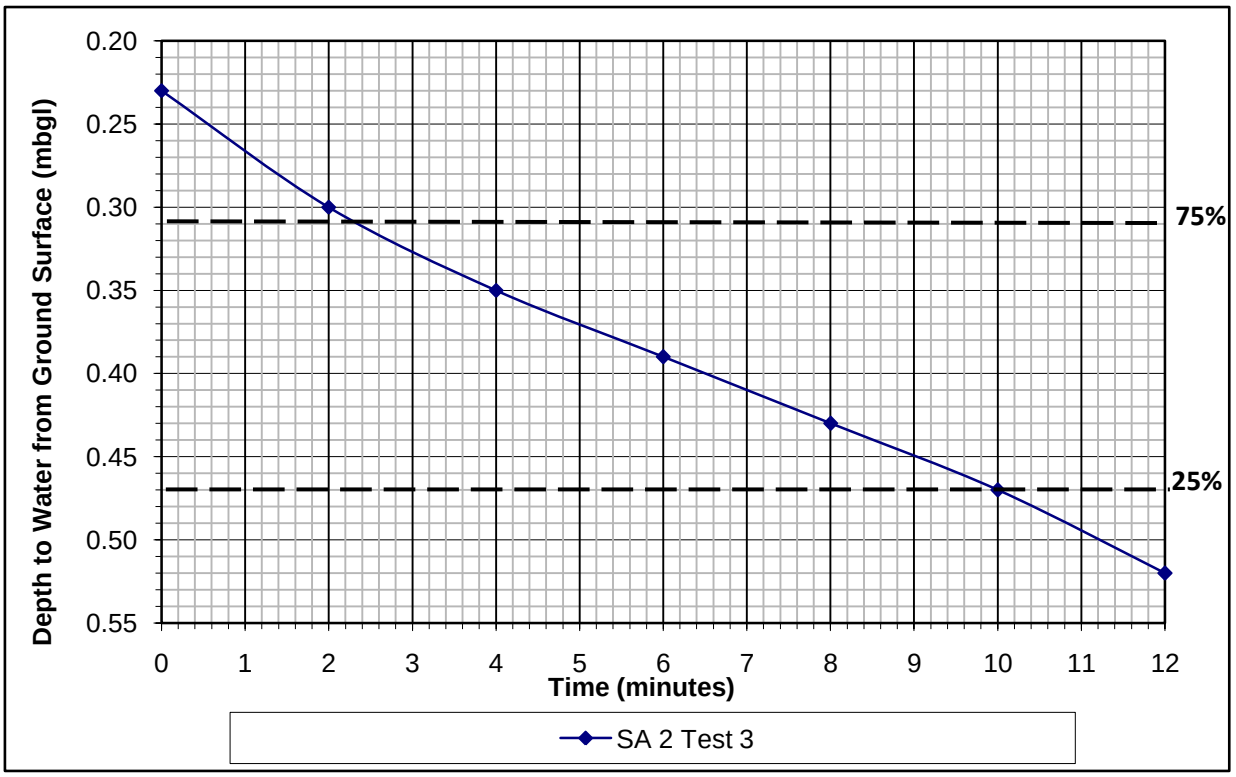
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.30m x 0.55m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
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 x 10^{-4} m/s



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Trial Pit Infiltration Testing to BRE Digest 365

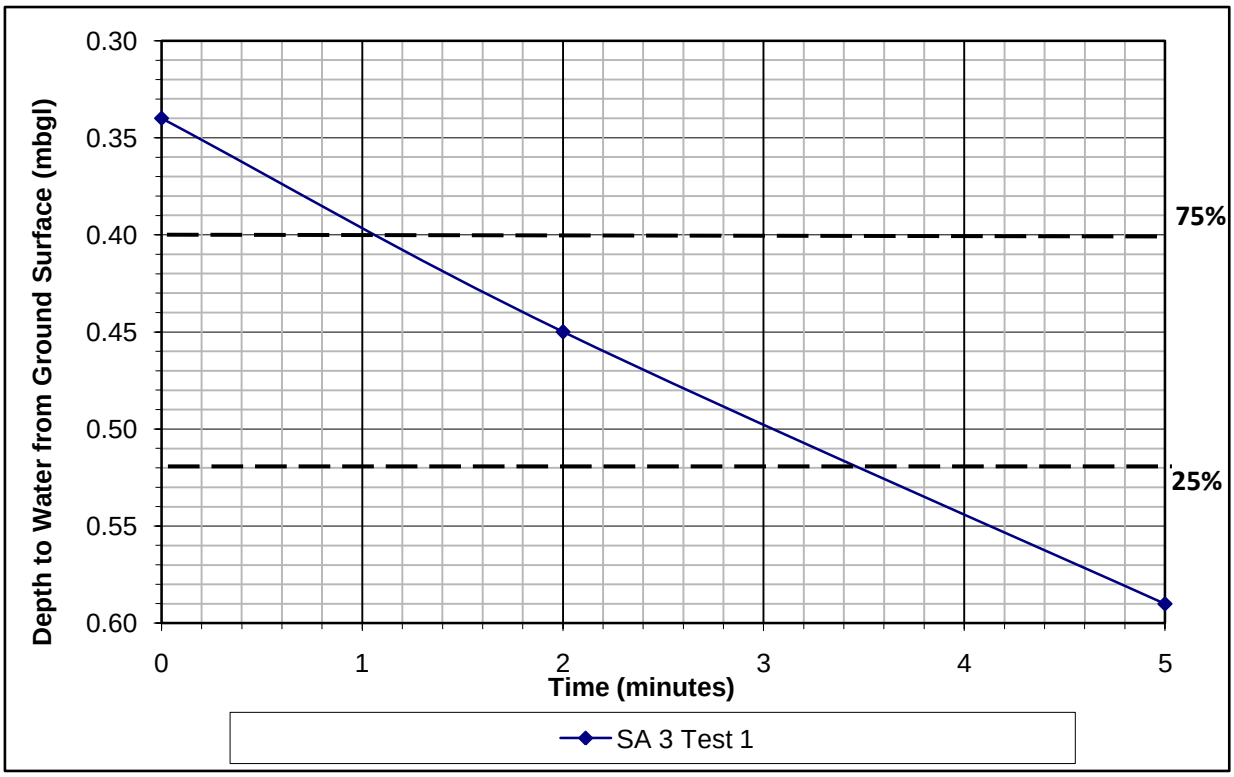
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.50m x 0.59m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
Test Location: SA 3

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 x 10^{-4} m/s



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Trial Pit Infiltration Testing to BRE Digest 365

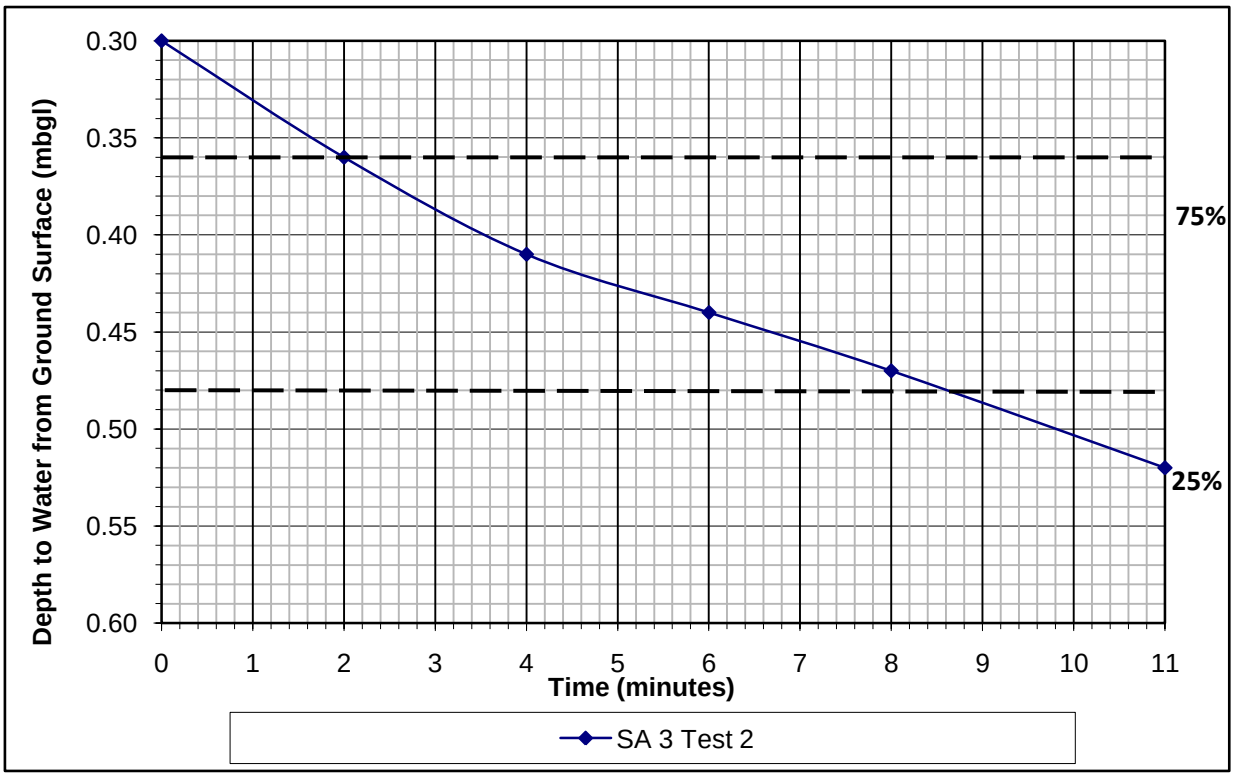
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.50m x 0.55m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
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 x 10^{-4} m/s



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Trial Pit Infiltration Testing to BRE Digest 365

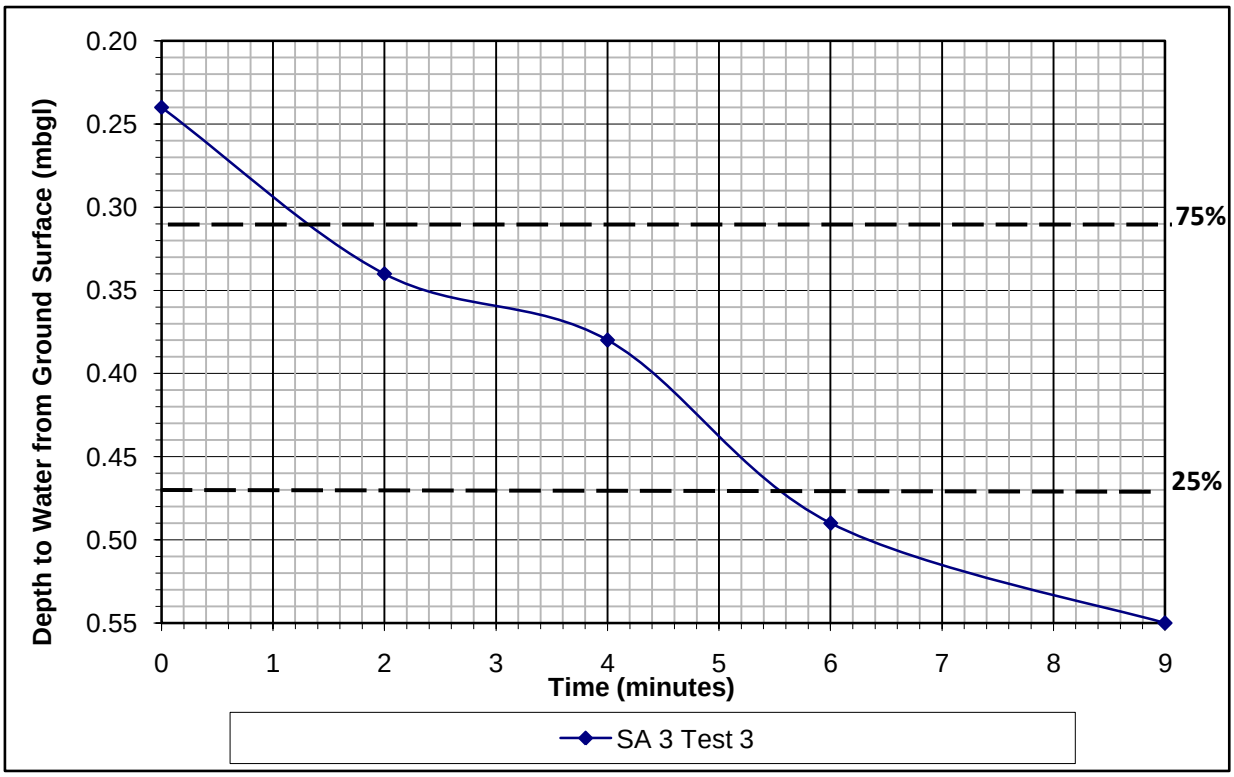
Client: Mace
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Dimensions: 0.60m x 1.50m x 0.55m (width x length x depth)

Report No: 23-01-21
Date Tested: 15/02/23
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 x 10^{-4} m/s



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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	CBR1

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.19	Mace	23-01-21
	Location (Handheld GPS) 504797.89 E 189051.27 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND Soft dark brown organic silty slightly sandy gravelly CLAY.		
				38.99	0.20	MADE GROUND Loose light frey silty sandy GRAVEL. Gravel is fine to coarse brick and concrete		
					(0.25)			
				38.74	0.45	Complete at 0.45m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR1

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	CBR2

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.63	Mace	23-01-21
	Location (Handheld GPS) 504750.12 E 189115.43 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				39.53	(0.10) 0.10	MADE GROUND Loose orange sandy gravelly SILT. Gravel is flint, brick and cement		
				39.43	(0.10) 0.20	CONCRETE		
						Complete at 0.20m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR2

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	CBR3

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.40	Mace	23-01-21
	Location (Handheld GPS) 504744.68 E 189206.12 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				39.30	(0.10) 0.10	CONCRETE Complete at 0.10m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR3

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	CBR4

Machine : JCB 3CX Method : Trial Pit	Dimensions	Ground Level (mOD)	Client	Job Number
		39.45	Mace	23-01-21
	Location (Handheld GPS) 504718.56 E 189276.29 N	Dates 15/02/2023	Project Contractor Geo-Integrity	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	MADE GROUND Loose brown orange silty sandy GRAVEL. Gravel is fine to coarse flint brick and concrete		
				39.30	0.15	Complete at 0.15m		

Plan

Remarks

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR4

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** CBR5
Machine : JCB 3CX **Method :** Trial Pit	**Dimensions**	**Ground Level (mOD)** 39.86	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504690.04 E 189321.71 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	MADE GROUND Loose orange brown silty sandy GRAVEL. Gravel is fine to coarse flint, brick and concrete		
				39.46	0.40	MADE GROUND Loose dark grey silty sandy GARVEL. Gravelis fine to coarse flint brick rubber cocnrete with a distinct hydrocarbon odour and staining		
					(0.49)			
				38.97	0.89	CONCRETE		
				38.96	0.90	Complete at 0.90m		

Plan

Remarks
Excavating from 0.00m.

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR5

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Site	Trial Pit Number
Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	CBR6

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit		39.81	Mace	23-01-21
	Location (Handheld GPS) 504648.73 E 189307.1 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND Soft dark brown silty gravelly CLAY. Gravel is fine to coarse brick flint and chalk		
				39.51	0.30			
					(0.30)	MADE GROUND Loose dark grey mottled white silty sandy GRAVEL. Gravel is fine to coarse brick flint chalk		
0.50	D1			39.21	0.60			
					(1.00)	MADE GROUND Firm dark brown beige silty slightly gravelly CLAY. Gravel is brick and flint		
1.40	D2		Water strike(1) at 1.50m, no rise after 5 mins.					▼1
				38.21	1.60	CONCRETE		
				38.16	1.65	Complete at 1.65m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR6

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Site Broadwater Lake, Moorhall Road, Harefield, UB9 6PE			**Trial Pit Number** CBR7
Machine : JCB 3CX **Method :**	**Dimensions**	**Ground Level (mOD)** 42.64	**Client** Mace	**Job Number** 23-01-21
	Location (Handheld GPS) 504604.51 E 189290.68 N	**Dates** 15/02/2023	**Project Contractor** Geo-Integrity	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND Loose orange brown silty sandy GRAVEL. Gravel is flint brick concrete		
				42.44	0.20	Complete at 0.20m		

Plan

Remarks

AGS

Scale (approx)	Logged By	Figure No.
1:20	LA	23-01-21.CBR7

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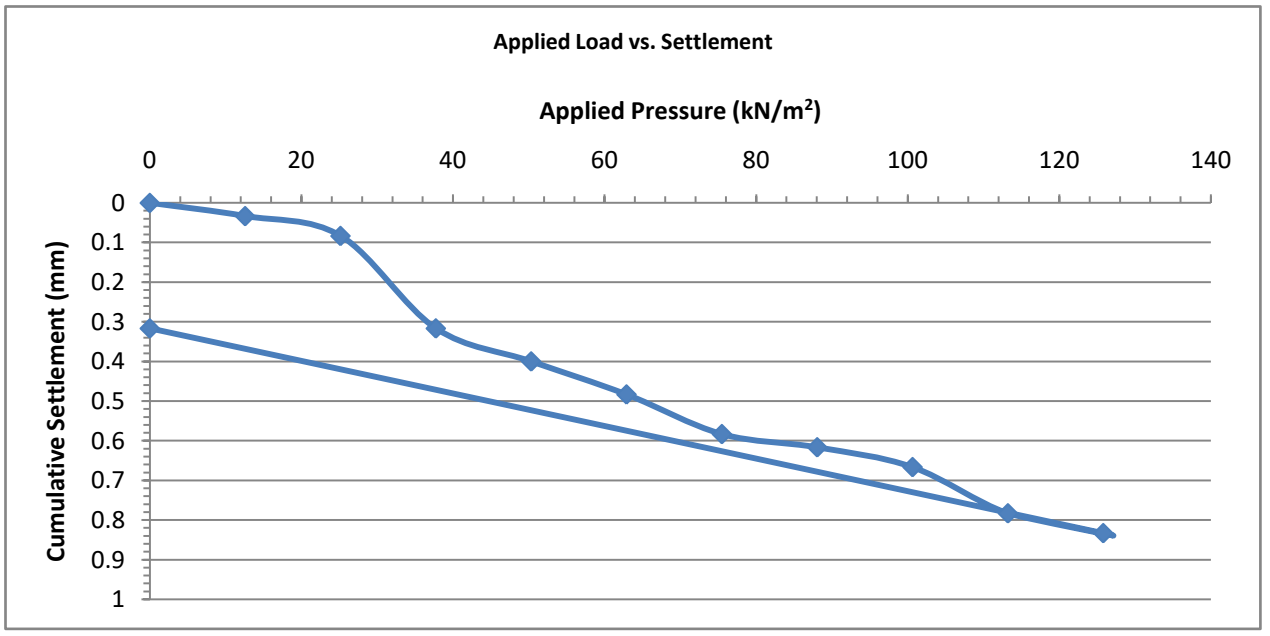
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client:	KLR Industrial Ltd	**Job No:**	23-01-21
Site:	Farm Complex, Silvesrtone Circuit NN12 8GZ	**Date:**	16/02/2023
Depth (bgl):	0.45 m	**TP No:**	CBR 1
Plate Size (m):	0.45 m		



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.03
4	25	0.08
6	38	0.32
8	50	0.40
10	63	0.48
12	75	0.58
14	88	0.62
16	101	0.67
18	113	0.78
20	126	0.83
0	0	0.32
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
132 kN/m²

Pressure at 1.25mm (kN/m2)
126 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
62.80 MN/m²/m

Equivalent CBR Value (%)
12.60 %

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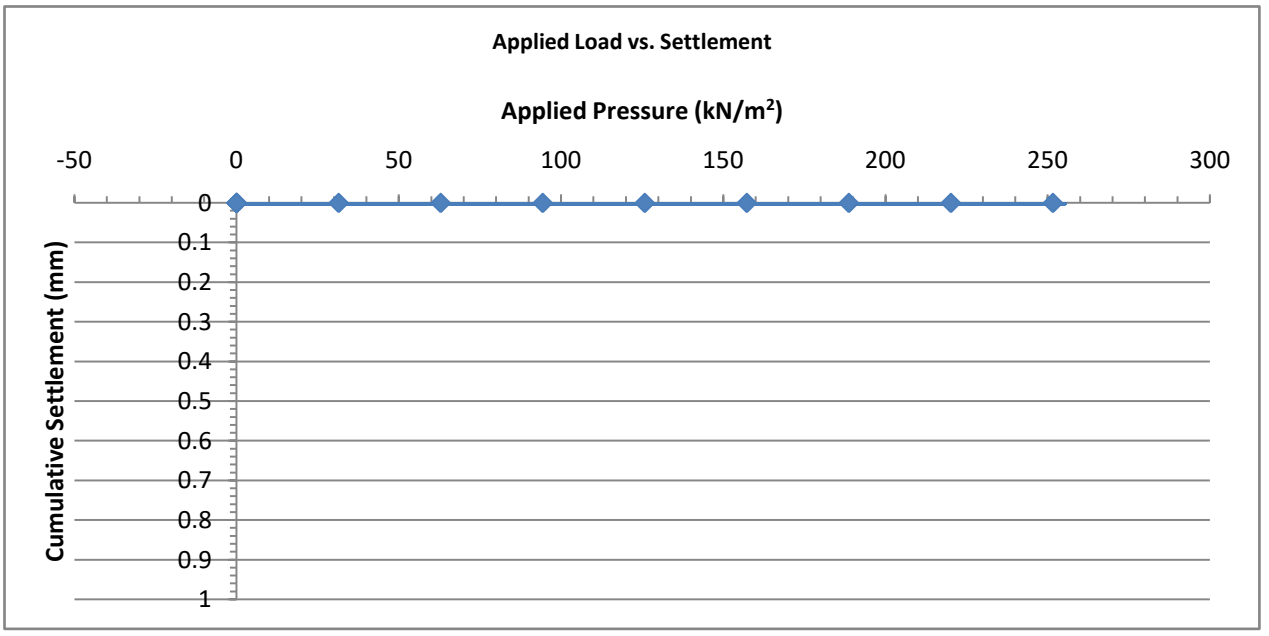
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client: Mace Group
Job No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Date: 16/02/2023
Depth (bgl): 0.2 m
TP No: CBR 2
Plate Size (m): 0.45 m



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
5	31	0.00
10	63	0.00
15	94	0.00
20	126	0.00
25	157	0.00
30	189	0.00
35	220	0.00
40	252	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
252 kN/m²

Pressure at 1.25mm (kN/m2)
252 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
125.61 MN/m²/m

Equivalent CBR Value (%)
41.87 %

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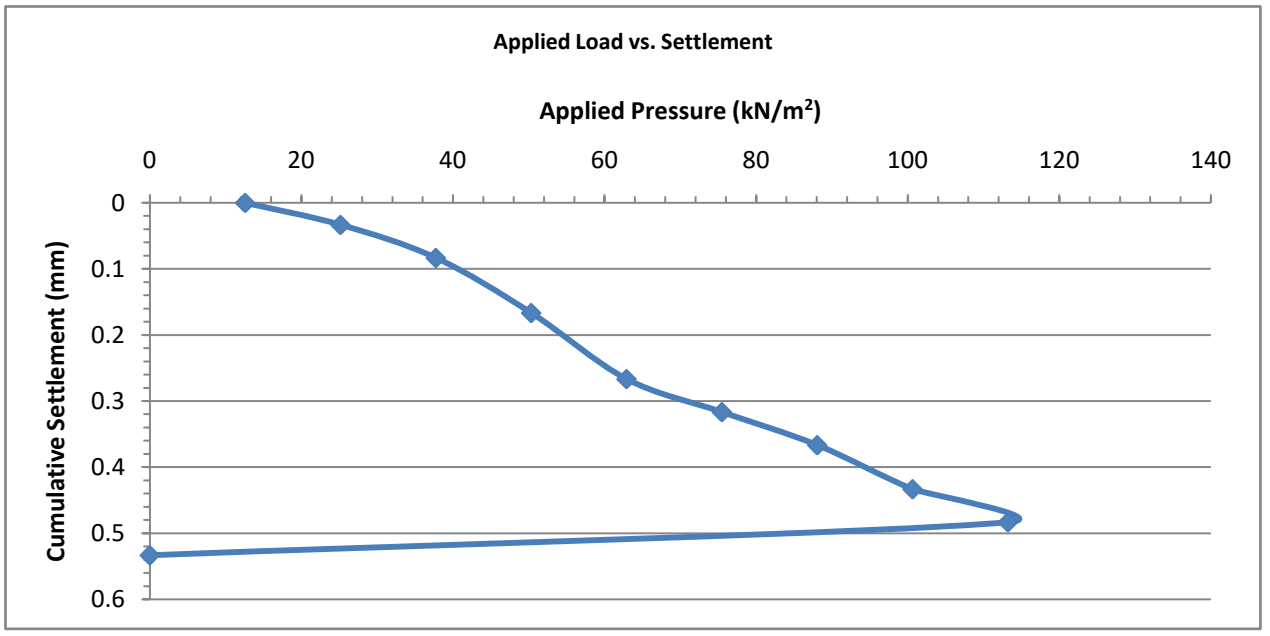
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client:	Mace Group	**Job No:**	23-01-21
Site:	Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	**Date:**	16/02/2023
Depth (bgl):	0.1 m	**TP No:**	CBR 3
Plate Size (m):	0.45 m		



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.03
4	25	0.08
6	38	0.17
8	50	0.27
10	63	0.32
12	75	0.37
14	88	0.43
16	101	0.48
18	113	0.53
0	0	0.00
0		0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
182 kN/m²

Pressure at 1.25mm (kN/m2)
113 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
56.32 MN/m²/m

Equivalent CBR Value (%)
10.43 %

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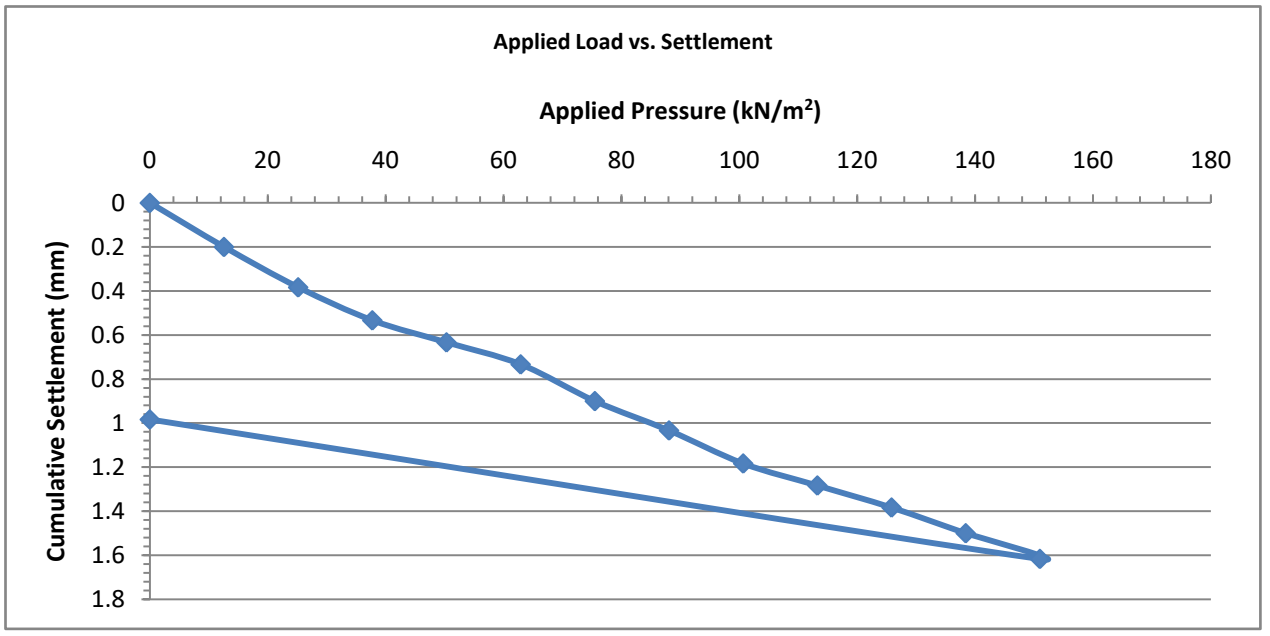
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client: Mace Group
Job No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Date: 16/02/2023
Depth (bgl): 0.15 m
TP No: CBR 4
Plate Size (m): 0.45 m



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.20
4	25	0.38
6	38	0.53
8	50	0.63
10	63	0.73
12	75	0.90
14	88	1.03
16	101	1.18
18	113	1.28
20	126	1.38
22	138	1.50
24	151	1.62
0	0	0.98
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
50 kN/m²

Pressure at 1.25mm (kN/m2)
110 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
54.83 MN/m²/m

Equivalent CBR Value (%)
9.95 %

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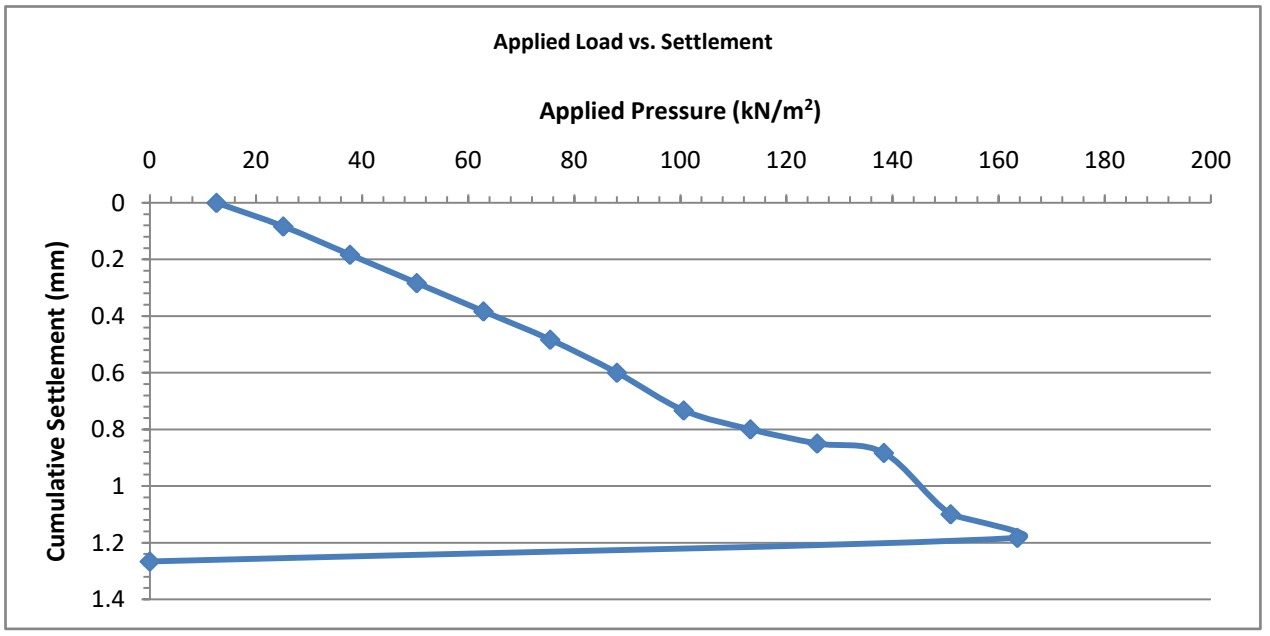
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client:	Mace Group	**Job No:**	23-01-21
Site:	Broadwater Lake, Moorhall Road, Harefield, UB9 6PE	**Date:**	16/02/2023
Depth (bgl):	0.15 m	**TP No:**	CBR 5
Plate Size (m):	0.45 m		



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.08
4	25	0.18
6	38	0.28
8	50	0.38
10	63	0.48
12	75	0.60
14	88	0.73
16	101	0.80
18	113	0.85
20	126	0.88
22	138	1.10
24	151	1.18
26	164	1.27
0	0	0.82
0	0	0.00

Seating Pressure for 1.5mm initial settlement
63 kN/m²

Pressure at 1.25mm (kN/m2)
162 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
80.75 MN/m²/m

Equivalent CBR Value (%)
19.47 %

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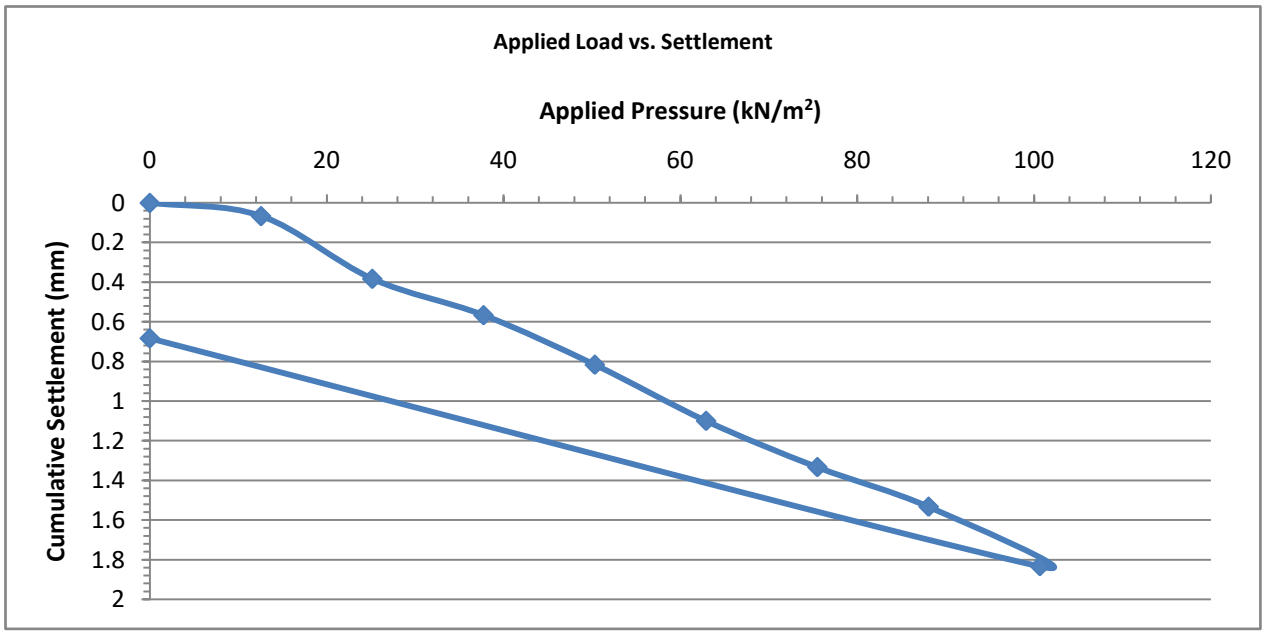
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client: Mace Group
Job No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Date: 16/02/2023
Depth (bgl): 0.2 m
TP No: CBR 6
Plate Size (m): 0.45 m



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.07
4	25	0.38
6	38	0.57
8	50	0.82
10	63	1.10
12	75	1.33
14	88	1.53
16	101	1.83
0	0	0.68
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
94 kN/m²

Pressure at 1.25mm (kN/m2)
76 kN/m²

Modulus of Subgrade Reaction (MN/m/m2)
37.88 MN/m²/m

Equivalent CBR Value (%)
5.24 %

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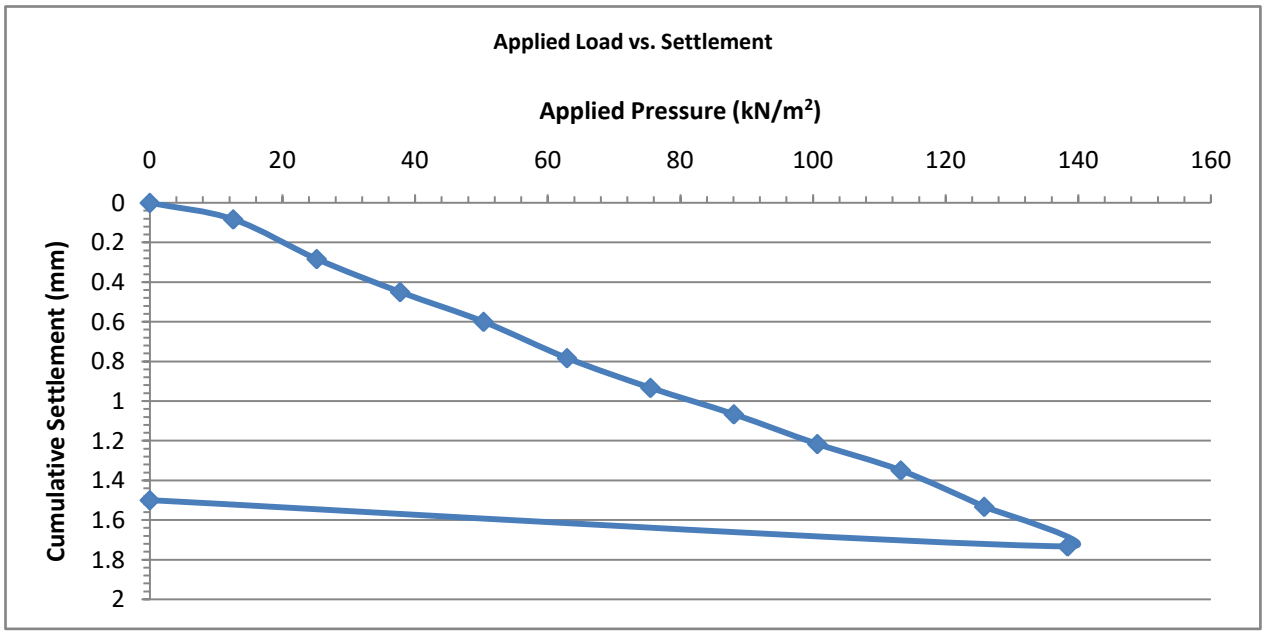
Calculation of Modulus of Sub-Grade Reaction and CBR from Plate Bearing Test

Client: Mace Group
Job No: 23-01-21
Site: Broadwater Lake, Moorhall Road, Harefield, UB9 6PE
Date: 16/02/2023
Depth (bgl): 0.2 m
TP No: CBR 7
Plate Size (m): 0.45 m



Applied Load (kN)	Applied Pressure (kN/m²)	Average Settlement (mm)
0	0	0.00
2	13	0.08
4	25	0.28
6	38	0.45
8	50	0.60
10	63	0.78
12	75	0.93
14	88	1.07
16	101	1.22
18	113	1.35
20	126	1.53
22	138	1.73
0	0	1.50
0	0	0.00
0	0	0.00
0	0	0.00

Seating Pressure for 1.5mm initial settlement
57 kN/m²

Pressure at 1.25mm (kN/m2)
105 kN/m²

Modulus of Subgrade Reaction (kN/m/m2)
52.34 MN/m²/m

Equivalent CBR Value (%)
9.18 %

Date	Job No.	BH	CH4(%)	LEL(%)	CO2(%)	O2(%)	H2S (ppm)	CO (ppm)	Hex(%)	PIDCf()	PkFlw (lh)	AP (mbar)	GW (m bgl)	Pmp (s)	Bal(%)
09/03/23	23-01-21	BH 3	0	0	0.3	19.1	0	0	0.027	1	0	986	2.39	69	80.6
09/03/23	23-01-21	BH 6	0.6	15.7	0.2	6.7	0	10	0.043	1.2	0	986	2.27	61	92.7
09/03/23	23-01-21	BH 9	0	0	0.8	16.9	0	0	0.029	1	0	986	0.8	61	82.3
15/03/23	23-01-21	BH 3	0	0	0.6	19.3	0	0	0.026	1	0.27	1011	2.3	62	80.1
15/03/23	23-01-21	BH 6	0.5	13.6	0.1	0.6	0	0	0.041	1.2	0	1011	2.12	61	98.9
15/03/23	23-01-21	BH 9	0	0	0.5	18.4	0	0	0.027	1	0	1011	1.78	61	81.1
20/03/23	23-01-21	BH 3	0	0	0.6	19.2	0	0	0.031	1	0	1010	-	60	80.2
20/03/23	23-01-21	BH 6	0.6	15.4	0.1	3.3	0	0	0.042	1.2	0	1010	-	60	96.1
20/03/23	23-01-21	BH 9	0	0	0.2	19.2	0	0	0.028	1	0	1010	-	60	80.6
29/03/23	23-01-21	BH3	0	0	0.8	19.4	0	0	0	1	0	1003	2.3	61	79.8
29/03/23	23-01-21	BH6	0	0	0	0.9	0	0	0.018	1	0	1002	2.12	63	99.1
29/03/23	23-01-21	BH9	0	0	0.4	19.9	0	0	0	1	0	1002	0.75	62	79.7

APPENDIX C

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GroundTech Laboratories

Geotechnical Testing Facility

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PROJECT INFORMATION		SAMPLE INFORMATION		
Site Location:-	Broadwater Lake Harefield	**Laboratory Tests Undertaken:-**		
		TEST TYPE	**TEST METHOD**	**TESTED**
		Natural Moisture Contents (MC%)	(BS 1377:Part 2:1990 Clause 3.2)	✓
		Liquid Limits (%)	(BS 1377:Part 2:1990 Clause 4.3)	✓
		Plastic Limits (%)	(BS 1377:Part 2:1990 Clause 5.3)	✓
		Plasticity Index (%)	(BS 1377:Part 2:1990 Clause 5.4)	✓
		Linear Shrinkage (%)	(BS 1377:Part 2:1990 Clause 6.5)	
		PSD - Wet Sieving	(BS 1377:Part 2:1990 Clause 9.2)	✓
Client Reference:-	23-01-21	Engineering Sample Descriptions	(BS 5930 : Section 6)	
		Passing 425/63 (μm)	-	✓
		Hydrometer	(BS 1377:Part 2:1990 Clause 9.5)	
Date Samples Received:-	03 March 2023	Loss on Ignition (%)	-	
Date Testing Completed:-	10 March 2023	Soil Suctions (kPa)	BRE Digest IP 4/93, 1993	
		Bulk Density (Mg/m^3)	(BS 1377:Part 2:1990 Clause 7.2)	
		Strength Tests	(BS 1377:Part 7:1990 Clause 8 & 9)	
		Soluble Sulphate Content (SO_4g/l)	(BS 1377:Part 3:1990 Clause 5.3)	
		pH value	(BS 1377:Part 3:1990 Clause 9.4)	
		California Bearing Ratios (CBR)	(BS 1377:Part 4:1990 Clause 7)	✓
		Compaction Tests	(BS 1377:Part 4:1990 Clauses 3.0-3.6)	
The results relate only to the samples tested				

Laboratory testing in accord with BS EN ISO/IEC 17025-2000 and Quality Management in accord with ISO 9001

Signed on behalf of GroundTech Laboratories:-_____ Technical Signatory

Quality Assured to ISO 9001

GEOTECHNICAL LABORATORY TEST RESULTS

Report No: 23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

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Quality Assured to ISO 9001

SAMPLES				CLASSIFICATION TESTS							CLASSIFICATION TESTS							STRENGTH TESTS					CHEMICAL TESTS	
Test Location	Sample Type	Sample Depth -m	Test Type	WC %	LL %	PL %	PI %	Passing 425 µm %	Modified PI %	Class	Passing 63 µm %	WC/ LL	PL+ 2%	Liquidity Index	Loss on Ignition %	Soil Suction kPa	Bulk Density Mg/m³	Test Type	Cell Pressure kN/m²	Deviator Stress kN/m²	Apparent Cohesion kN/m²	ϕ	pH Value	Soluble Sulphate Content SO4 g/l
BH 01	D	1.00	PI/63	112	66	54	12	92	11	MH	82	1.70	56	4.83										
	D	3.00	PSD																					
BH 02	D	3.00	PI/63	72	53	34	19	96	18	MH	92	1.36	36	2.00										
	D	4.50	PSD																					
BH 03	D	3.00	PI/63	68	52	33	19	81	15	MH	64	1.31	35	1.84										
	D	4.50	PSD																					
BH 04	D	6.00	PSD																					
BH 05	D	1.20	PSD																					
BH 06	D	3.00	PI/63	66	45	26	19	86	16	CI	55	1.47	28	2.11										
	D	4.00	PSD																					
BH 08	D	1.65	PSD																					
	D	3.00	PSD																					

Symbols:

U	Undisturbed Sample	R	Remoulded	PI	Plasticity Index	T	Triaxial Undrained	L	100mm specimen
D	Disturbed Sample	63	Passing 63µm	F	Filter Paper Suction Tests	M	Multistage Triaxial	S	38mm specimen
B	Bulk Sample	H	Hydrometer	CC	Continuous Core	HP	Hand Penetrometer		
W	Water Sample	PSD	Wet Sieving			V	Vane Test		

LABORATORY TEST RESULTS

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 01

Sample Depth: 3.00m -3.45m

Sample Description:

Hydrometer No.:

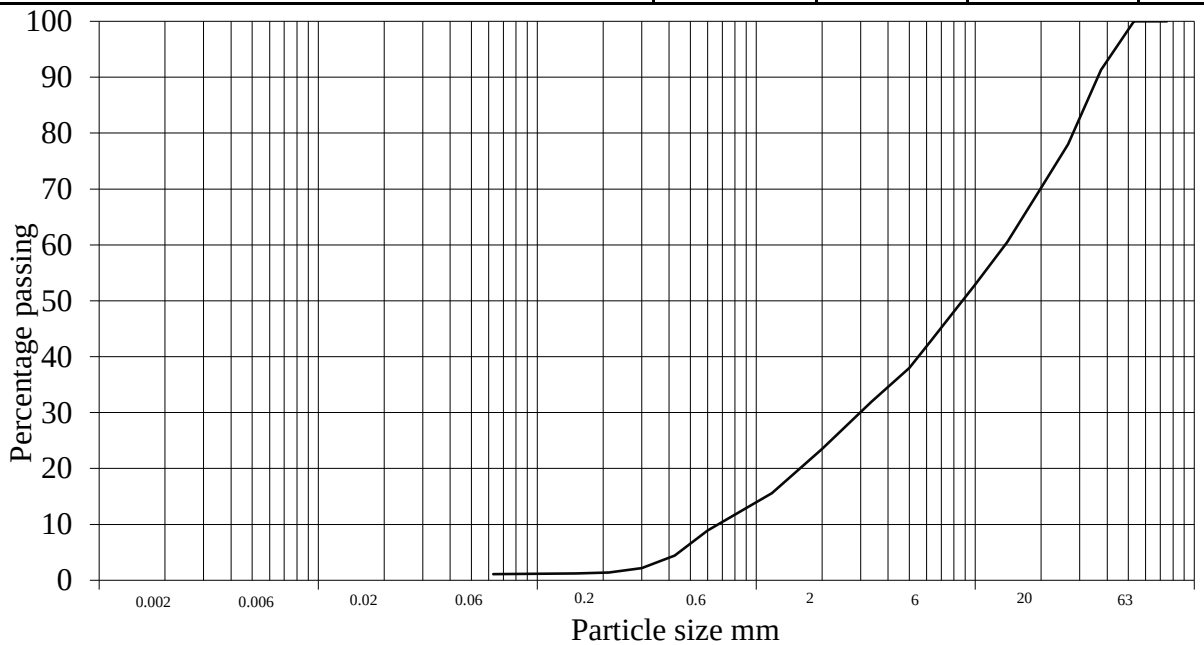
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	100.00		
50mm	100.00		
37.5mm	91.30		
26.5mm	78.00		
20mm	70.20		
14mm	60.50		
10mm	52.90		
6.3mm	42.90		
5mm	38.00		
3.5mm	31.90		
2mm	23.50		
1.18mm	15.60		
600µm	8.90		
425µm	4.40		
300µm	2.20		
212µm	1.40		
150µm	1.20		
63µm	1.10		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
1%				22%			77%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 02

Sample Depth: 4.50m -4.95m

Sample Description:

Hydrometer No.:

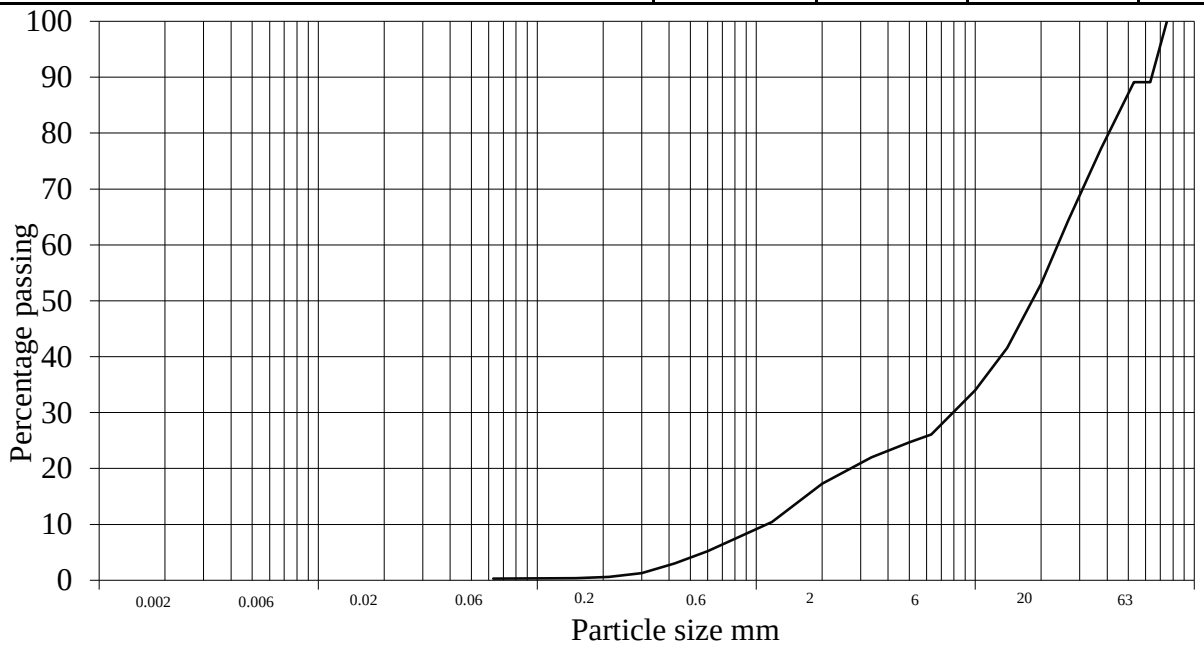
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	89.10		
50mm	89.10		
37.5mm	77.20		
26.5mm	64.30		
20mm	53.00		
14mm	41.60		
10mm	34.00		
6.3mm	26.10		
5mm	24.70		
3.5mm	22.00		
2mm	17.30		
1.18mm	10.40		
600µm	5.20		
425µm	3.00		
300µm	1.30		
212µm	0.60		
150µm	0.40		
63µm	0.30		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
(i)0% (ii)0%				(i)17% (ii)19%			(i)72% (ii)81%			11%

(i) Percentage of whole sample (ii) Percentage of sample excluding very coarse soils

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 03

Sample Depth: 4.50m -5.00m

Sample Description:

Hydrometer No.:

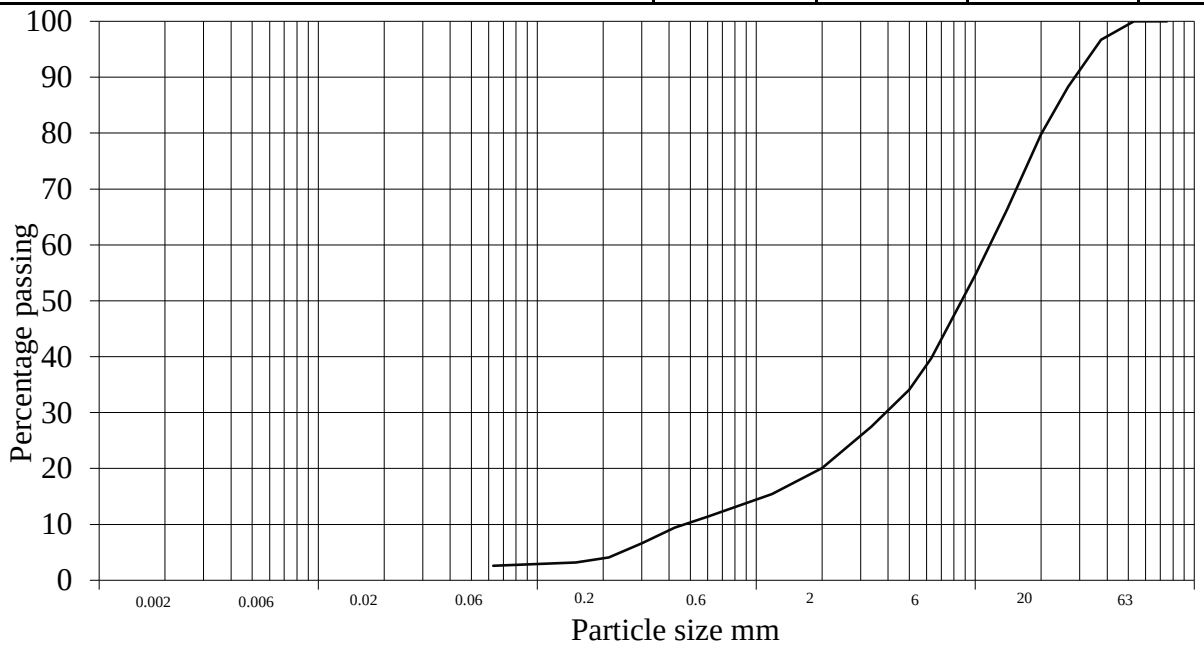
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	100.00		
50mm	100.00		
37.5mm	96.70		
26.5mm	88.30		
20mm	79.80		
14mm	66.40		
10mm	54.60		
6.3mm	39.70		
5mm	34.10		
3.5mm	27.50		
2mm	20.10		
1.18mm	15.40		
600µm	11.40		
425µm	9.40		
300µm	6.60		
212µm	4.10		
150µm	3.20		
63µm	2.60		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
3%				18%			80%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 04

Sample Depth: 6.00m -6.50m

Sample Description:

Hydrometer No.:

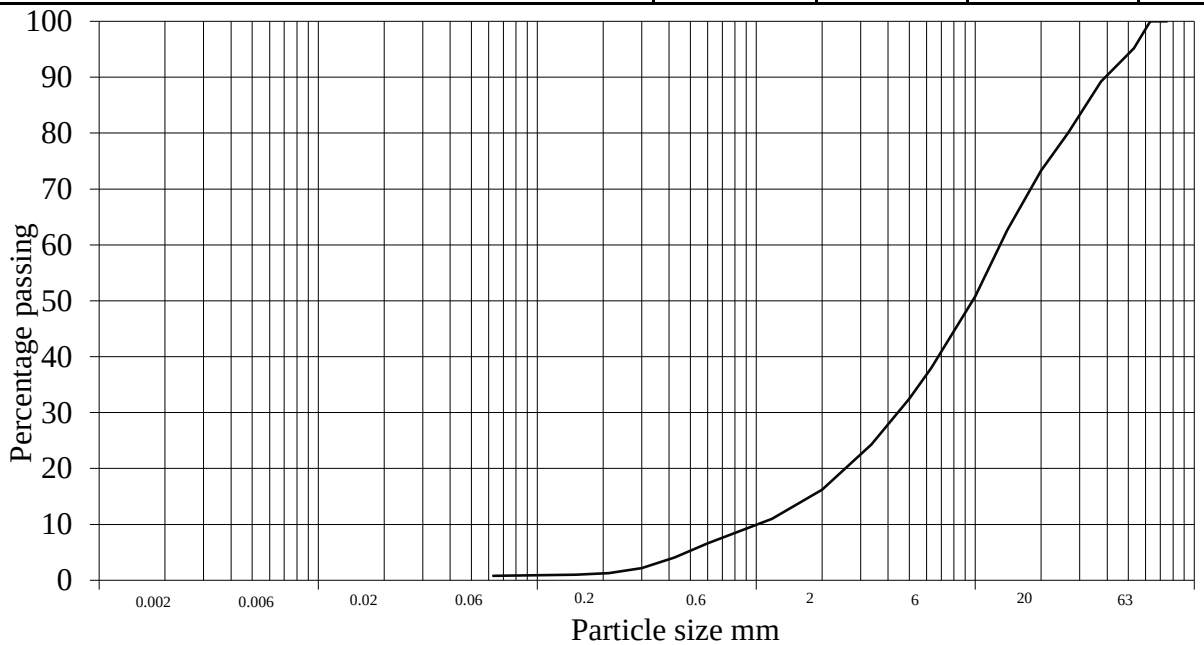
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	100.00		
50mm	95.20		
37.5mm	89.20		
26.5mm	80.00		
20mm	73.30		
14mm	62.60		
10mm	50.80		
6.3mm	38.00		
5mm	32.50		
3.5mm	24.30		
2mm	16.20		
1.18mm	11.00		
600µm	6.60		
425µm	4.10		
300µm	2.20		
212µm	1.30		
150µm	1.00		
63µm	0.80		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
1%				15%			84%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 05

Sample Depth: 1.20m -2.00m

Sample Description:

Hydrometer No.:

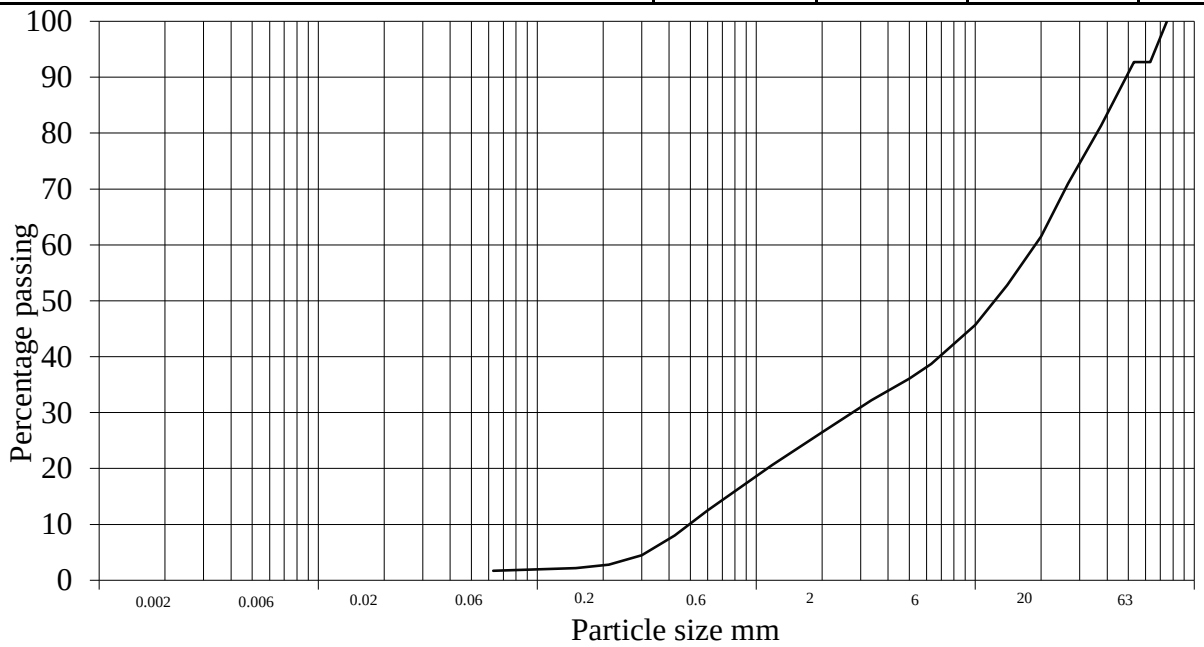
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	92.70		
50mm	92.70		
37.5mm	81.30		
26.5mm	71.00		
20mm	61.50		
14mm	52.80		
10mm	45.70		
6.3mm	38.70		
5mm	36.10		
3.5mm	32.20		
2mm	26.50		
1.18mm	20.60		
600µm	12.50		
425µm	8.00		
300µm	4.50		
212µm	2.80		
150µm	2.20		
63µm	1.70		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
(i)2% (ii)2%				(i)25% (ii)27%			(i)66% (ii)71%			7%

(i) Percentage of whole sample (ii) Percentage of sample excluding very coarse soils

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 06

Sample Depth: 4.00m -4.45m

Sample Description:

Hydrometer No.:

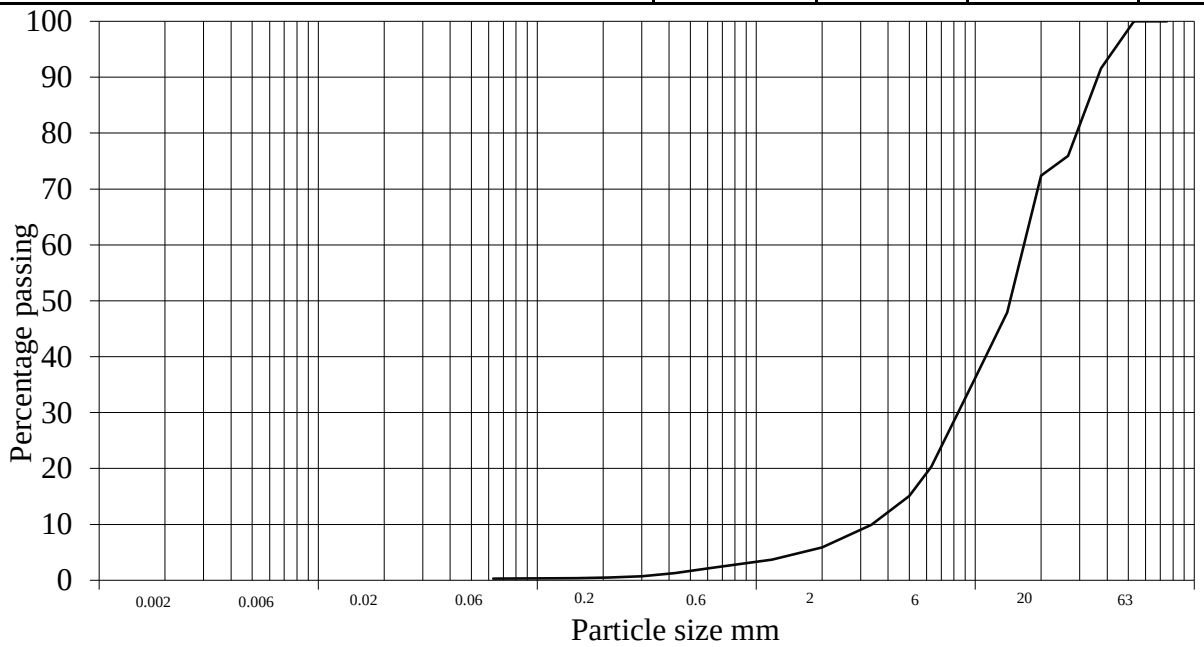
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	100.00		
50mm	100.00		
37.5mm	91.60		
26.5mm	75.90		
20mm	72.40		
14mm	47.90		
10mm	36.20		
6.3mm	20.30		
5mm	15.10		
3.5mm	9.90		
2mm	5.90		
1.18mm	3.70		
600µm	2.10		
425µm	1.30		
300µm	0.70		
212µm	0.50		
150µm	0.40		
63µm	0.30		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
0%				6%			94%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 08

Sample Depth: 1.65m -2.00m

Sample Description:

Hydrometer No.:

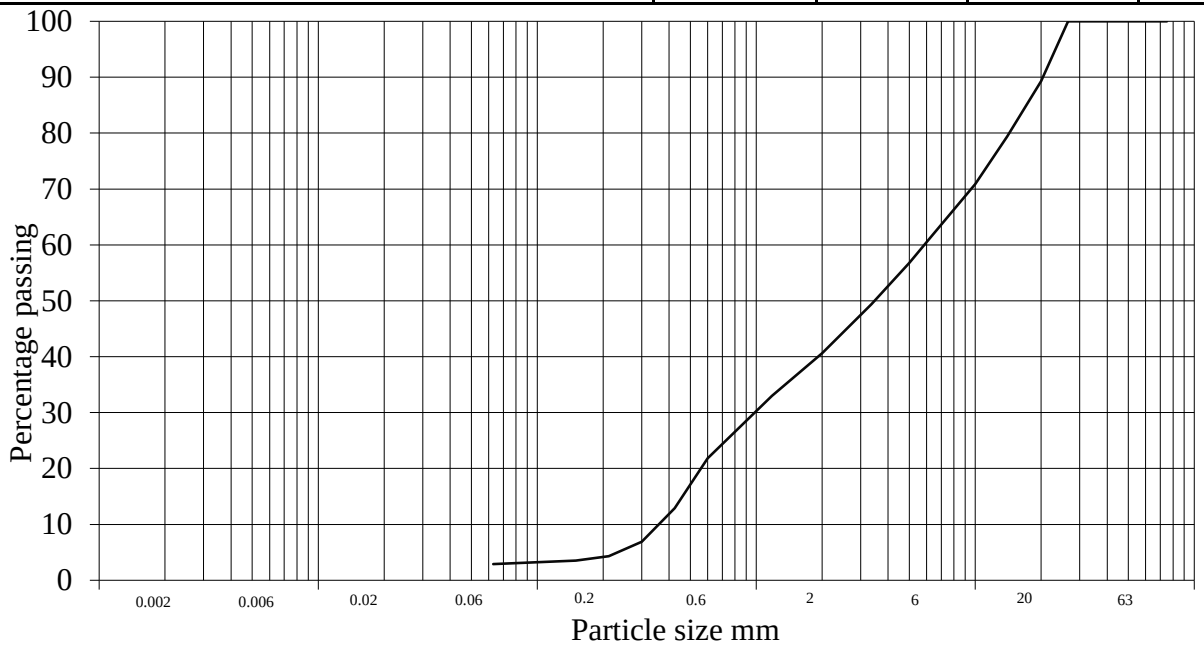
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	100.00		
50mm	100.00		
37.5mm	100.00		
26.5mm	100.00		
20mm	89.30		
14mm	79.40		
10mm	70.90		
6.3mm	61.50		
5mm	56.80		
3.5mm	49.40		
2mm	40.60		
1.18mm	33.00		
600µm	21.80		
425µm	12.90		
300µm	6.90		
212µm	4.30		
150µm	3.50		
63µm	2.90		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
3%				38%			59%			0%

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430 Email: groundtech@listersgeotechnics.co.uk

Quality Assured ISO 9001

Site: Broadwater Lake
Harefield

Test Location: BH 08

Sample Depth: 3.00m -3.45m

Sample Description:

Hydrometer No.:

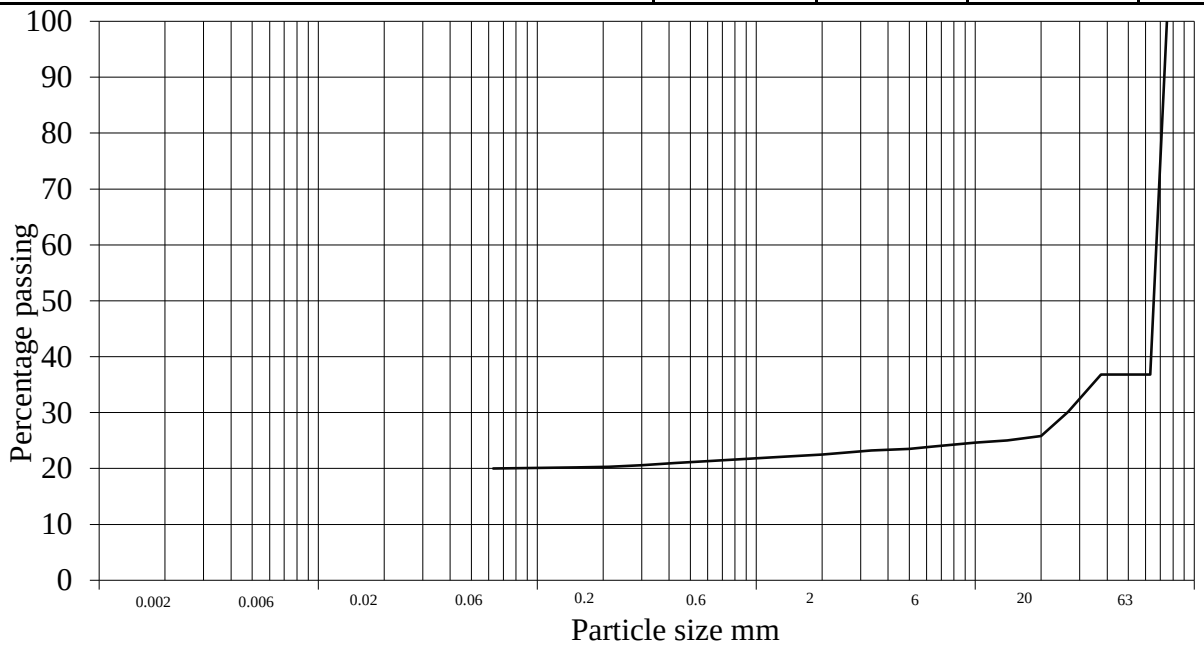
SG Gs:

Water Visc. (N):

Dry Mass of Soil after pretreatment (g):

Test Method: BS 1377 : Part 2 : 1990 : 9.2

BS test sieve	Cumulative Passing - %	Hydrometer Particle Diameter	Cumulative Passing - %
75mm	100.00		
63mm	36.80		
50mm	36.80		
37.5mm	36.80		
26.5mm	30.10		
20mm	25.80		
14mm	25.00		
10mm	24.60		
6.3mm	23.90		
5mm	23.50		
3.5mm	23.20		
2mm	22.50		
1.18mm	22.00		
600µm	21.30		
425µm	21.00		
300µm	20.60		
212µm	20.30		
150µm	20.20		
63µm	20.00		



CLAY	SILT			SAND			GRAVEL			COBBLES
	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	
(i)20% (ii)54%				(i)3% (ii)7%			(i)14% (ii)39%			63%

(i) Percentage of whole sample (ii) Percentage of sample excluding very coarse soils

PARTICLE SIZE DISTRIBUTION

Project Reference
23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn, Blakesley Road, Slapton, Towcester, Northants. NN12 8QD
Telephone: 01327 860947/860060 Fax: 01327 860430

Test Location	Depth (m)	C.B.R. Value % Top:	Base	Final Water Content %	Bulk Density Mg/m^3	Dry Density Mg/m^3	Remarks
BH 02	0.10	0.5	4.1	15	2.23	1.95	Grey silty, sandy GRAVEL. Gravel is fine to coarse subangular to angular flint.
BH 04	0.50	10.9	22.1	5	1.95	1.86	Grey brown, slightly sandy GRAVEL. Gravel is fine to coarse subangular to subrounded flint and rare quarzitic gravel.
BH 06	0.50	42.3	35.3	13	2.13	1.89	Grey silty sandy GRAVEL. Gravel is fine to coarse, subrounded to angular flint and rare quarzitic gravel.
BH 07	0.50	37.1	73.4	6	2.09	1.96	Grey sandy GRAVEL. Gravel is fine to coarse, subrounded to angular flint and rare quarzitic gravel.

Samples recompacted using standard compaction
Surcharge 8kg

CALIFORNIA BEARING RATIO	Report No. 23.03.008

GroundTech Laboratories

Geotechnical Testing Facility

Slapton Hill Barn Blakesley Road Slapton Towcester Northamptonshire NN12 8QD

Telephone: 01327 860947/860060 Fax: 01327 860430

Test Location	Sample				Spec Ref.	SWC	Intact Bulk Density	Intact Dry Density	CIRIA C574 Density Sclae
	Ref	Top	Base	Type		%	Mg/m³	Mg/m³	
BH 01	3	9.50	9.60	D	1	21	2.09	1.73	H
BH 02	7	9.00	9.10	D	1	23	2.05	1.67	M
BH 03	10	12.50	12.95	D	1	25	2.02	1.62	M
BH 07	18	7.50		D	1	27	1.97	1.57	M
BH 08	21	12.50	12.95	D	1	25	2.02	1.62	M

Date	SATURATION WATER CONTENT	Report No.	L: Low M: Medium H: High VH: Very High
10/03/2023		23.03.008	
Tested in accordance with BS1377 : Part 2 : 1990, clause 3.3 unless annotated otherwise.			

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-06239-1		
Initial Date of Issue:	08-Mar-2023		
Client	Geo Integrity		
Client Address:	Units 7 Burcote Wood Farm Business Park Wood Burcote Towcester NN12 8TA		
Contact(s):	Lee Ashworth		
Project	23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE		
Quotation No.:	Q21-23824	**Date Received:**	23-Feb-2023
Order No.:		**Date Instructed:**	23-Feb-2023
No. of Samples:	15		
Turnaround (Wkdays):	7	**Results Due:**	03-Mar-2023
Date Approved:	08-Mar-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Leachate

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity				**Chemtest Job No.:**		23-06239	23-06239
Quotation No.: Q21-23824				**Chemtest Sample ID.:**		1595876	1595888
				Sample Location:		TP1	TP2
				Sample Type:		SOIL	SOIL
				Top Depth (m):		0.50	0.50
				Date Sampled:		15-Feb-2023	15-Feb-2023
Determinand	**Accred.**	**SOP**	**Type**	**Units**	**LOD**		
Arsenic (Dissolved)	U	1455	10:1	µg/l	0.20	1.6	3.1
Cadmium (Dissolved)	U	1455	10:1	µg/l	0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	10:1	µg/l	0.50	2.3	4.8
Copper (Dissolved)	U	1455	10:1	µg/l	0.50	12	4.1
Mercury (Dissolved)	U	1455	10:1	µg/l	0.05	< 0.05	< 0.05
Nickel (Dissolved)	U	1455	10:1	µg/l	0.50	5.5	5.3
Lead (Dissolved)	U	1455	10:1	µg/l	0.50	1.9	0.91
Selenium (Dissolved)	U	1455	10:1	µg/l	0.50	2.4	0.66
Zinc (Dissolved)	U	1455	10:1	µg/l	2.5	8.3	25

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		**Chemtest Job No.:**			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		**Chemtest Sample ID.:**			1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
		Sample Location:			TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
		Date Sampled:			15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192		N/A	-	-	-	-	-		-	-	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture	N	2030	%	0.020	48	18	13	18	21	11	8.8	5.2	6.3
Arsenic	M	2455	mg/kg	0.5	17	10	4.7	4.5	13	14	15	14	12
Cadmium	M	2455	mg/kg	0.10	0.50	0.19	0.14	< 0.10	0.21	0.10	0.44	0.38	0.24
Chromium	M	2455	mg/kg	0.5	38	24	9.7	11	25	20	30	28	24
Copper	M	2455	mg/kg	0.50	40	27	12	4.8	20	4.7	27	23	27
Mercury	M	2455	mg/kg	0.05	0.26	0.09	< 0.05	< 0.05	0.35	< 0.05	0.08	0.08	0.09
Nickel	M	2455	mg/kg	0.50	36	19	10	7.8	21	11	21	21	20
Lead	M	2455	mg/kg	0.50	76	50	29	7.6	120	9.8	57	58	51
Selenium	M	2455	mg/kg	0.25	4.4	0.66	0.39	0.25	1.1	0.43	0.76	0.77	0.70
Zinc	M	2455	mg/kg	0.50	72	67	31	22	95	13	91	85	67
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05									
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05									
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05									
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05									
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25									
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00									
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00									
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00									
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00									
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00									
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00									
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00									
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05									
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05									
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05									
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25									
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00									
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00									
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00									
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00									
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00									
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00									
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00									
Total VPH >C5-C10	M	2780	mg/kg	0.50									

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity					Chemtest Job No.:	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824					Chemtest Sample ID.:	1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
					Sample Location:	TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
					Date Sampled:	15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Total EPH >C10-C35	M	2690	mg/kg	10.00										
Total EPH >C10-C40	N	2690	mg/kg	10.00										
Fraction of Organic Carbon	M	2625		0.0010	0.092						0.015			0.013
Total Organic Carbon	M	2625	%	0.20										
TPH >C5-C6	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C6-C7	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C7-C8	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0	17	< 1.0	< 1.0	< 1.0	10	< 1.0	< 1.0	27	8.1
TPH >C16-C21	N	2670	mg/kg	1.0	40	< 1.0	< 1.0	< 1.0	20	< 1.0	< 1.0	86	20
TPH >C21-C35	N	2670	mg/kg	1.0	160	< 1.0	< 1.0	< 1.0	40	< 1.0	< 1.0	70	37
Total TPH >C5-C35	N	2670	mg/kg	10	220	< 10	< 10	< 10	70	< 10	< 10	180	65
Naphthalene	M	2700	mg/kg	0.10	0.50	0.90	< 0.10	< 0.10	1.1	< 0.10	0.65	0.62	0.72
Acenaphthylene	M	2700	mg/kg	0.10	0.21	0.35	< 0.10	< 0.10	0.31	< 0.10	0.45	0.41	0.20
Acenaphthene	M	2700	mg/kg	0.10	0.15	0.40	< 0.10	< 0.10	0.19	< 0.10	0.24	0.21	0.31
Fluorene	M	2700	mg/kg	0.10	0.17	0.26	< 0.10	< 0.10	0.16	< 0.10	0.40	0.18	0.23
Phenanthrene	M	2700	mg/kg	0.10	0.87	1.4	< 0.10	< 0.10	0.79	< 0.10	0.78	0.68	1.2
Anthracene	M	2700	mg/kg	0.10	0.34	0.36	< 0.10	< 0.10	0.27	< 0.10	0.44	0.75	0.39
Fluoranthene	M	2700	mg/kg	0.10	2.5	1.4	< 0.10	0.52	1.5	0.12	1.5	1.2	1.2
Pyrene	M	2700	mg/kg	0.10	2.6	1.6	< 0.10	0.65	1.6	0.29	2.0	1.7	1.5
Benzo[a]anthracene	M	2700	mg/kg	0.10	1.5	0.88	< 0.10	< 0.10	0.86	< 0.10	1.2	0.93	0.74
Chrysene	M	2700	mg/kg	0.10	4.4	1.1	< 0.10	< 0.10	2.7	< 0.10	1.5	1.1	0.92
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	1.8	0.93	< 0.10	< 0.10	1.2	< 0.10	1.7	1.2	0.87
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	0.76	0.56	< 0.10	< 0.10	0.59	< 0.10	0.62	0.58	0.63
Benzo[a]pyrene	M	2700	mg/kg	0.10	1.5	0.83	< 0.10	< 0.10	0.84	< 0.10	1.5	0.98	0.67
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	1.3	0.60	< 0.10	< 0.10	0.67	< 0.10	1.1	1.1	0.53
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	0.18	0.11	< 0.10	< 0.10	0.16	< 0.10	0.25	0.44	< 0.10
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	2.5	0.95	< 0.10	< 0.10	1.3	< 0.10	1.6	1.2	0.86
Total Of 16 PAH's	M	2700	mg/kg	2.0	21	13	< 2.0	< 2.0	14	< 2.0	16	13	11
Dichlorodifluoromethane	U	2760	µg/kg	1.0		< 1.0			< 1.0				
Chloromethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Vinyl Chloride	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Bromomethane	M	2760	µg/kg	20		< 20			< 20				
Chloroethane	U	2760	µg/kg	2.0		< 2.0			< 2.0				
Trichlorofluoromethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,1-Dichloroethene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0			< 1.0				

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:			1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
		Sample Location:			TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
		Date Sampled:			15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
		Asbestos Lab:			COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,1-Dichloroethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Bromochloromethane	U	2760	µg/kg	5.0		< 5.0			< 5.0				
Trichloromethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,1,1-Trichloroethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Tetrachloromethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,1-Dichloropropene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2.0		< 2.0			< 2.0				
Trichloroethene	N	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2-Dichloropropane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Dibromomethane	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Bromodichloromethane	M	2760	µg/kg	5.0		< 5.0			< 5.0				
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10			< 10				
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10			< 10				
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10			< 10				
Tetrachloroethene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,3-Dichloropropane	U	2760	µg/kg	2.0		< 2.0			< 2.0				
Dibromochloromethane	U	2760	µg/kg	10		< 10			< 10				
1,2-Dibromoethane	M	2760	µg/kg	5.0		< 5.0			< 5.0				
Chlorobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0		< 2.0			< 2.0				
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Tribromomethane	U	2760	µg/kg	1.0		< 1.0			< 1.0				
Isopropylbenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Bromobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50			< 50				
N-Propylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
2-Chlorotoluene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
4-Chlorotoluene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
Tert-Butylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Sec-Butylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0				

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:	1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
		Sample Location:	TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
		Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):	0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
		Date Sampled:	15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
		Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY

Determinand	Accred.	SOP	Units	LOD									
1,3-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
4-Isopropyltoluene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
1,4-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
N-Butylbenzene	U	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2-Dichlorobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50			< 50				
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0		< 1.0			< 1.0				
Hexachlorobutadiene	N	2760	µg/kg	1.0		< 1.0			< 1.0				
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0		< 2.0			< 2.0				
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0		< 1.0			< 1.0				
N-Nitrosodimethylamine	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Phenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Chlorophenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50		< 0.50			< 0.50				
1,3-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
1,4-Dichlorobenzene	N	2790	mg/kg	0.50		< 0.50			< 0.50				
1,2-Dichlorobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Methylphenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Hexachloroethane	N	2790	mg/kg	0.50		< 0.50			< 0.50				
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Methylphenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Nitrobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Isophorone	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Nitrophenol	N	2790	mg/kg	0.50		< 0.50			< 0.50				
2,4-Dimethylphenol	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2,4-Dichlorophenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Naphthalene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Chloroaniline	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Hexachlorobutadiene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Methylnaphthalene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Nitrophenol	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50		< 0.50			< 0.50				
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50		< 0.50			< 0.50				

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:	1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
		Sample Location:	TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
		Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):	0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
		Date Sampled:	15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
		Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY

Determinand	Accred.	SOP	Units	LOD									
2-Chloronaphthalene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Nitroaniline	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Acenaphthylene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Dimethylphthalate	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2,6-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Acenaphthene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
3-Nitroaniline	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Dibenzofuran	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Chlorophenylphenylether	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2,4-Dinitrotoluene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Fluorene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Diethyl Phthalate	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Nitroaniline	M	2790	mg/kg	0.50		< 0.50			< 0.50				
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Azobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Hexachlorobenzene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Pentachlorophenol	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Phenanthrene	M	2790	mg/kg	0.50		1.2			1.1				
Anthracene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Carbazole	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Fluoranthene	M	2790	mg/kg	0.50		0.80			2.9				
Pyrene	M	2790	mg/kg	0.50		0.67			2.4				
Butylbenzyl Phthalate	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Benzo[a]anthracene	M	2790	mg/kg	0.50		< 0.50			1.2				
Chrysene	M	2790	mg/kg	0.50		< 0.50			1.4				
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50		< 0.50			< 0.50				
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Benzo[b]fluoranthene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Benzo[k]fluoranthene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Benzo[a]pyrene	M	2790	mg/kg	0.50		< 0.50			1.3				
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50		< 0.50			0.72				
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50		< 0.50			< 0.50				
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50		< 0.50			0.82				
PCB 81	N	2815	mg/kg	0.010							< 0.010		
PCB 77	U	2815	mg/kg	0.010							< 0.010		
PCB 105	N	2815	mg/kg	0.010							< 0.010		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity					**Chemtest Job No.:**	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824					**Chemtest Sample ID.:**	1595876	1595877	1595878	1595879	1595880	1595881	1595882	1595883	1595884
					Sample Location:	TP1	TP10	TP12	TP6	TP9	TP13	TP14	TP5	TP3
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.50	0.80	0.80	0.50	1.40	1.30	0.60	0.50	1.20
					Date Sampled:	15-Feb-2023	16-Feb-2023	17-Feb-2023	16-Feb-2023	16-Feb-2023	17-Feb-2023	17-Feb-2023	15-Feb-2023	15-Feb-2023
					Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY	COVENTRY		COVENTRY	COVENTRY	COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
PCB 114	N	2815	mg/kg	0.010								< 0.010		
PCB 118	N	2815	mg/kg	0.010								< 0.010		
PCB 123	N	2815	mg/kg	0.010								< 0.010		
PCB 126	N	2815	mg/kg	0.010								< 0.010		
PCB 156	N	2815	mg/kg	0.010								< 0.010		
PCB 157	N	2815	mg/kg	0.010								< 0.010		
PCB 167	N	2815	mg/kg	0.010								< 0.010		
PCB 169	N	2815	mg/kg	0.010								< 0.010		
PCB 189	N	2815	mg/kg	0.010								< 0.010		
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12								< 0.12		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		**Chemtest Job No.:**			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		**Chemtest Sample ID.:**			1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
ACM Type	U	2192		N/A	-	-	-	-		
Asbestos Identification	U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected		
Moisture	N	2030	%	0.020	12	12	10	11	63	43
Arsenic	M	2455	mg/kg	0.5	4.3	6.8	13	7.2		
Cadmium	M	2455	mg/kg	0.10	0.10	0.14	0.33	0.13		
Chromium	M	2455	mg/kg	0.5	11	16	33	17		
Copper	M	2455	mg/kg	0.50	6.1	16	32	15		
Mercury	M	2455	mg/kg	0.05	< 0.05	0.28	0.09	0.28		
Nickel	M	2455	mg/kg	0.50	8.3	12	17	12		
Lead	M	2455	mg/kg	0.50	13	60	120	67		
Selenium	M	2455	mg/kg	0.25	0.31	0.48	0.68	0.46		
Zinc	M	2455	mg/kg	0.50	22	48	120	51		
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50		
Aliphatic VPH >C5-C6	M	2780	mg/kg	0.05	< 0.05	< 0.05				
Aliphatic VPH >C6-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05				
Aliphatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	0.25				
Aliphatic VPH >C8-C10	M	2780	mg/kg	0.05	1.2	4.3				
Total Aliphatic VPH >C5-C10	M	2780	mg/kg	0.25	1.2	4.6				
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00	340	290				
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00	2800	1400				
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00	3700	1700				
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00	1500	570				
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00	54	27				
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00	8300	4000				
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00	8400	4000				
Aromatic VPH >C5-C7	M	2780	mg/kg	0.05	< 0.05	< 0.05				
Aromatic VPH >C7-C8	M	2780	mg/kg	0.05	< 0.05	< 0.05				
Aromatic VPH >C8-C10	M	2780	mg/kg	0.05	< 0.05	< 0.05				
Total Aromatic VPH >C5-C10	M	2780	mg/kg	0.25	< 0.25	< 0.25				
Aromatic EPH >C10-C12	M	2690	mg/kg	1.00	100	100				
Aromatic EPH >C12-C16	M	2690	mg/kg	1.00	1600	1200				
Aromatic EPH >C16-C21	N	2690	mg/kg	2.00	1500	530				
Aromatic EPH >C21-C35	M	2690	mg/kg	2.00	140	49				
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00	2.6	< 1.0				
Total Aromatic EPH >C10-C35	M	2690	mg/kg	5.00	3400	1800				
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00	3400	1800				
Total VPH >C5-C10	M	2780	mg/kg	0.50	1.2	4.6				

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:			1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Total EPH >C10-C35	M	2690	mg/kg	10.00	12000	5800				
Total EPH >C10-C40	N	2690	mg/kg	10.00	12000	5800				
Fraction of Organic Carbon	M	2625		0.0010		0.0075			0.14	
Total Organic Carbon	M	2625	%	0.20						12
TPH >C5-C6	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
TPH >C6-C7	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
TPH >C7-C8	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
TPH >C8-C10	N	2670	mg/kg	1.0	76	86	18	1.5		
TPH >C10-C12	N	2670	mg/kg	1.0	490	400	67	6.8		
TPH >C12-C16	N	2670	mg/kg	1.0	4500	2600	600	18		
TPH >C16-C21	N	2670	mg/kg	1.0	6900	2900	1000	20		
TPH >C21-C35	N	2670	mg/kg	1.0	3400	990	1100	46		
Total TPH >C5-C35	N	2670	mg/kg	10	15000	7000	2800	93		
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Phenanthrene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Anthracene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10		
Fluoranthene	M	2700	mg/kg	0.10	< 0.10	4.3	7.3	< 0.10		
Pyrene	M	2700	mg/kg	0.10	< 0.10	5.9	12	< 0.10		
Benzo[a]anthracene	M	2700	mg/kg	0.10	< 0.10	2.4	4.7	< 0.10		
Chrysene	M	2700	mg/kg	0.10	< 0.10	4.0	6.5	< 0.10		
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.7	6.1	< 0.10		
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.58	2.9	< 0.10		
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	1.5	4.7	< 0.10		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	1.1	3.8	< 0.10		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.73	1.2	< 0.10		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	1.8	4.5	< 0.10		
Total Of 16 PAH's	M	2700	mg/kg	2.0	< 2.0	24	54	< 2.0		
Dichlorodifluoromethane	U	2760	µg/kg	1.0	< 1.0			< 1.0		
Chloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Vinyl Chloride	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Bromomethane	M	2760	µg/kg	20	< 20			< 20		
Chloroethane	U	2760	µg/kg	2.0	< 2.0			< 2.0		
Trichlorofluoromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,1-Dichloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Trans 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:			1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,1-Dichloroethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
cis 1,2-Dichloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Bromochloromethane	U	2760	µg/kg	5.0	< 5.0			< 5.0		
Trichloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,1,1-Trichloroethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Tetrachloromethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,1-Dichloropropene	U	2760	µg/kg	1.0	< 1.0			< 1.0		
Benzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2.0	< 2.0			< 2.0		
Trichloroethene	N	2760	µg/kg	1.0	< 1.0			< 1.0		
1,2-Dichloropropane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Dibromomethane	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Bromodichloromethane	M	2760	µg/kg	5.0	< 5.0			< 5.0		
cis-1,3-Dichloropropene	N	2760	µg/kg	10	< 10			< 10		
Toluene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10	< 10			< 10		
1,1,2-Trichloroethane	M	2760	µg/kg	10	< 10			< 10		
Tetrachloroethene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,3-Dichloropropane	U	2760	µg/kg	2.0	< 2.0			< 2.0		
Dibromochloromethane	U	2760	µg/kg	10	< 10			< 10		
1,2-Dibromoethane	M	2760	µg/kg	5.0	< 5.0			< 5.0		
Chlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2.0	< 2.0			< 2.0		
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
o-Xylene	M	2760	µg/kg	1.0	< 1.0	< 1.0	< 1.0	< 1.0		
Styrene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Tribromomethane	U	2760	µg/kg	1.0	< 1.0			< 1.0		
Isopropylbenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Bromobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,2,3-Trichloropropane	N	2760	µg/kg	50	< 50			< 50		
N-Propylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0		
2-Chlorotoluene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1.0	14			< 1.0		
4-Chlorotoluene	U	2760	µg/kg	1.0	< 1.0			< 1.0		
Tert-Butylbenzene	U	2760	µg/kg	1.0	2.4			< 1.0		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1.0	11			< 1.0		
Sec-Butylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		**Chemtest Job No.:**			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		**Chemtest Sample ID.:**			1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
1,3-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
4-Isopropyltoluene	U	2760	µg/kg	1.0	3.6			< 1.0		
1,4-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
N-Butylbenzene	U	2760	µg/kg	1.0	< 1.0			< 1.0		
1,2-Dichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50	< 50			< 50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1.0	< 1.0			< 1.0		
Hexachlorobutadiene	N	2760	µg/kg	1.0	< 1.0			< 1.0		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2.0	< 2.0			< 2.0		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1.0	< 1.0			< 1.0		
N-Nitrosodimethylamine	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Phenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Chlorophenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Bis-(2-Chloroethyl)Ether	M	2790	mg/kg	0.50	< 0.50			< 0.50		
1,3-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
1,4-Dichlorobenzene	N	2790	mg/kg	0.50	< 0.50			< 0.50		
1,2-Dichlorobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Methylphenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Bis(2-Chloroisopropyl)Ether	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Hexachloroethane	N	2790	mg/kg	0.50	< 0.50			< 0.50		
N-Nitrosodi-n-propylamine	M	2790	mg/kg	0.50	< 0.50			< 0.50		
4-Methylphenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Nitrobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Isophorone	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Nitrophenol	N	2790	mg/kg	0.50	< 0.50			< 0.50		
2,4-Dimethylphenol	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Bis(2-Chloroethoxy)Methane	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2,4-Dichlorophenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
1,2,4-Trichlorobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Naphthalene	M	2790	mg/kg	0.50	0.96			< 0.50		
4-Chloroaniline	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Hexachlorobutadiene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
4-Chloro-3-Methylphenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Methylnaphthalene	M	2790	mg/kg	0.50	6.0			< 0.50		
4-Nitrophenol	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.50	< 0.50			< 0.50		
2,4,6-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2,4,5-Trichlorophenol	M	2790	mg/kg	0.50	< 0.50			< 0.50		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity		Chemtest Job No.:			23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824		Chemtest Sample ID.:			1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
2-Chloronaphthalene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Nitroaniline	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Acenaphthylene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Dimethylphthalate	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2,6-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Acenaphthene	M	2790	mg/kg	0.50	2.0			< 0.50		
3-Nitroaniline	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Dibenzofuran	M	2790	mg/kg	0.50	1.1			< 0.50		
4-Chlorophenylphenylether	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2,4-Dinitrotoluene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Fluorene	M	2790	mg/kg	0.50	2.9			< 0.50		
Diethyl Phthalate	M	2790	mg/kg	0.50	< 0.50			< 0.50		
4-Nitroaniline	M	2790	mg/kg	0.50	< 0.50			< 0.50		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Azobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
4-Bromophenylphenyl Ether	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Hexachlorobenzene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Pentachlorophenol	N	2790	mg/kg	0.50	< 0.50			< 0.50		
Phenanthrene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Anthracene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Carbazole	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Di-N-Butyl Phthalate	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Fluoranthene	M	2790	mg/kg	0.50	3.6			1.2		
Pyrene	M	2790	mg/kg	0.50	3.4			1.1		
Butylbenzyl Phthalate	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Benzo[a]anthracene	M	2790	mg/kg	0.50	0.75			0.66		
Chrysene	M	2790	mg/kg	0.50	0.98			0.74		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.50	0.94			< 0.50		
Di-N-Octyl Phthalate	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Benzo[b]fluoranthene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Benzo[k]fluoranthene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Benzo[a]pyrene	M	2790	mg/kg	0.50	< 0.50			0.86		
Indeno(1,2,3-c,d)Pyrene	M	2790	mg/kg	0.50	< 0.50			0.61		
Dibenz(a,h)Anthracene	M	2790	mg/kg	0.50	< 0.50			< 0.50		
Benzo[g,h,i]perylene	M	2790	mg/kg	0.50	< 0.50			0.68		
PCB 81	N	2815	mg/kg	0.010						
PCB 77	U	2815	mg/kg	0.010						
PCB 105	N	2815	mg/kg	0.010						

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

Client: Geo Integrity				**Chemtest Job No.:**	23-06239	23-06239	23-06239	23-06239	23-06239	23-06239
Quotation No.: Q21-23824				**Chemtest Sample ID.:**	1595885	1595886	1595887	1595888	1595889	1595890
				Sample Location:	TP4	TP4	CBR5	TP2	TP11	TP14
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.75	2.00	0.75	0.50	1.20	1.40
				Date Sampled:	15-Feb-2023	15-Feb-2023	16-Feb-2023	15-Feb-2023	17-Feb-2023	17-Feb-2023
				Asbestos Lab:	COVENTRY	COVENTRY	COVENTRY	COVENTRY		
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
PCB 114	N	2815	mg/kg	0.010						
PCB 118	N	2815	mg/kg	0.010						
PCB 123	N	2815	mg/kg	0.010						
PCB 126	N	2815	mg/kg	0.010						
PCB 156	N	2815	mg/kg	0.010						
PCB 157	N	2815	mg/kg	0.010						
PCB 167	N	2815	mg/kg	0.010						
PCB 169	N	2815	mg/kg	0.010						
PCB 189	N	2815	mg/kg	0.010						
Total PCBs (12 Congeners)	N	2815	mg/kg	0.12						

Results - Single Stage WAC

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-06239						
Chemtest Sample ID:	1595878						
Sample Ref:							
Sample ID:							
Sample Location:	TP12						
Top Depth(m):	0.80						
Bottom Depth(m):							
Sampling Date:	17-Feb-2023						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	2.1	3	5	6
Loss On Ignition	2610	M	%	4.3	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	< 10	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		9.0	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0070	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0055	0.055	0.5	2	25
Barium	1455	U	0.010	0.097	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	0.0054	0.054	0.5	10	70
Copper	1455	U	0.023	0.23	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0050	0.050	0.5	10	30
Nickel	1455	U	0.0014	0.015	0.4	10	40
Lead	1455	U	0.0032	0.032	0.5	10	50
Antimony	1455	U	0.0012	0.012	0.06	0.7	5
Selenium	1455	U	0.0018	0.018	0.1	0.5	7
Zinc	1455	U	0.005	0.053	4	50	200
Chloride	1220	U	1.9	19	800	15000	25000
Fluoride	1220	U	0.67	6.7	10	150	500
Sulphate	1220	U	12	120	1000	20000	50000
Total Dissolved Solids	1020	N	100	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	18	180	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	13

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Results - Single Stage WAC

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield, UB9 6PE

					Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-06239						
Chemtest Sample ID:	1595885						
Sample Ref:							
Sample ID:							
Sample Location:	TP4						
Top Depth(m):	0.75						
Bottom Depth(m):							
Sampling Date:	15-Feb-2023						
Determinand	**SOP**	**Accred.**	**Units**		**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%	0.48	3	5	6
Loss On Ignition	2610	M	%	1.6	--	--	10
Total BTEX	2760	M	mg/kg	< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg	< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg	15000	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg	< 2.0	100	--	--
pH	2010	M		8.5	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg	0.0050	--	To evaluate	To evaluate
Eluate Analysis			**10:1 Eluate mg/l**	**10:1 Eluate mg/kg**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0056	0.056	0.5	2	25
Barium	1455	U	0.044	0.44	20	100	300
Cadmium	1455	U	< 0.00011	< 0.0011	0.04	1	5
Chromium	1455	U	< 0.0005	< 0.0050	0.5	10	70
Copper	1455	U	0.0022	0.022	2	50	100
Mercury	1455	U	< 0.00005	< 0.00050	0.01	0.2	2
Molybdenum	1455	U	0.0060	0.060	0.5	10	30
Nickel	1455	U	0.0023	0.023	0.4	10	40
Lead	1455	U	< 0.0005	< 0.0050	0.5	10	50
Antimony	1455	U	0.0023	0.023	0.06	0.7	5
Selenium	1455	U	< 0.0005	< 0.0050	0.1	0.5	7
Zinc	1455	U	< 0.003	< 0.025	4	50	200
Chloride	1220	U	< 1.0	< 10	800	15000	25000
Fluoride	1220	U	1.1	11	10	150	500
Sulphate	1220	U	18	180	1000	20000	50000
Total Dissolved Solids	1020	N	190	1900	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.30	1	-	-
Dissolved Organic Carbon	1610	U	19	190	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.090
Moisture (%)	12

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.

Test Methods

SOP	Title	Parameters included	Method summary
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection
2790	Semi-Volatile Organic Compounds (SVOCs) in Soils by GC-MS	Semi-volatile organic compounds(cf. USEPA Method 8270)	Acetone/Hexane extraction / GC-MS
2810	Polychlorinated Biphenyls (PCB) as Aroclors in Soils by GC-ECD	Polychlorinated Biphenyls expressed as an Aroclor (normally reported as *Aroclor 1242)	Extraction of a soil sample, as received, into hexane/acetone (50:50) followed by gas chromatography (GC) using mass spectrometric (MS) detection for identification of polychlorinated biphenyls and electron capture detection (ECD) for quanitation if present.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-07407-1		
Initial Date of Issue:	09-Mar-2023		
Client	Geo Integrity		
Client Address:	Units 7 Burcote Wood Farm Business Park Wood Burcote Towcester NN12 8TA		
Contact(s):	Lee Ashworth		
Project	23-01-21 Broadwater Lake, Moorhall Road, Harefield		
Quotation No.:	Q22-26343	**Date Received:**	03-Mar-2023
Order No.:		**Date Instructed:**	03-Mar-2023
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	09-Mar-2023
Date Approved:	09-Mar-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Water

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield

Client: Geo Integrity		**Chemtest Job No.:**			23-07407	23-07407	23-07407
Quotation No.: Q22-26343		**Chemtest Sample ID.:**			1601258	1601259	1601260
			Sample Location:		BH3	BH6	BH9
			Sample Type:		WATER	WATER	WATER
			Top Depth (m):		2.20	0.94	2.36
			Date Sampled:		01-Mar-2023	01-Mar-2023	01-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
pH	U	1010		N/A	8.3	8.1	7.9
Chemical Oxygen Demand	U	1100	mg O2/l	10	75	12	28
Calcium (Dissolved)	U	1455	mg/l	2.00	85	78	170
Potassium (Dissolved)	U	1455	mg/l	0.50	7.1	4.8	5.5
Magnesium (Dissolved)	U	1455	mg/l	0.20	2.8	3.9	8.8
Sodium (Dissolved)	U	1455	mg/l	1.50	30	41	48
Total Hardness as CaCO3	U	1270	mg/l	15	230	210	470
Arsenic (Dissolved)	U	1455	µg/l	0.20	7.7	3.8	3.3
Boron (Dissolved)	U	1455	µg/l	10.0	50	63	120
Barium (Dissolved)	U	1455	µg/l	5.00	24	32	110
Cadmium (Dissolved)	U	1455	µg/l	0.11	< 0.11	< 0.11	< 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50
Copper (Dissolved)	U	1455	µg/l	0.50	1.8	< 0.50	< 0.50
Iron (Dissolved)	N	1455	µg/l	5.0	69	< 5.0	< 5.0
Mercury (Dissolved)	U	1455	µg/l	0.05	< 0.05	< 0.05	< 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	150	200	760
Nickel (Dissolved)	U	1455	µg/l	0.50	4.7	3.2	4.8
Lead (Dissolved)	U	1455	µg/l	0.50	< 0.50	< 0.50	< 0.50
Selenium (Dissolved)	U	1455	µg/l	0.50	0.59	< 0.50	< 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	< 2.5	2.5	5.8
Dissolved Organic Carbon	U	1610	mg/l	2.0	22	7.0	12
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	< 5.0	< 5.0	< 5.0

Results - Water

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield

Client: Geo Integrity		**Chemtest Job No.:**			23-07407	23-07407	23-07407
Quotation No.: Q22-26343		**Chemtest Sample ID.:**			1601258	1601259	1601260
				Sample Location:	BH3	BH6	BH9
				Sample Type:	WATER	WATER	WATER
				Top Depth (m):	2.20	0.94	2.36
				Date Sampled:	01-Mar-2023	01-Mar-2023	01-Mar-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**			
Total Petroleum Hydrocarbons	N	1675	µg/l	10	< 10	< 10	< 10
Naphthalene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluorene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Chrysene	N	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's	N	1700	µg/l	2.0	< 2.0	< 2.0	< 2.0

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1100	Chemical Oxygen Demand	Chemical Oxygen demand (COD)	Dichromate oxidation of organic matter in sample followed by colorimetric determination of residual Cr[VI].
1270	Total Hardness of Waters	Total hardness	Calculation applied to calcium and magnesium results, expressed as mg l-1 CaCO3 equivalent.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-07701-1		
Initial Date of Issue:	13-Mar-2023		
Client	Geo Integrity		
Client Address:	Units 7 Burcote Wood Farm Business Park Wood Burcote Towcester NN12 8TA		
Contact(s):	Lee Ashworth		
Project	23-01-21 Broadwater Lake, Moorhall Road, Harefield		
Quotation No.:	Q22-27618	**Date Received:**	07-Mar-2023
Order No.:		**Date Instructed:**	07-Mar-2023
No. of Samples:	11		
Turnaround (Wkdays):	5	**Results Due:**	13-Mar-2023
Date Approved:	13-Mar-2023		

Approved By:

Details: Stuart Henderson, Technical Manager

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield

Client: Geo Integrity			**Chemtest Job No.:**		23-07701	23-07701	23-07701	23-07701	23-07701	23-07701	23-07701	23-07701	23-07701
Quotation No.: Q22-27618			**Chemtest Sample ID.:**		1602932	1602933	1602934	1602935	1602936	1602937	1602938	1602939	1602940
			Sample Location:		BH1	BH1	BH3	BH6	BH1	BH3	BH7	BH9	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.10	7.00	1.20	0.30	1.20	7.00	3.00	0.40	5.00
			Bottom Depth (m):		0.20	7.45	1.65	0.40	1.65	7.50	3.45	0.50	5.45
			Date Sampled:		16-Feb-2023	16-Feb-2023	20-Feb-2023	21-Feb-2023	26-Feb-2023	20-Feb-2023	21-Feb-2023	22-Feb-2023	21-Feb-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020	4.5	23	8.3	14	41	16	37	15	0.98
pH	U	2010		4.0	8.8	9.4	8.9	9.8	8.4	9.4	8.5	9.0	8.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.053	< 0.010	0.041	0.52	< 0.010	< 0.010	0.019	< 0.010	< 0.010
Total Sulphur	U	2175	%	0.010					0.18		0.10		
Sulphate (Acid Soluble)	U	2430	%	0.010					0.044		0.097		

Results - Soil

Project: 23-01-21 Broadwater Lake, Moorhall Road, Harefield

Client: Geo Integrity			**Chemtest Job No.:**		23-07701	23-07701
Quotation No.: Q22-27618			**Chemtest Sample ID.:**		1602941	1602942
			Sample Location:		BH7	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.20	1.20
			Bottom Depth (m):		0.30	1.65
			Date Sampled:		23-Feb-2023	24-Feb-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Moisture	N	2030	%	0.020	11	5.5
pH	U	2010		4.0	8.9	9.2
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	0.086	< 0.010
Total Sulphur	U	2175	%	0.010		
Sulphate (Acid Soluble)	U	2430	%	0.010		

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

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customerservices@chemtest.com

INPUT DATA											RESULTS (Copper)				RESULTS (Zinc)				RESULTS (Mn)				RESULTS (Ni)			
ID	Location	Waterbody	Date	Measured Cu Concentration (dissolved) (µg l^{-1})	Measured Zn Concentration (dissolved) (µg l^{-1})	Measured Mn Concentration (dissolved) (µg l^{-1})	Measured Ni Concentration (dissolved) (µg l^{-1})	pH	DOC	Ca	Site-specific PNEC Dissolved Copper (µg l^{-1})	BioF	Bioavailable Copper Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Zinc (µg l^{-1})	BioF	Bioavailable Zinc Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Manganese (µg l^{-1})	BioF	Bioavailable Manganese Concentration (µg l^{-1})	Risk Characterisation Ratio	Site-specific PNEC Dissolved Nickel (µg l^{-1})	BioF	Bioavailable Nickel Concentration (µg l^{-1})	Risk Characterisation Ratio
1	BH3	GW	01/03/2023	1.8	2.5	150	4.7	8.3	22	85	1.08	1.00	1.80	1.80	89.29	0.12	0.31	0.03	123.08	1.00	150.00	1.22	20.54	0.19	0.92	0.23
2	BH6	GW	01/03/2023	0.5	2.5	200	3.2	8.1	7	78	20.43	0.05	0.02	0.02	36.37	0.30	0.75	0.07	180.51	0.64	133.84	0.11	12.25	0.33	1.05	0.26
3	BH9	GW	01/03/2023	0.5	5.8	760	4.8	7.9	12	170	33.87	0.03	0.01	0.01	52.15	0.21	1.21	0.11	266.45	0.49	350.84	2.85	20.74	0.19	0.93	0.23

Benzo[a]anthracene	1.2	0.93	2.4	4.70			
Chrysene	1.50	1.10	4.0	6.50			
Benzo[b]fluoranthene	1.7	1.20	1.7	6.10			
Benzo[k]fluoranthene	0.62	0.58	0.6	2.90			
Indeno(1,2,3-c,d)Pyrene	1.10	1.10	1.1	3.80			
Dibenz(a,h)Anthracene	0.25	0.44	0.73	1.20			
Benzo[g,h,i]perylene	1.60	1.20	1.8	4.50			
Benzo[a]pyrene	1.50	0.98	1.5	4.70			

PAH/BaP ratio						
0.8	0.94898	1.6	1			
1	1.122449	2.666667	1.382979			
1.133333	1.22449	1.133333	1.297872			
0.413333	0.591837	0.386667	0.617021			
0.733333	1.122449	0.733333	0.808511			
0.166667	0.44898	0.486667	0.255319			
1.066667	1.22449	1.2	0.957447			

Mean
1.09
1.54
1.20
0.50
0.85
0.34
1.11

Table 2.5: Profile of the genotoxic PAHs relative to BaP in the Culp study with order of magnitude upper and lower limits.

PAH	Mean ratio to BaP	Lower limit	Upper limit
Benz[a]anthracene	1.24	0.12	12.43
Chrysene	1.16	0.12	11.61
Benzo[b]fluoranthene	1.08	0.11	10.85
Benzo[k]fluoranthene	0.37	0.04	3.72
Dibenz[ah]anthracene	0.14	0.01	1.38
Indeno[123-cd]pyrene	0.73	0.07	7.27
Benzo[ghi]perylene	0.82	0.08	8.22

HazWasteOnline™

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

a) understand the origin of the waste
b) select the correct List of Waste code(s)
c) confirm that the list of determinands, results and sampling plan are fit for purpose
d) select and justify the chosen metal species (Appendix B)
e) correctly apply moisture correction and other available corrections
f) add the meta data for their user-defined substances (Appendix A)
g) check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

TJ6EA-T17ET-I2JWB

Job name

Broadwater Lake, Harefield

Description/Comments

Project

23-01-21

Site

Broadwater Lake, Moorhall Road, Harefield , UB9 6PE

Classified by

Name:
Murray Bateman
Date:
03 Apr 2023 10:55 GMT
Telephone:
01280 816409

Company:
Geo-Integrity Limited
4 Church Street
Maids Moreton
MK18 1QE

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification: -

Course	Date
Hazardous Waste Classification	-

Purpose of classification

7 - Disposal of Waste

Address of the waste

Broadwater Lake, Moorhall Road, Harefield , UB9 6PE **Post Code** UB96PE

SIC for the process giving rise to the waste

41201 Construction of commercial buildings

Description of industry/producer giving rise to the waste

Redevelopment of an area of land historically used for gravel processing with the construction of an outdoor activity centre

Description of the specific process, sub-process and/or activity that created the waste

Waste created during the excavation of soils for foundations, roads etc.

Description of the waste

Made Ground comprising generally granular soils with gravels of brick, flint and concrete, Alluvial soils and reworked natural granular soils.

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP1	0.50	Non Hazardous		3
2	TP10	0.80	Non Hazardous		5
3	TP12	0.80	Non Hazardous		7
4	TP6	0.50	Non Hazardous		9
5	TP9	1.40	Non Hazardous		11
6	TP13	1.30	Non Hazardous		13
7	TP14	0.60	Non Hazardous		15
8	TP5	0.50	Non Hazardous		17
9	TP3	1.20	Non Hazardous		19
10	TP4	0.75	Hazardous	HP 3(i), HP 7, HP 11	21
11	TP4[2]	2.00	Hazardous	HP 3(i), HP 7, HP 11	24
12	CBR5	0.75	Hazardous	HP 3(i), HP 7, HP 11	27
13	TP2	0.50	Non Hazardous		30

Related documents

#	Name	Description
1	WM3 v1.2 2021 compliant	waste stream template used to create this Job

Report

Created by: Murray Bateman

Created date: 03 Apr 2023 10:55 GMT

Classification of sample: TP1

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP1
Sample Depth:
0.50 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17 mg/kg	1.32	22.446 mg/kg	0.00224 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.5 mg/kg	1.855	0.927 mg/kg	0.0000927 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		38 mg/kg	1.462	55.539 mg/kg	0.00555 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		40 mg/kg	3.929	157.162 mg/kg	0.0157 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.26 mg/kg	1.353	0.352 mg/kg	0.0000352 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		36 mg/kg	2.976	107.146 mg/kg	0.0107 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	76 mg/kg	1.56	118.546 mg/kg	0.0076 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				4.4 mg/kg	1.405	6.182 mg/kg	0.000618 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		72 mg/kg	2.774	199.739 mg/kg	0.02 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		220 mg/kg		220 mg/kg	0.022 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.5 mg/kg		0.5 mg/kg	0.00005 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.21 mg/kg		0.21 mg/kg	0.000021 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.15 mg/kg		0.15 mg/kg	0.000015 %	✓	
15	fluorene		201-695-5	86-73-7		0.17 mg/kg		0.17 mg/kg	0.000017 %	✓	
16	phenanthrene		201-581-5	85-01-8		0.87 mg/kg		0.87 mg/kg	0.000087 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		anthracene		204-371-1	120-12-7		0.34	mg/kg		0.34	mg/kg	0.000034 %	✓	
18		fluoranthene		205-912-4	206-44-0		2.5	mg/kg		2.5	mg/kg	0.00025 %	✓	
19		pyrene		204-927-3	129-00-0		2.6	mg/kg		2.6	mg/kg	0.00026 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		4.4	mg/kg		4.4	mg/kg	0.00044 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.8	mg/kg		1.8	mg/kg	0.00018 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.76	mg/kg		0.76	mg/kg	0.000076 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		1.3	mg/kg		1.3	mg/kg	0.00013 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.18	mg/kg		0.18	mg/kg	0.000018 %	✓	
27		benzo[ghi]perylene		205-883-8	191-24-2		2.5	mg/kg		2.5	mg/kg	0.00025 %	✓	
28		PAHs (total)					21	mg/kg		21	mg/kg	0.0021 %	✓	
29		benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
30		toluene	601-021-00-3	203-625-9	108-88-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
31		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
											Total:	0.0893 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.022%)

Classification of sample: TP10

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP10
Sample Depth:
0.80 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

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1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		10 mg/kg	1.32	13.203 mg/kg	0.00132 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.19 mg/kg	1.855	0.352 mg/kg	0.0000352 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24 mg/kg	1.462	35.077 mg/kg	0.00351 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27 mg/kg	3.929	106.084 mg/kg	0.0106 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09 mg/kg	1.353	0.122 mg/kg	0.0000122 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		19 mg/kg	2.976	56.549 mg/kg	0.00565 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	50 mg/kg	1.56	77.991 mg/kg	0.005 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.66 mg/kg	1.405	0.927 mg/kg	0.0000927 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		67 mg/kg	2.774	185.868 mg/kg	0.0186 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.9 mg/kg		0.9 mg/kg	0.00009 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.35 mg/kg		0.35 mg/kg	0.000035 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.4 mg/kg		0.4 mg/kg	0.00004 %	✓	
15	fluorene		201-695-5	86-73-7		0.26 mg/kg		0.26 mg/kg	0.000026 %	✓	
16	phenanthrene		201-581-5	85-01-8		1.4 mg/kg		1.4 mg/kg	0.00014 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				0.36	mg/kg		0.36	mg/kg	0.000036 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				1.4	mg/kg		1.4	mg/kg	0.00014 %	✓	
			205-912-4	206-44-0									
19		pyrene				1.6	mg/kg		1.6	mg/kg	0.00016 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				0.88	mg/kg		0.88	mg/kg	0.000088 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				0.93	mg/kg		0.93	mg/kg	0.000093 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.56	mg/kg		0.56	mg/kg	0.000056 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				0.83	mg/kg		0.83	mg/kg	0.000083 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				0.6	mg/kg		0.6	mg/kg	0.00006 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.11	mg/kg		0.11	mg/kg	0.000011 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				0.95	mg/kg		0.95	mg/kg	0.000095 %	✓	
			205-883-8	191-24-2									
28		PAHs (total)				13	mg/kg		13	mg/kg	0.0013 %	✓	
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0489 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP12

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP12
Sample Depth:
0.80 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.7 mg/kg	1.32	6.206 mg/kg	0.000621 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.14 mg/kg	1.855	0.26 mg/kg	0.000026 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		9.7 mg/kg	1.462	14.177 mg/kg	0.00142 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		12 mg/kg	3.929	47.149 mg/kg	0.00471 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	29.763 mg/kg	0.00298 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	29 mg/kg	1.56	45.235 mg/kg	0.0029 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.39 mg/kg	1.405	0.548 mg/kg	0.0000548 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		31 mg/kg	2.774	85.999 mg/kg	0.0086 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
11	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
15	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
18		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
19		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
20		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
28		PAHs (total)				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0232 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP6

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP6
Sample Depth:
0.50 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.5 mg/kg	1.32	5.941 mg/kg	0.000594 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		<0.1 mg/kg	1.855	<0.185 mg/kg	<0.0000185 %		<LOD
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		4.8 mg/kg	3.929	18.859 mg/kg	0.00189 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		7.8 mg/kg	2.976	23.215 mg/kg	0.00232 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	7.6 mg/kg	1.56	11.855 mg/kg	0.00076 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.25 mg/kg	1.405	0.351 mg/kg	0.0000351 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		22 mg/kg	2.774	61.031 mg/kg	0.0061 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
11	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
15	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
18		fluoranthene				0.52	mg/kg		0.52	mg/kg	0.000052 %	✓	
			205-912-4	206-44-0									
19		pyrene				0.65	mg/kg		0.65	mg/kg	0.000065 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
28		PAHs (total)				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0153 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP9

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP9
Sample Depth:
1.40 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.21	mg/kg	1.855	0.389	mg/kg	0.0000389 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		25	mg/kg	1.462	36.539	mg/kg	0.00365 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		20	mg/kg	3.929	78.581	mg/kg	0.00786 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.35	mg/kg	1.353	0.474	mg/kg	0.0000474 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21	mg/kg	2.976	62.502	mg/kg	0.00625 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120	mg/kg	1.56	187.178	mg/kg	0.012 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				1.1	mg/kg	1.405	1.546	mg/kg	0.000155 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		95	mg/kg	2.774	263.544	mg/kg	0.0264 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		70	mg/kg		70	mg/kg	0.007 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.31	mg/kg		0.31	mg/kg	0.000031 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.19	mg/kg		0.19	mg/kg	0.000019 %	✓	
15	fluorene		201-695-5	86-73-7		0.16	mg/kg		0.16	mg/kg	0.000016 %	✓	
16	phenanthrene		201-581-5	85-01-8		0.79	mg/kg		0.79	mg/kg	0.000079 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		anthracene		204-371-1	120-12-7		0.27	mg/kg		0.27	mg/kg	0.000027 %	✓	
18		fluoranthene		205-912-4	206-44-0		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
19		pyrene		204-927-3	129-00-0		1.6	mg/kg		1.6	mg/kg	0.00016 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.86	mg/kg		0.86	mg/kg	0.000086 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		2.7	mg/kg		2.7	mg/kg	0.00027 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.59	mg/kg		0.59	mg/kg	0.000059 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.84	mg/kg		0.84	mg/kg	0.000084 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		0.67	mg/kg		0.67	mg/kg	0.000067 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.16	mg/kg		0.16	mg/kg	0.000016 %	✓	
27		benzo[ghi]perylene		205-883-8	191-24-2		1.3	mg/kg		1.3	mg/kg	0.00013 %	✓	
28		PAHs (total)					14	mg/kg		14	mg/kg	0.0014 %	✓	
29		benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
30		toluene	601-021-00-3	203-625-9	108-88-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
31		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
											Total:	0.0684 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.007%)

Classification of sample: TP13

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP13
Sample Depth:
1.30 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.185 mg/kg	0.0000185 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		20 mg/kg	1.462	29.231 mg/kg	0.00292 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		4.7 mg/kg	3.929	18.467 mg/kg	0.00185 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		11 mg/kg	2.976	32.739 mg/kg	0.00327 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	9.8 mg/kg	1.56	15.286 mg/kg	0.00098 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.43 mg/kg	1.405	0.604 mg/kg	0.0000604 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		13 mg/kg	2.774	36.064 mg/kg	0.00361 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
11	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<LOD
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
15	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
18		fluoranthene				0.12	mg/kg		0.12	mg/kg	0.000012 %	✓	
			205-912-4	206-44-0									
19		pyrene				0.29	mg/kg		0.29	mg/kg	0.000029 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-883-8	191-24-2									
28		PAHs (total)				<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0164 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP14

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP14
Sample Depth:
0.60 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		15 mg/kg	1.32	19.805 mg/kg	0.00198 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.44 mg/kg	1.855	0.816 mg/kg	0.0000816 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		30 mg/kg	1.462	43.847 mg/kg	0.00438 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27 mg/kg	3.929	106.084 mg/kg	0.0106 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.108 mg/kg	0.0000108 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	62.502 mg/kg	0.00625 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	57 mg/kg	1.56	88.909 mg/kg	0.0057 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.76 mg/kg	1.405	1.068 mg/kg	0.000107 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		91 mg/kg	2.774	252.447 mg/kg	0.0252 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		<10 mg/kg		<10 mg/kg	<0.001 %		<**LOD**
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.65 mg/kg		0.65 mg/kg	0.000065 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.45 mg/kg		0.45 mg/kg	0.000045 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.24 mg/kg		0.24 mg/kg	0.000024 %	✓	
15	fluorene		201-695-5	86-73-7		0.4 mg/kg		0.4 mg/kg	0.00004 %	✓	
16	phenanthrene		201-581-5	85-01-8		0.78 mg/kg		0.78 mg/kg	0.000078 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17	●	anthracene		204-371-1	120-12-7		0.44	mg/kg		0.44	mg/kg	0.000044 %	✓	
18	●	fluoranthene		205-912-4	206-44-0		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
19	●	pyrene		204-927-3	129-00-0		2	mg/kg		2	mg/kg	0.0002 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		1.7	mg/kg		1.7	mg/kg	0.00017 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.62	mg/kg		0.62	mg/kg	0.000062 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
25	●	indeno[123-cd]pyrene		205-893-2	193-39-5		1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		0.25	mg/kg		0.25	mg/kg	0.000025 %	✓	
27	●	benzo[ghi]perylene		205-883-8	191-24-2		1.6	mg/kg		1.6	mg/kg	0.00016 %	✓	
28	●	PAHs (total)					16	mg/kg		16	mg/kg	0.0016 %	✓	
29		benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
30		toluene	601-021-00-3	203-625-9	108-88-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
31	●	ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
											Total:	0.0591 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
●	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP5

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP5
Sample Depth:
0.50 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		14 mg/kg	1.32	18.485 mg/kg	0.00185 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.38 mg/kg	1.855	0.705 mg/kg	0.0000705 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		28 mg/kg	1.462	40.924 mg/kg	0.00409 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		23 mg/kg	3.929	90.368 mg/kg	0.00904 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.08 mg/kg	1.353	0.108 mg/kg	0.0000108 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		21 mg/kg	2.976	62.502 mg/kg	0.00625 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	58 mg/kg	1.56	90.469 mg/kg	0.0058 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.77 mg/kg	1.405	1.082 mg/kg	0.000108 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		85 mg/kg	2.774	235.802 mg/kg	0.0236 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		180 mg/kg		180 mg/kg	0.018 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.62 mg/kg		0.62 mg/kg	0.000062 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.41 mg/kg		0.41 mg/kg	0.000041 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.21 mg/kg		0.21 mg/kg	0.000021 %	✓	
15	fluorene		201-695-5	86-73-7		0.18 mg/kg		0.18 mg/kg	0.000018 %	✓	
16	phenanthrene		201-581-5	85-01-8		0.68 mg/kg		0.68 mg/kg	0.000068 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				0.75	mg/kg		0.75	mg/kg	0.000075 %	✓	
			204-371-1	120-12-7									
18		fluoranthene				1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
			205-912-4	206-44-0									
19		pyrene				1.7	mg/kg		1.7	mg/kg	0.00017 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				0.93	mg/kg		0.93	mg/kg	0.000093 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.58	mg/kg		0.58	mg/kg	0.000058 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				0.98	mg/kg		0.98	mg/kg	0.000098 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.44	mg/kg		0.44	mg/kg	0.000044 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
			205-883-8	191-24-2									
28		PAHs (total)				13	mg/kg		13	mg/kg	0.0013 %	✓	
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.0719 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.018%)

Classification of sample: TP3

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP3
Sample Depth:
1.20 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	15.844	mg/kg	0.00158 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.24	mg/kg	1.855	0.445	mg/kg	0.0000445 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		24	mg/kg	1.462	35.077	mg/kg	0.00351 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		27	mg/kg	3.929	106.084	mg/kg	0.0106 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09	mg/kg	1.353	0.122	mg/kg	0.0000122 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		20	mg/kg	2.976	59.525	mg/kg	0.00595 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	51	mg/kg	1.56	79.551	mg/kg	0.0051 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.7	mg/kg	1.405	0.983	mg/kg	0.0000983 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		67	mg/kg	2.774	185.868	mg/kg	0.0186 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		65	mg/kg		65	mg/kg	0.0065 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		0.72	mg/kg		0.72	mg/kg	0.000072 %	✓	
13	acenaphthylene		205-917-1	208-96-8		0.2	mg/kg		0.2	mg/kg	0.00002 %	✓	
14	acenaphthene		201-469-6	83-32-9		0.31	mg/kg		0.31	mg/kg	0.000031 %	✓	
15	fluorene		201-695-5	86-73-7		0.23	mg/kg		0.23	mg/kg	0.000023 %	✓	
16	phenanthrene		201-581-5	85-01-8		1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
17		anthracene		204-371-1	120-12-7		0.39	mg/kg		0.39	mg/kg	0.000039 %	✓	
18		fluoranthene		205-912-4	206-44-0		1.2	mg/kg		1.2	mg/kg	0.00012 %	✓	
19		pyrene		204-927-3	129-00-0		1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.74	mg/kg		0.74	mg/kg	0.000074 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		0.92	mg/kg		0.92	mg/kg	0.000092 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.87	mg/kg		0.87	mg/kg	0.000087 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.63	mg/kg		0.63	mg/kg	0.000063 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.67	mg/kg		0.67	mg/kg	0.000067 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		0.53	mg/kg		0.53	mg/kg	0.000053 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		benzo[ghi]perylene		205-883-8	191-24-2		0.86	mg/kg		0.86	mg/kg	0.000086 %	✓	
28		PAHs (total)					11	mg/kg		11	mg/kg	0.0011 %	✓	
29		benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
30		toluene	601-021-00-3	203-625-9	108-88-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
31		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
											Total:	0.0547 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0065%)

Classification of sample: TP4

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:	
TP4	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.75 m	Entry:	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.5%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.5%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 1.5%)

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		4.3 mg/kg	1.32	5.677 mg/kg	0.000568 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.1 mg/kg	1.855	0.185 mg/kg	0.0000185 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		11 mg/kg	1.462	16.077 mg/kg	0.00161 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		6.1 mg/kg	3.929	23.967 mg/kg	0.0024 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
6		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		8.3	mg/kg	2.976	24.703	mg/kg	0.00247 %	✓	
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	13	mg/kg	1.56	20.278	mg/kg	0.0013 %	✓	
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.31	mg/kg	1.405	0.436	mg/kg	0.0000436 %	✓	
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		22	mg/kg	2.774	61.031	mg/kg	0.0061 %	✓	
10		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<LOD
11		TPH (C6 to C40) petroleum group			TPH		15000	mg/kg		15000	mg/kg	1.5 %	✓	
12		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
13		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
14		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
15		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
16		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
17		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
18		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
19		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
21		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		PAHs (total)					<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
29		benzene	601-020-00-8	200-753-7	71-43-2		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
30		toluene	601-021-00-3	203-625-9	108-88-3		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
31		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	1.515 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP4[2]

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:
TP4[2]
Sample Depth:
2.00 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.7%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.7%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.7%)

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		6.8 mg/kg	1.32	8.978 mg/kg	0.000898 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.14 mg/kg	1.855	0.26 mg/kg	0.000026 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		16 mg/kg	1.462	23.385 mg/kg	0.00234 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		16 mg/kg	3.929	62.865 mg/kg	0.00629 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.28 mg/kg	1.353	0.379 mg/kg	0.0000379 %	✓	

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
6		nickel { nickel chromate }				12	mg/kg	2.976	35.715	mg/kg	0.00357 %	✓	
		028-035-00-7	238-766-5	14721-18-7									
7		lead { lead chromate }			1	60	mg/kg	1.56	93.589	mg/kg	0.006 %	✓	
		082-004-00-2	231-846-0	7758-97-6									
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				0.48	mg/kg	1.405	0.674	mg/kg	0.0000674 %	✓	
		034-002-00-8											
9		zinc { zinc chromate }				48	mg/kg	2.774	133.159	mg/kg	0.0133 %	✓	
		024-007-00-3	236-878-9	13530-65-9									
10		chromium in chromium(VI) compounds { chromium(VI) oxide }				<0.5	mg/kg	1.923	<0.962	mg/kg	<0.0000962 %		<**LOD**
		024-001-00-0	215-607-8	1333-82-0									
11		TPH (C6 to C40) petroleum group				7000	mg/kg		7000	mg/kg	0.7 %	✓	
				TPH									
12		naphthalene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
		601-052-00-2	202-049-5	91-20-3									
13		acenaphthylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			205-917-1	208-96-8									
14		acenaphthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-469-6	83-32-9									
15		fluorene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-695-5	86-73-7									
16		phenanthrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			201-581-5	85-01-8									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
			204-371-1	120-12-7									
18		fluoranthene				4.3	mg/kg		4.3	mg/kg	0.00043 %	✓	
			205-912-4	206-44-0									
19		pyrene				5.9	mg/kg		5.9	mg/kg	0.00059 %	✓	
			204-927-3	129-00-0									
20		benzo[a]anthracene				2.4	mg/kg		2.4	mg/kg	0.00024 %	✓	
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				4	mg/kg		4	mg/kg	0.0004 %	✓	
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				1.7	mg/kg		1.7	mg/kg	0.00017 %	✓	
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				0.58	mg/kg		0.58	mg/kg	0.000058 %	✓	
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				1.5	mg/kg		1.5	mg/kg	0.00015 %	✓	
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				1.1	mg/kg		1.1	mg/kg	0.00011 %	✓	
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				0.73	mg/kg		0.73	mg/kg	0.000073 %	✓	
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				1.8	mg/kg		1.8	mg/kg	0.00018 %	✓	
			205-883-8	191-24-2									
28		PAHs (total)				24	mg/kg		24	mg/kg	0.0024 %	✓	
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<**LOD**
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	0.738 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: CBR5

Hazardous Waste
Classified as **17 05 03 ***
in the List of Waste

Sample details

Sample name:	LoW Code:	
CBR5	Chapter:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:		
0.75 m	Entry:	17 05 03 * (Soil and stones containing hazardous substances)

Hazard properties

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"
Force this Hazardous property to hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.28%)

HP 7: Carcinogenic "waste which induces cancer or increases its incidence"

Hazard Statements hit:

Carc. 1B; H350 "May cause cancer [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.28%)

HP 11: Mutagenic "waste which may cause a mutation, that is a permanent change in the amount or structure of the genetic material in a cell"

Hazard Statements hit:

Muta. 1B; H340 "May cause genetic defects [state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard]."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.28%)

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		13	mg/kg	1.32	17.164	mg/kg	0.00172 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.33	mg/kg	1.855	0.612	mg/kg	0.0000612 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		33	mg/kg	1.462	48.231	mg/kg	0.00482 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		32	mg/kg	3.929	125.73	mg/kg	0.0126 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.09	mg/kg	1.353	0.122	mg/kg	0.0000122 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
6		nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		17 mg/kg	2.976	50.597 mg/kg	0.00506 %	✓	
7		lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	120 mg/kg	1.56	187.178 mg/kg	0.012 %	✓	
8		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.68 mg/kg	1.405	0.955 mg/kg	0.0000955 %	✓	
9		zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		120 mg/kg	2.774	332.898 mg/kg	0.0333 %	✓	
10		chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<LOD
11		TPH (C6 to C40) petroleum group			TPH		2800 mg/kg		2800 mg/kg	0.28 %	✓	
12		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
13		acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
14		acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
15		fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
16		phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
17		anthracene		204-371-1	120-12-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
18		fluoranthene		205-912-4	206-44-0		7.3 mg/kg		7.3 mg/kg	0.00073 %	✓	
19		pyrene		204-927-3	129-00-0		12 mg/kg		12 mg/kg	0.0012 %	✓	
20		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		4.7 mg/kg		4.7 mg/kg	0.00047 %	✓	
21		chrysene	601-048-00-0	205-923-4	218-01-9		6.5 mg/kg		6.5 mg/kg	0.00065 %	✓	
22		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		6.1 mg/kg		6.1 mg/kg	0.00061 %	✓	
23		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		2.9 mg/kg		2.9 mg/kg	0.00029 %	✓	
24		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		4.7 mg/kg		4.7 mg/kg	0.00047 %	✓	
25		indeno[123-cd]pyrene		205-893-2	193-39-5		3.8 mg/kg		3.8 mg/kg	0.00038 %	✓	
26		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		1.2 mg/kg		1.2 mg/kg	0.00012 %	✓	
27		benzo[ghi]perylene		205-883-8	191-24-2		4.5 mg/kg		4.5 mg/kg	0.00045 %	✓	
28		PAHs (total)					54 mg/kg		54 mg/kg	0.0054 %	✓	
29		benzene	601-020-00-8	200-753-7	71-43-2		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
30		toluene	601-021-00-3	203-625-9	108-88-3		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
31		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD
32		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<1 mg/kg		<1 mg/kg	<0.0001 %		<LOD

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
								Total:	0.361 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Hazardous result
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP2

Non Hazardous Waste
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:
TP2
Sample Depth:
0.50 m

LoW Code:
Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)

Hazard properties

None identified

Determinands

Moisture content: 0% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7.2 mg/kg	1.32	9.506 mg/kg	0.000951 %	✓	
2	cadmium { cadmium sulfate }	048-009-00-9	233-331-6	10124-36-4		0.13 mg/kg	1.855	0.241 mg/kg	0.0000241 %	✓	
3	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		17 mg/kg	1.462	24.846 mg/kg	0.00248 %	✓	
4	copper { copper sulphate pentahydrate }	029-023-00-4	231-847-6	7758-99-8		15 mg/kg	3.929	58.936 mg/kg	0.00589 %	✓	
5	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		0.28 mg/kg	1.353	0.379 mg/kg	0.0000379 %	✓	
6	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		12 mg/kg	2.976	35.715 mg/kg	0.00357 %	✓	
7	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	67 mg/kg	1.56	104.508 mg/kg	0.0067 %	✓	
8	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }	034-002-00-8				0.46 mg/kg	1.405	0.646 mg/kg	0.0000646 %	✓	
9	zinc { zinc chromate }	024-007-00-3	236-878-9	13530-65-9		51 mg/kg	2.774	141.481 mg/kg	0.0141 %	✓	
10	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0		<0.5 mg/kg	1.923	<0.962 mg/kg	<0.0000962 %		<**LOD**
11	TPH (C6 to C40) petroleum group			TPH		93 mg/kg		93 mg/kg	0.0093 %	✓	
12	naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
13	acenaphthylene		205-917-1	208-96-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
14	acenaphthene		201-469-6	83-32-9		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
15	fluorene		201-695-5	86-73-7		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**
16	phenanthrene		201-581-5	85-01-8		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<**LOD**

#		Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number									
17		anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-371-1	120-12-7									
18		fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-912-4	206-44-0									
19		pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			204-927-3	129-00-0									
20		benzo[a]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-033-00-9	200-280-6	56-55-3									
21		chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-048-00-0	205-923-4	218-01-9									
22		benzo[b]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-034-00-4	205-911-9	205-99-2									
23		benzo[k]fluoranthene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-036-00-5	205-916-6	207-08-9									
24		benzo[a]pyrene; benzo[def]chrysene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-032-00-3	200-028-5	50-32-8									
25		indeno[123-cd]pyrene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-893-2	193-39-5									
26		dibenz[a,h]anthracene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
		601-041-00-2	200-181-8	53-70-3									
27		benzo[ghi]perylene				<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
			205-883-8	191-24-2									
28		PAHs (total)				<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
29		benzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-020-00-8	200-753-7	71-43-2									
30		toluene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-021-00-3	203-625-9	108-88-3									
31		ethylbenzene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-023-00-4	202-849-4	100-41-4									
32		xylene				<1	mg/kg		<1	mg/kg	<0.0001 %		<LOD
		601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]									
										Total:	0.044 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Deteminand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Supplementary Hazardous Property Information

HP 3(i): Flammable "flammable liquid waste: liquid waste having a flash point below 60°C or waste gas oil, diesel and light heating oils having a flash point > 55°C and <= 75°C"

Force this Hazardous property to non hazardous because Long Chain Hydrocarbons - no free phase - non flammable

Hazard Statements hit:

Flam. Liq. 3; H226 "Flammable liquid and vapour."

Because of determinand:

TPH (C6 to C40) petroleum group: (conc.: 0.0093%)

Appendix A: Classifier defined and non GB MCL determinands

- **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database
Data source: https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **TPH (C6 to C40) petroleum group** (CAS Number: TPH)

Description/Comments: Hazard statements taken from WM3 1st Edition 2015; Risk phrases: WM2 3rd Edition 2013
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: Flam. Liq. 3; H226 , Asp. Tox. 1; H304 , STOT RE 2; H373 , Muta. 1B; H340 , Carc. 1B; H350 , Repr. 2; H361d , Aquatic Chronic 2; H411

- **acenaphthylene** (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

- **acenaphthene** (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

- **fluorene** (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **phenanthrene** (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

- **anthracene** (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **fluoranthene** (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **pyrene** (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

- **indeno[123-cd]pyrene** (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

PAHs (total)

Description/Comments: Worst case scenario combining risk phrases and substance specific thresholds from benzo[a]pyrene (CLP# 601-032-00-3) and benzo[a]anthracene (CLP# 601-033-00-9)
Data source: 2008/1272/EC – Table 3.2 of Annex VI of regulation 1272/2008/EC - Classification, labelling and packaging of substances and mixtures and 2009/790/EC Annex IV – Annex IV of regulation 2009/790/EC - 1st Adaptation to Technical Progress for European Regulation 1272/2008
Data source date: 16 Dec 2008
Hazard Statements: Skin Sens. 1; H317 , Carc. 1B; H350 , Carc. 1B; H350 >= 0.01 % , Muta. 1B; H340 , Aquatic Acute 1; H400 (M=100) , Aquatic Chronic 1; H410 (M=100) , Repr. 1B; H360FD

ethylbenzene (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4
Description/Comments:
Additional Hazard Statement(s): Carc. 2; H351
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

Reasonable case CLP species based on hazard statements/molecular weight and most common (stable) oxide of arsenic. Industrial sources include: smelting; main precursor to other arsenic compounds

cadmium {cadmium sulfate}

Worst Case Species Selected

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

(enter justification for selecting this species)

copper {copper sulphate pentahydrate}

Worst Case Species Selected

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weigh

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight

lead {lead chromate}

Worst Case Species Selected

selenium {selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex}

(enter justification for selecting this species)

zinc {zinc chromate}

Worst Case Species Selected

chromium in chromium(VI) compounds {chromium(VI) oxide}

(enter justification for selecting this species)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2023.73.5544.10256 (14 Mar 2023)
HazWasteOnline Database: 2023.73.5544.10256 (14 Mar 2023)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021