



Hydrogeological Risk Assessment Report

Meridian Water Waste Recovery Permit Application

March 2024

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This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
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Comments

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Glossary

- The Permitted Site – this refers to the proposed permitted area as defined in Plan D-ESSD1C.
- Meridian Water Strategic Infrastructure Works (SIW) – the enabling works required in advance of the construction of Phase 2 of the Meridian Water Development. The works will occur across two adjacent areas termed Phase 1 SIW and Phase 2 SIW – collectively ‘the SIW site’ for the purposes of the EP application documents.
- Development Zones (DZ) – specific areas in Phase 2 Meridian Water Development referred to in planning documents. As shown on Plan D-ESSD1D.
- Edmonton Marshes flood relief storage basins – to be excavated at the eastern end of the Permitted Site as part of the SIW in DZLV1. The waste the subject of this EP application will arise from excavation into the former Lea Valley Trading Estate landfill to create part of the flood relief storage basins.

Glossary

1. Introduction

1.1 The Brief

Waterman Infrastructure & Environment Limited (“Waterman”) is instructed by Taylor Woodrow Construction, the civil engineering arm of Vinci Construction UK Limited (“the applicant” and “the operator”) to prepare an application for an Environmental Permit (EP). The EP application is to authorise the permanent deposit of waste on land as a recovery activity. The waste recovery is for previously deposited (waste) soil and stones to be used in the waste recovery areas of the Strategic Infrastructure Works (SIW) at Meridian Water, Enfield, London (“the Permitted Site”).

To support this EP application, a hydrogeological risk assessment (HRA) has been prepared detailing the potential for use of the waste to impact controlled waters at and surrounding the Permitted Site, including shallow groundwater, deep groundwater, and surface water receptors.

1.2 Context

The Meridian Water scheme is a regeneration project led by the London Borough of Enfield (LBE). The permitted site is one small part of the wider Meridian Water scheme. The permitted site is centred at approximate National Grid Reference 535601, 191831.

Overall, the Meridian Water scheme will deliver:

- 10,000 new homes;
- 6,000 high quality jobs, a further 10,000 construction jobs;
- new train station;
- schools, healthcare provisions and other local services; and
- naturalisation of the Pymmes Brook and improved waterside public green spaces.

The first phase of the scheme (“Meridian One”) was granted full planning permission and is underway. The new Meridian Water station opened in 2019, the first new school in 2017 and the first 950 homes are scheduled for completion in 2026 at Willoughby Lane.

LBE is now bringing forward Phase 2 of the Meridian Water scheme. Phase 2 is a residential led mixed use scheme including up to 2,300 new homes, various non- residential uses including workspace and a new school. To enable Phase 2, the SIW are required to prepare the development area including the implementation of flood mitigation measures.

Earthworks material will be excavated from various locations across the SIW site where the level needs to be lowered to provide flood storage basins or to create a suitable development platform level. Some material will be suitable for reuse in earthworks without treatment, other material will require remediation (regulated by separate mobile treatment plant permit). Material confirmed to be suitable for reuse will be moved to various locations in the SIW site where levels need to be raised. The cut and fill locations are shown on plan D-ESSD4.

Most of the material to be excavated and / or treated will be reused in accordance with the Definition of Waste: Development Industry Code of Practice (DoWCoP). However, some excavation will be necessary in an area that is considered by the Environment Agency (EA) to be an historic landfill site (Lee Valley Trading Estate Landfill located at the eastern end of the SIW site and shown on plan D-ESSD2E).

Material excavated from the landfill area is considered by the EA to be waste. The Environmental Permitting Regime applies to its use in recovery (permanent deposit in land). This material is the waste subject to EP controls. This regulatory constraint on the use of a proportion of the site derived excavation arisings risks overcomplicating the execution of the remediation and earthworks. The project remediation contractor intends to progress discussions with the local EA area team to agree the reduction of the extent of the Lee Valley Trading Estate Landfill, limiting the historic landfill boundary to the raised area of northern portion of the polygon shown on D-ESSD2E.

The SIW to be completed following land raising using waste may include roads, footpaths and development plots (works to the west of Harbet Road), and soft and hard landscaping between the new flood storage basins in Edmonton Marshes to the east of Harbet Road. In addition, waste soils may be used to create a growing medium (soil layer) in Brooks Park (east of Pymmes Brook). In addition, plans D-ESSD5V-Y provide sections through Brooks Park – the soils shown on plan D-ESSD5V may be waste.

Treatment of waste will be limited to sorting at the point of excavation to separately remove any gross contamination or large lumps of hard materials. Waste suitable for recovery will be stored in stockpiles, until required for use in earthworks in the permitted site. Waste may also be treated with lime or cement for moisture control and / or creation of capping material. Both applications will be for geotechnical improvement so should not require waste regulatory controls. However, should the EA disagree, the treatment will be carried out under mobile treatment plant permit and the relevant List of Waste codes included for in the waste recovery EP application.

1.3 Scope of This Report

To secure the EP for recovery of waste at the SIW, a Hydrogeological Risk Assessment (HRA) is required. This sets out the baseline controlled waters conditions at Meridian Water based on previous investigations relevant to the SIW, details the proposed use of waste, and sets out an assessment of the potential for this waste use to cause detriment to water quality. The report also includes a scheme of proposed monitoring pre- and post-deposition of the waste to demonstrate this activity has not caused impacts to water receptors.

This HRA has been developed in line with relevant EA guidance¹. The EA further provides a template document for preparation of a HRA, which has formed the basis for this report structure and content. Any sections that are not applicable to the activity have been included for completeness, with an explanation of why they are not relevant.

The HRA will form part of the environmental management system (EMS) to be operated by the applicant for the lifetime of the EP. A copy of the HRA and EMS will be kept in Taylor Woodrow's site office.

Plans and drawings referred to in this report are to be found in the "ESSD drawings and information bundle" submitted as part of the EP application. In the text of this report the plans may be referred to in full or by abbreviated reference (e.g. D-ESSD1A).

This report should be read alongside the "Conceptual Site Model, Environmental Setting and Site Design Report" (ESSD report) prepared by Waterman and included in the EP application.

1.4 Limitations and Constraints

Waterman has endeavoured to assess all information provided to them during the preparation of this document but makes no guarantees or warranties as to the accuracy or completeness of this information.

The conclusions resulting from this report are not necessarily indicative of future conditions or operating practices at or adjacent to the Permitted Site.

¹ <https://www.gov.uk/guidance/landfill-developments-groundwater-risk-assessment-for-leachate> (accessed 16/06/2022).

2. Site Setting and Waste to be Recovered

2.1 Information Used to Inform This Assessment

The Meridian Water Permitted Site and DZLV1 areas have been the subject of extensive historical desk study and ground investigation work in previous years. Relevant technical information has been utilised for this HRA where appropriate. This includes, but is not limited to the following:

- The planning applications for the scheme;
- Documents required to fulfil planning conditions (e.g. Construction Environmental Management Plan (CEMP) prepared by Taylor Woodrow);
- Data and analysis from ground investigation;
- Waste classification analysis of samples collected from the former landfill area; and
- Specification for material suitable for use in the earthworks.

Table 1 details all reports and documents reviewed by Waterman with land quality information relevant to the Permitted Site and waste recovery area.

Table 1: Ground Investigation Information

Document	Author	Reference	Date	Relevant areas	Scope
Ground Contamination Baseline Report	ARUP	MWP2-2.2	24/4/2019	Entire Masterplan Area	Desk Study
Ground Contamination Risk Assessment, Strategic Infrastructure Works	ARUP	REP/260637/CL/001	14/12/2020	Strategic Infrastructure Works	Ground Investigation
Meridian Water HIF and Infrastructure Ground Investigation – Factual Report	GTS	GTS-19-250	26/3/2020	Entire Masterplan Area	Ground Investigation
Meridian Water HIF and Infrastructure Ground Investigation – Phase 2	GTS	GT0120	15/9/2021	Strategic Infrastructure Works	Ground Investigation
London Borough of Enfield; Meridian Works, Enfield Phase 2 Geo-environmental survey	BWB	MWD-BWB-ZZ-XX-YE-RP-0001_Ph2	March 2020	DZ6 north	Ground Investigation
Lea Valley Landfill Technical Note	ARUP	SIW-001	08/04/2021	DZLV1	Technical Note
Strategic Infrastructure Works – Ground Contamination investigation, remediation and materials management framework	ARUP	MWP2-2.3	24/4/2019	Entire Masterplan Area	Remediation Framework
Ground Investigation interpretative Report – IKEA Clear Site, Leaside Road, Edmonton	SLR	409.05569.0004	January 2019	DZ4 south	Ground Investigation

2.2 Summary Characterisation of the Waste

2.2.1 Waste Area

For the purposes of this HRA, excavation arisings from construction of the Edmonton Marshes flood relief storage basins in DZLV1, in the area to be agreed by the project remediation contractor with the EA to be historic landfill, will be the waste the subject of this waste recovery EP application. The maximum of extent is the area of historic landfill shown on plan D-ESSD2E. Data arising from the area shown on plan D-ESSD2E is discussed in its entirety.

Area DZLV1 is predominantly disused scrub land, with a hardstanding area along the western edge in use as a scrap yard. It is bounded by Harbet Road to the south, west and north-west, the River Lea Diversion Channel to the east and the A406 north circular to the north.

2.2.2 Origins of the Waste

Arup compiled a technical note of available information relating to the landfilling in April 2021 (*reference Meridian Water SIW-001 – appended to the Waste Recovery Plan*). Mapping information indicates Area DZLV1 has primarily remained undeveloped throughout its history, with the exception of the western side of this area. By 1963 this area was developed with hardstanding for use as a car park serving the adjacent Lea Valley Trading Estate.

Visual observations, historical mapping and records from previous ground investigations indicate the waste was considered most likely to have arisen during the excavation of the William Girling Reservoir north of the Permitted Site, and re-alignment of the River Lea Diversion Channel adjacent to the east. Ground investigation across DZLV1 in 2019 described the landfilled waste as comprising reworked natural soils and waste construction materials rather than household or commercial waste for example. However, amosite and chrysotile asbestos free fibres and fragments were also identified in samples of upper Made Ground at depths from surface level at 0m bgl down to 1.5m bgl. The estimated time period over which the waste was deposited is between the 1930s and 1950s.

As the waste material is natural in origin it is unlikely to contain significant elevated contaminant concentrations or have impacted the underlying natural deposits. Potentially contaminative land uses aside from the former landfilling are limited to recent fly tipping. The fly tipped material is likely to have resulted in contamination of the surface soils but unlikely to have contaminated the soils at depth. Historical potentially contaminative land uses are absent on DZLV1 outside the former landfill.

Further details of the historical deposition of these soils as waste are set out in the ESSD.

3. Conceptual Hydrogeological Site Model

The conceptual model for the SIW in its entirety is included in the ESSD report completed separately to this report. It should be read in conjunction and referred to in addition to this document. A summary of the conceptual site model with a focus on controlled waters included within this document.

Note that for the purposes of contaminated land assessment across the SIW site, Arup has split the SIW into two phases – Phase 1 SIW lies to the east of Pymmes Brook and Phase 2 SIW to the west of Pymmes Brook. This phase nomenclature is not to be confused with Phase 2 Meridian Water. See D-ESSD1D for development zone locations and the boundaries of Phases 1 and 2 SIW. Geology and Hydrogeology within the Permitted Site Area

A summary of geology across the permitted Site area where ground levels are to be raised is included in Table 2.

Table 2: Permitted Site Geology Inferred from Previous Ground Investigation

Stratum	Area Covered	Estimated Thickness	Depth to Top of Stratum	Typical Description
Made Ground	Entire Permitted Site	0 to 5	+8 to +15	Concrete, tarmac or topsoil over red-grey-brown slightly clayey sand and flint gravel with small fragments of brick, concrete, glass and plastic.
Enfield Silt Member	Areas DZ2-DZ7 only	0 to 3	+9.5 to +10	Yellow-brown slightly clayey fine sands and silts
Kempton Park Gravel Member	Entire Permitted Site	2 to 6	+6.5 to +11	Multicoloured sandy clayey flint gravel
London Clay Formation	Entire Permitted Site	2 to 12	+2 to +7.5	Brown, fissured slightly sandy clay
Harwich Formation	Central areas of Permitted Site	0.7 to 1.5	-1.8 to -6.5	Greenish-grey sandy calcareous clay
Lambeth Group	Entire Permitted Site	5 to 16	-6 to +2.5	Brown-blue slightly mottled sandy clay with fine-medium sand partings.
Thanet Formation	Entire Permitted Site	6 to 18	-19 to -3	Dark grey slightly silty fine-medium sand
Chalk Group	Entire Permitted Site	100+ (not proven)	-30 to -20	Fractured white chalk with flints

3.1 Controlled Waters

3.1.1 Surface Waters

The surface waters of Pymmes Brook, Salmon Brook, and the River Lee (Navigation) intersect north to south across the Permitted Site, and the River Lea Diversion Channel flows north to south adjacent to the eastern SIW boundary. All waterways within and adjacent to the Permitted Site boundary are currently concrete lined and canalised.

3.1.2 Groundwater

The Environment Agency classification of the geological deposits underlying the SIW are as per Table 3.

Table 3: Summary of Hydrogeological Properties of the Main Geological Strata

Stratum	EA Classification	Hydrogeological Significance
Made Ground	Not classified	May contain local pockets of shallow groundwater
Enfield Silt Member	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Kempton Park Gravel Member		
London Clay Formation	Unproductive Strata	Contains insignificant quantities of vertically or laterally extensive groundwater
Lambeth Group	Secondary A Aquifer, however noted to not contain laterally extensive groundwater during previous investigations at the Site	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Harwich Formation	Secondary A Aquifer, however noted to not contain laterally extensive groundwater during previous investigations at the Site	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Thanet Formation	Secondary A Aquifer	May be important in supporting local abstractions or in providing baseflow to rivers and streams
Chalk Group	Principal Aquifer	Regionally important aquifer, likely to be used to support potable abstractions

The Permitted Site is within a groundwater Source Protection Zone II (outer catchment), with sections to the north and west also within a Zone 1 (inner catchment).

3.1.3 Current Groundwater Chemical Quality Within SIW Area

Existing groundwater chemical quality has been established from findings of previous ground investigations with locations within or proximal to the Permitted Site boundary. A summary of the relevant locations is set out in Table 4. A plan showing the exploratory hole locations is included in Appendix A.

Table 4: Groundwater Monitoring Locations Within and Proximal to SIW boundary

Relevant Locations Within Permitted Site		Relevant Locations proximal to Permitted Site boundary (within 25m)	
Location	Target Stratum	Location	Target Stratum
2_BH2013	Kempton Park Gravel Member & Lambeth Group	2_BH2008	Kempton Park Gravel Member & Lambeth Group
2_BH2087	Chalk Group	3_BH2007	Chalk Group
3_BH2005	Kempton Park Gravel Member	4_BH2026	Kempton Park Gravel Member & Lambeth Group
3_BH2006	Kempton Park Gravel Member	4_BH2047	Chalk Group
4_BH2024	Kempton Park Gravel Member & Lambeth Group	4_BH2089	Chalk Group
4_BH2025	Kempton Park Gravel Member & Lambeth Group	6_BH2062	Chalk Group
4_BH2027	Chalk Group	6_BH2063	Kempton Park Gravel Member
4_BH2028	Kempton Park Gravel Member	6_BH2086	Kempton Park Gravel Member & Lambeth Group

Relevant Locations Within Permitted Site		Relevant Locations proximal to Permitted Site boundary (within 25m)	
Location	Target Stratum	Location	Target Stratum
4_BH2029	Kempton Park Gravel Member	7_BH2054	Kempton Park Gravel Member & Lambeth Group
4_BH2031	Kempton Park Gravel Member	7_BH2057	Kempton Park Gravel Member
4_BH2036A	Kempton Park Gravel Member	2_BH2010	Chalk Group
4_BH2038	Chalk Group	4_BH1006	Kempton Park Gravel Member
4_BH2043	Chalk Group	4_BH1002	Kempton Park Gravel Member
4_BH2045	Chalk Group	4_BH1003	Kempton Park Gravel Member
4_BH2081	Kempton Park Gravel Member	4_BH2048	Kempton Park Gravel Member
4_BH2082	Kempton Park Gravel Member	7_BH2060	Kempton Park Gravel Member
5_BH2016	Kempton Park Gravel Member	LV1_BH2078	Kempton Park Gravel Member
5_BH2017	Kempton Park Gravel Member	LV1_BH2075	Kempton Park Gravel Member
5_BH2019A	Kempton Park Gravel Member	LV1_BH2073	Kempton Park Gravel Member
5_BH2021	Kempton Park Gravel Member	6_BH3003	Kempton Park Gravel Member & Lambeth Group
5_BH2022A	Kempton Park Gravel Member	6_BH3001	Kempton Park Gravel Member & Lambeth Group
5_BH2023	Kempton Park Gravel Member	6_BH3002	Kempton Park Gravel Member & Lambeth Group
5_BH2090	Kempton Park Gravel Member & Lambeth Group		
7_BH2058	Kempton Park Gravel Member		
4_BH1004	Kempton Park Gravel Member		
4_BH1005	Kempton Park Gravel Member		
4_BH1005A	Kempton Park Gravel Member		
4_BH2044	Kempton Park Gravel Member & Lambeth Group		
4_BH2032	Lambeth Group		
4_BH2088	Chalk Group		
5_BH2015	Chalk Group		
5_BH2018	Chalk Group		
5_BH2020	Chalk Group		
4_BH1001	Kempton Park Gravel Member		
4_BH1001A	Kempton Park Gravel Member		
4_BH2033	Kempton Park Gravel Member		
4_BH2030	Kempton Park Gravel Member		
4_BH2034	Kempton Park Gravel Member		
4_BH2040	Kempton Park Gravel Member		
4_BH2037	Kempton Park Gravel Member		
4_BH2041	Kempton Park Gravel Member		

Relevant Locations Within Permitted Site		Relevant Locations proximal to Permitted Site boundary (within 25m)	
Location	Target Stratum	Location	Target Stratum
4_BH2041A	Kempton Park Gravel Member		
4_BH2042	Kempton Park Gravel Member		
4_BH2035	Kempton Park Gravel Member		
4_BH2039	Kempton Park Gravel Member		
4_BH2036	Kempton Park Gravel Member		
6_BH2064	Kempton Park Gravel Member		
5_BH2019	Kempton Park Gravel Member		
5_BH2021F	Kempton Park Gravel Member		

To determine existing groundwater quality in the areas where level changes are proposed, results of historical groundwater sampling and testing at ground investigations within the SIW boundary have been compiled.

Results for the shallow groundwater body within the Kempton Park Gravel Member, sporadic groundwater identified in the Lambeth Group, and deep groundwater in the Thanet Formation and Chalk Group have been compared to Waterman Generic Assessment Criteria (GAC) for drinking water. These GAC are based on EA derived Environmental Quality Standards (EQS) and UK Drinking Water Standards (DWS).

Identified exceedances of Waterman GAC from samples collected within or proximal to the Permitted Site boundary are detailed in Table 5.

Table 5: Summary of Identified Contamination within Groundwater

Contaminant	GAC (mg/l)	Mean value (mg/l)	Peak value recorded	Number of samples exceeding GAC	Total number of samples
Shallow Aquifer (Kempton Park Gravel Member)					
Antimony	0.005	0.0014	0.0109	6	168
Arsenic	0.01	0.0048	0.0292	23	188
Chromium	0.05	0.0023	0.157	1	188
Chromium VI	0.0034	0.0047	0.183	4	183
Lead	0.01	0.0007	0.0493	2	188
Selenium	0.01	0.0013	0.021	1	188
Vanadium	0.02	0.0025	0.0485	3	182
Zinc	0.0123	0.009	0.087	32	188
Ammoniacal nitrogen	0.6	5.8042	67.9	143	187
Cyanide	0.05	0.0566	1.9	37	188
Manganese	0.123	0.4373	1.72	150	167
Phenol	0.0077	0.0027	0.105	11	188
TPH Aliphatic C8-10	0.3	0.0898	3.74	8	188
TPH Aliphatic C10-12	0.3	0.2732	7.14	20	188

Contaminant	GAC (mg/l)	Mean value (mg/l)	Peak value recorded	Number of samples exceeding GAC	Total number of samples
TPH Aliphatic C12-16	0.3	21.161	2800	29	183
TPH Aromatic C5-C7	0.01	0.0983	2.36	9	97
TPH Aromatic C8-10	0.3	0.0641	2.5	7	188
TPH Aromatic C10-12	0.09	0.1814	4.76	24	188
TPH Aromatic C12-16	0.09	6.0827	761	33	183
TPH Aromatic C16-21	0.09	13.148	1760	43	183
TPH Aromatic C21-35	0.09	5.3573	675	44	183
Acenaphthene	2.0	0.2233	26.2	2	183
Fluoranthene	0.0000063	0.1889	80.3	142	183
Naphthalene	0.002	0.0166	1.11	22	186
Anthracene	0.0001	0.0845	9.17	45	183
Benzo(a)pyrene	0.01	0.0192	1.56	13	183
Benzene	0.01	0.0535	3.33	11	188
Toluene	0.074	0.0038	0.11	1	188
Ethylbenzene	0.02	0.0039	0.0496	4	188
Xylene	0.03	0.0078	0.0425	2	167
Chloroethene	0.0005	0.0015	0.0131	25	188
Cis (1,2) Dichloroethene	0.05	0.0011	0.0583	1	188
Intermediate Aquifer (Lambeth Group)					
Arsenic	0.01	0.0017	0.0247	1	64
Chromium VI	0.05	0.0052	0.062	3	61
Nickel	0.02	0.0041	0.0308	3	64
Zinc	0.0123	0.0054	0.0305	8	64
Ammoniacal Nitrogen	0.6	1.2207	8.02	38	64
Cyanide	0.05	0.0145	0.103	6	64
Manganese	0.123	66.066	1290	38	64
TPH Aliphatic C8-10	0.3	0.0364	0.58	3	64
TPH Aliphatic C10-12	0.3	0.0359	0.604	2	64
TPH Aliphatic C12-16	0.3	0.7375	20.7	10	61
TPH Aromatics >C5-C7	0.01	0.2093	2.38	31	61
TPH Aromatics >C6-7	0.7	3.0256	67.1	20	61
Fluoranthene	0.0000063	0.0016	0.102	57	61
Anthracene	0.0001	0.0005	0.00973	16	61
Benzene	0.01	0.0056	0.0552	4	64
Xylene	0.03	0.0144	0.24	4	64
Deep Aquifer (Thanet Formation and Chalk Group)					

Contaminant	GAC (mg/l)	Mean value (mg/l)	Peak value recorded	Number of samples exceeding GAC	Total number of samples
Chromium VI	0.0034	0.0039	0.00871	3	94
Zinc	0.0123	0.0052	0.0295	8	95
Ammoniacal nitrogen	0.6	8.659	79.1	65	95
Cyanide	0.05	0.0565	0.336	36	95
Manganese	0.123	0.3829	1.69	45	90
TPH Aliphatic C12-16	0.3	0.0751	3.16	4	93
TPH Aromatic C5-7	0.01	0.1523	4.22	42	93
TPH Aromatic C6-7	0.7	0.5904	10.2	17	90
Fluoranthene	0.0000063	0.001	0.0653	76	93
Naphthalene	0.002	0.0055	0.173	9	95
Anthracene	0.0001	0.0001	0.00173	13	93
Benzene	0.01	0.0040	0.013	3	95
Chloroethene	0.0005	0.0015	0.0087	22	95
Bis(2-ethylhexyl)phthalate	0.0013	0.0047	0.0221	9	91
Di-n-butyl phthalate	0.008	0.0062	0.334	2	88

Findings of the previous investigation works indicate that within the SIW boundary both shallow and deeper groundwater bodies have been impacted by contamination including metals, ammoniacal nitrogen, cyanide and hydrocarbons including VOCs and SVOCs.

Chemical quality for the waste to be used has been assessed against existing groundwater quality to determine if use of this material will cause further detriment to shallow and deep aquifers. This has been done according to the source-pathway-receptor model.

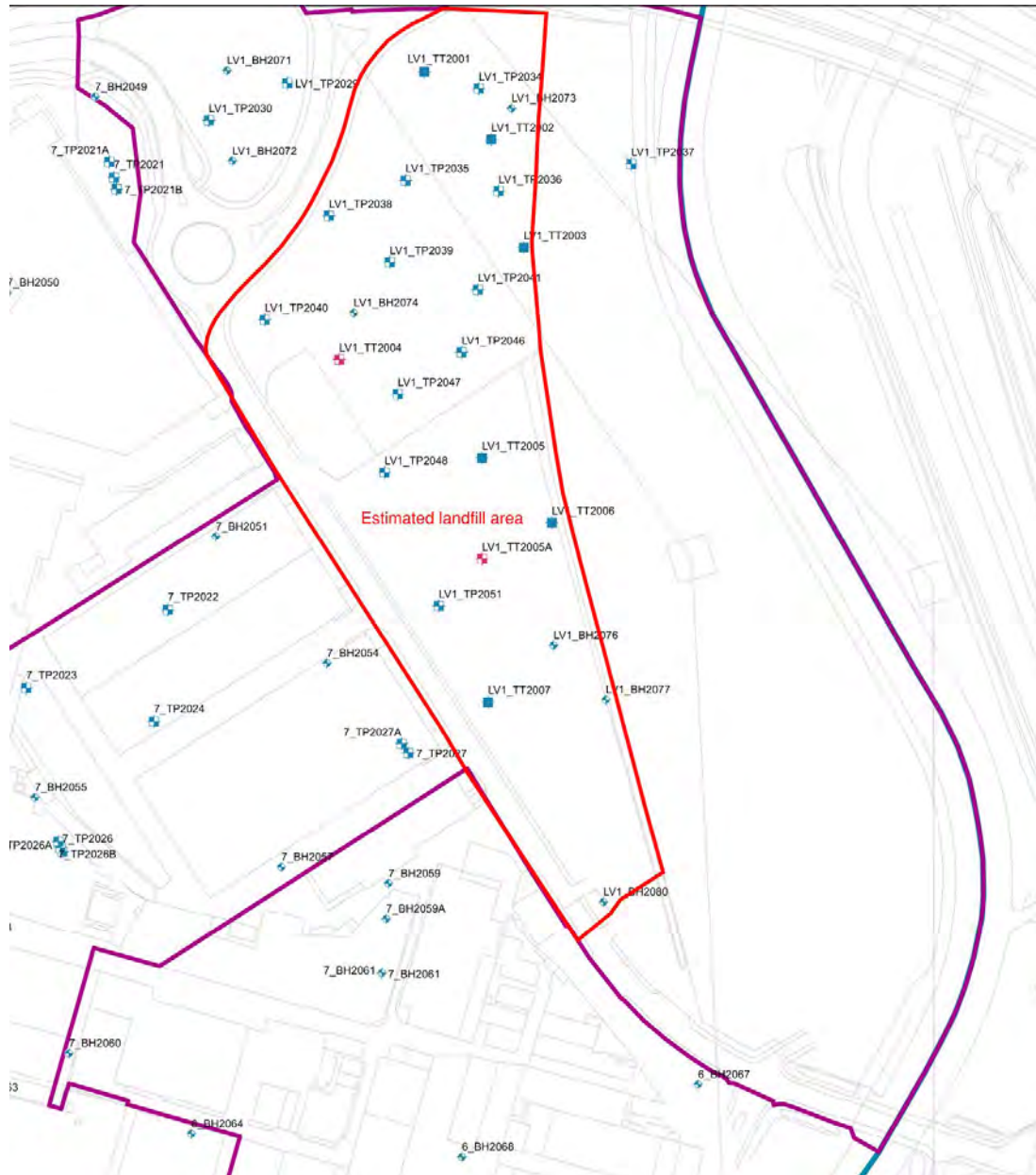
3.2 Source Assessment

3.2.1 DZLV1 Source Area

Area DZLV1 is predominantly disused scrub land, with a hardstanding area along the western edge in use as a scrap yard. It is bounded by Harbet Road to the south and west, the River Lea Diversion Channel to the east and the A406 north circular to the north.

The EA classify part of the DZLV1 area in the north-west, west and south-west as a historical landfill. A plan detailing the estimated landfill area at DZLV1 from historical desk study sources is set out in Figure 1. It is also shown on plan D-ESSD2E. Note this is the maximum extent of historic landfill, the project remediation contractor will be seeking to agree with the EA a reduced area of historic landfill.

Figure 1: Estimated Source of Waste Area



Topographic information for the source of waste area found it to be generally flat and level, with a raised area in the north about 4m higher than the surrounding land.

Visual observations, historical mapping and records from previous ground investigations indicate the waste was considered most likely to have arisen during the excavation of the William Girling Reservoir north of the permitted Site, and re-alignment of the River Lea Diversion Channel adjacent to the east.

Intrusive ground investigations have formed a profile for the ground (waste) currently occupying the DZLV1 landfill area. Within the landfill polygon, a layer of Made Ground generally 1-2m thick is present above re-worked natural soils such as clay, sands and gravels. Estimated emplacement date of this landfill is between the 1930s and 1950s.

Where the landfilled waste is natural in origin it is unlikely to contain elevated contaminant concentrations or have impacted the underlying natural deposits. Potentially contaminative land uses outside the historical landfill are limited to recent fly tipping. The fly tipped material is likely to have resulted in contamination of the surface soils but unlikely to have contaminated the soils at depth. Historical potentially contaminative land uses are absent on DZLV1 outside the historical landfill.

A summary of previous investigation locations with soil chemical quality data completed within the historical landfill area is in Table 6. A plan showing locations of these exploratory holes is included in Appendix A.

Table 6: Ground Investigation Locations within Historical Landfill Area

Feature	Ground Level (m OD)	Depth Excavated (m)
Boreholes		
DZLV1_BH2073	+10.69	6.25
DZLV1_BH2074	+15.91	49.45
DZLV1_BH2076	+11.8	9.4
DZLV1_BH2077	+11.9	35.27
DZLV1_BH2080	+10.57	31.82
Trial Pits		
DZLV1_TP2034	+14.49	4
DZLV1_TP2035	+14.57	3
DZLV1_TP2036	+14.45	3
DZLV1_TP038	+12.19	4.9
DZLV1_TP2039	+14.6	5.6
DZLV1_TP2040	+11.36	3
DZLV1_TP2041	+14.7	5.6
DZLV1_TP2046	+14.55	5.6
DZLV1_TP2047	+14.56	4.2
DZLV1_TP2048	+11.72	3
DZLV1_TP2051	+11.84	3
Trial Trenches		
DZLV1_TT2001	+10.76	3
DZLV1_TT2002	+10.61	1.7
DZLV1_TT2003	+11.2	5.2
DZLV1_TT2004	+12.51	5.3
DZLV1_TT2005	+11.78	3.2
DZLV1_TT2006	+11.84	3.3
DZLV1_TT2007	+11.9	3

3.2.2 Chemical Quality of the Waste

Boreholes undertaken across the DZLV1 area identified the geology as Topsoil and Made Ground at surface, generally around 2m – 3.5m thickness but up to 6.7m locally at the mound area in the north. The uppermost 1m of Made Ground and mound in the north of DZLV1 comprised mixed natural material and construction waste. Deeper Made Ground is predominantly clayey soils with occasional gravel, cobbles and fragments of concrete or brick.

Underlying natural soils comprise 0.4 to 5.5m of Alluvium, then 1.3 to 5m Kempton Park Gravel Member and 8.5 to 12.3m London Clay Formation which thins from east to west.

For most of the locations, no visual or olfactory evidence for contamination was identified during the intrusive works. At location DZLV1_TT2006 a hydrocarbon odour was noted within the Made Ground between 0.25m bgl and 0.35m bgl.

Discarded household waste was present dumped at surface level across the eastern half of DZLV1, however this has arisen recently and is not representative of the historical waste.

Chemical Results - Metals

Metals testing within the waste recorded elevated concentrations including lead up to 3,070mg/kg, and zinc up to 1,600mg/kg. Total metals concentrations recorded in samples from the waste proposed for use are detailed in Table 7.

Table 7: Metals Values for Waste Recovery Area Sampling

Determinant	Value Range (mg/kg)	Mean Value (mg/kg)
Arsenic	5.44 to 28.9	13.03
Cadmium	0.03 to 1.24	0.33
Chromium	7.41 to 64.4	25.31
Copper	3.76 to 276	45.89
Mercury	<0.0001 to 0.18	0.03
Nickel	9.2 to 54	28.08
Lead	4.77 to 3070	259.70
Selenium	1.1 to 2.19	1.57
Zinc	17.3 to 1600	162.82

Leachate testing results for metals are not available.

Chemical Results - Hydrocarbons

Within the completed investigation works at the DZLV1 area, thirty-five samples were collected from the waste proposed for use.

Evidence for significant hydrocarbon contamination within natural soils was not identified during intrusive works. A sample of the Made Ground collected at 0.3m bgl from location DZLV1_TT2006 where hydrocarbon odour was reported during drilling works did not identify any elevated concentrations of hydrocarbons.

Total Petroleum Hydrocarbons (TPH) results identified some areas of elevated hydrocarbon concentrations around location DZLV1_TP2047 at the mound in the north of DZLV1. A value of 749mg/kg for TPH was recorded at 0.1m bgl, decreasing to 201mg/kg at 2.1m bgl and falling below the limit of detection at 3.1m bgl. Across the remainder of the DZLV1 area slightly elevated hydrocarbons up to 278mg/kg were detected, however none were above the inert waste limit of 500mg/kg.

Elevated Polycyclic Aromatic Hydrocarbon (PAH) concentrations were detected in areas across DZLV1 up to 152mg/kg, however occurrences were sporadic and did not indicate a significant hot-spot of contamination.

Chemical Results - Asbestos

Fragments of amosite asbestos were found in four samples across the historical landfill section of the DZLV1 area. Of these, three also contained chrysotile asbestos, with a further sample containing chrysotile only. Quantification of asbestos where found did not record it to comprise more than 1% of any sample collected.

3.2.3 Waste Classification

Ahead of works at the Permitted Site, the surface household waste and uppermost 0.3m layer of Made Ground soils at DZLV1 will be separately excavated and removed, and will not be used for the SIW. As part of the Arup 2019-2020 ground investigations, waste classification was undertaken on samples from the historical landfill area at DZLV1, including samples of the underlying waste with potential for use.

Thirty-four samples of Made Ground collected between 0.3m bgl and 5.5m bgl, five samples of Alluvium between 2.4m bgl and 5.5m bgl and two samples of underlying natural soils at 4.6m bgl and 4.9m bgl were assessed in accordance with WM3 using the software package HazWasteOnline.

The outputs of this assessment found that all natural soils and alluvium samples would be classified as non-hazardous waste. Within the Made Ground, thirty-three of the thirty-four samples assessed were identified as non-hazardous. However, a sample collected from location DZLV1_TP2046 at 1m depth was determined to have potentially hazardous properties due to elevated concentrations of lead, chromium (VI) oxide and zinc oxide. Logs for this sample area recorded the shallow ground as containing multiple fragments of household waste including wiring and broken glass, which may have contributed to the elevated metals concentrations. The presence of this household waste would render the waste as physically unsuitable for use in any event, and it would be visually screened out of the larger waste body ahead of use.

Overall, the findings of sampling within the historical landfill area indicate it is not significantly contaminated, and the soils due to be excavated and used would be capable of being classified as non-hazardous waste.

Considering the origins and contamination status of this waste, it is considered that use of this waste will not introduce a new source of potential contamination once emplacement works are complete. Therefore, the principal risks to water resources at the Permitted Site remain the existing groundwater contamination previously identified through multiple historical investigation works.

3.2.4 Groundwater Quality within Waste Source Area

Groundwater wells targeting the shallow Secondary A Aquifer in the Kempton Park Gravel Member within the DZLV1 waste recovery area found minor elevations of concentrations of some contaminants in the shallow groundwater when compared to EA EQS and DWS, however these low levels in groundwater are not significant and well below concentrations found across the Permitted Site area. The original emplacement of the waste to this area is considered not to have caused deterioration of groundwater quality within DZLV1.

3.3 Pathways

3.3.1 Groundwater

The works to raise ground levels within the SIW will involve excavation of existing hardstanding and clearing of obstructions within this area, followed by transport and emplacement of the waste to create the new formation level. The resultant situation in these areas will be waste emplaced directly above residual soils.

The SIW to be completed following land raising using waste may include roads, footpaths and development plots (works to the west of Harbet Road), and soft and hard landscaping between the new flood storage basins in Edmonton Marshes to the east of Harbet Road.

Should contamination be present within the emplaced waste, the potential pathway for this would be downward migration of leachate into the underlying in-situ soils. Following on from this, the contamination could be dispersed through the shallow aquifer in the Kempton Park Gravel Member to the wider Meridian Water area and further off-site. However, waste acceptance procedures will be put in place throughout use of the material to ensure no contamination source is created through the use. Control measures are set out in the Waste Acceptance Procedures (WAP) document for the works.

In addition, waste soils may be used to create a growing medium (soil layer) in Brooks Park. In those areas of Brooks Park located in Phase 1 SIW, the soils will be placed above an impermeable layer.

This impermeable layer will not be installed at the Phase 2 SIW Brooks Park area, as the existing river wall will remain in place and will prevent rainfall-driven groundwater migration to the wider site. The impermeable layer across Brooks Park in Phase 1 SIW, is required to prevent rainfall potentially mobilising contaminants in the underlying soils to groundwater, rather than being necessary to protect underlying groundwater from the waste used as a plant growth medium. As any waste recovered in Brooks Park will be subject to the more stringent cover soils reuse criteria (see Waste Acceptance Procedures submitted with the EP application).

Plans D-ESSD5V, X and Y provide sections through Brooks Park – the soils shown on plan D-ESSD5V may be waste. Plans D-ESSD5X and Y show the impermeable clay layer across Brooks Park in sections.

3.3.2 Surface Waters

The SIW boundary is intersected by the River Lee (Navigation), Pymmes Brook and Salmon Brook. The River Lea Diversion Channel runs adjacent to the SIW eastern boundary. These waterways are currently channelised and lined with concrete. During construction works, surface run-off to areas immediately adjacent to the Permitted Site is possible.

Development proposals involve naturalisation of sections of these waterways at Brooks Park, with removal of the concrete barriers between the surface water and shallow groundwater. To prevent the removal of this concrete channel creating a potential migration pathway between these water bodies with subsequent potential contamination pathway, naturalisation works at Brooks Park will include construction of a hydraulic cut-off wall keyed into the top of the London Clay surrounding the area of the new naturalised Pymmes Brook channel.

The works also include excavation to formation followed by installation of an impermeable barrier across the entirety of Brooks Park within the SIW Phase 1 area thereby preventing downward migration of precipitation and surface water to groundwater.

On both ends of the new Pymmes Brook naturalised channel, the impermeable barrier will be constructed to tie in with the retained Pymmes Brook concrete channel to the north and south of the new naturalised channel, creating a continuous impermeable barrier, preventing connectivity of brook water to groundwater. Details for the impermeable barrier are shown on the plans and sections D-ESSD5W-Y.

3.4 Receptors

3.4.1 Receptors During the Works

During the works, the waste will be directly transported to areas where ground level raising is required. As the waste will be exposed during this process, the potential exists for surface run-off or dust emissions to reach the nearby surface waters at the River Lea Diversion Channel, River Lee (Navigation), Pymmes Brook and Salmon Brook.

During the works to complete the level raising, existing hardstanding covering the majority of the Permitted Site will be excavated and removed. This will be done both in areas where filling is required to raise levels, and where cut is necessary to reduce levels. For the period that this hardstanding is not present, underlying soils will be exposed. This in turn will lead to increased rainwater infiltration, which could increase migration of any contamination in shallow soils or in the waste downwards to the shallow water body.

3.4.2 Receptors at Completed Permitted Area

On completion of the works, the waste will be capped by buildings, hardstanding, landscaping and rain gardens for surface water attenuation. This capping layer will prevent runoff and dust emissions, and reduce rainfall infiltration to ground. Furthermore, all sustainable drainage installed (including the entirety of Brooks Park in Phase 1 SIW) will be underlain to form an impermeable barrier with the surrounding ground and groundwater. Subsequently, contaminant migration through groundwater driven by rainfall infiltration will be reduced but may still occur at the naturalised Edmonton Marshes area where lining is not proposed due to the absence of significant contaminants in the ground.

Surrounding potential groundwater receptors include the shallow aquifer within the Kempton Park Gravel Member, and deeper water bodies in the Harwich Formation, Lambeth Group, Thanet Formation and Chalk Group. Installation of the hydraulic cut off wall in this area, retention of the existing concrete channel of the former Pymmes Brook and installation of the impermeable barrier at the naturalised Pymmes Brook and Brook Park will prevent existing contamination within the shallow groundwater in the SIW area migrating to these waterways.

Remediation of the existing contamination is set out in a Remediation Strategy and Verification Plans documents for SIW Phase 1 and 2 developed by Arup and included for reference in the EP application. This remediation work will be undertaken ahead of the SIW construction commencing, reducing the potential for hydraulic continuity between the shallow groundwater and surface waters to carry contamination to the wider Site.

4. Hydrogeological Risk Assessment

4.1 The Nature of the Hydrogeological Risk Assessment

Arup has undertaken significant previous groundwater quality research across the Meridian Water Masterplan area, including the Permitted Site area. Two phases of intrusive ground works were completed between 2019 and 2020, with results set out in two interpretive reports by Arup (*reference MWP2-2.2; April 2019 and REP/260637/CL/001; December 2020*). As part of these works, a minimum of six rounds of groundwater sampling were completed at all boreholes within the Permitted Site and across the wider Masterplan area.

Findings of this groundwater monitoring have been reported within the Arup interpretive reports and provided to the EA local groundwater team (as a technical consultee to the LBE planning team). Detailed discussions on groundwater quality across Meridian Water have been held between EA and LBE, with Arup, Taylor Woodrow and Waterman. For these reasons, it is considered that the contamination status of shallow and deep groundwater at the Site has been well investigated, and further risk assessment is not necessary. For the purposes of the EP application, a qualitative assessment of risk from the use of specific non-hazardous waste is considered proportionate.

Ground investigation findings for the source area indicate the waste proposed to be used under the waste recovery EP will comprise non-hazardous material. Emplacement of this material to build up levels is anticipated not to introduce a new source of contamination to the Site. Acceptance procedures for the waste set out in the Waste Acceptance Procedures (WAP) included in the EP application will ensure any unacceptable contamination in the waste is identified, and that such waste is not used.

Potential contaminant pathways have been identified during the works from runoff or dust emissions from exposed soils. These risks would be managed through implementation of the Construction Environment Management Plan (CEMP) prepared for the works by Taylor Woodrow (*reference SIW-TWC-XX-XX-PL-W-000002*) and a Dust Emissions Management Plan (DEMP) prepared for the works, as described in the Environmental Risk Assessment (ERA) included in the EP application. Furthermore, prior remediation of the groundwater within and surrounding the Permitted Site is anticipated as detailed in the Arup Remediation Strategies. Therefore, throughout the use process the source-pathway-receptor pollutant linkage would be incomplete, and as such further hydrogeological risk assessment is deemed not required.

Complex risk assessment is considered unnecessary due to the absence of significant contaminant sources within the waste, and lack of uncontrolled pathways to receptors either during or on completion of the works.

4.2 The Proposed Assessment Scenarios

Two scenarios are considered – the duration of the works, and the completed development. Table 8 details the potential contaminant linkages in each scenario along with the relevant mitigation measures.

Table 8: Assessment of Potential Contaminant Linkages

Source	Pathway	Receptor	Mitigation
During Construction Works			
Existing shallow soils and groundwater contamination	Rainfall-driven migration of contamination to shallow groundwater	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Remediation works as set out in ARUP remediation strategies
Potential	Downward migration	Shallow	Chemical analysis of the waste to be used has not

Source	Pathway	Receptor	Mitigation
contamination in waste emplaced within the Permitted Site to build up levels	of leachate into the underlying in-situ soils and shallow groundwater	Secondary A Aquifer in the Kempton Park Gravel Member	identified potential for it to act as a contamination source Acceptance procedures set out in the WAP will ensure any unacceptable contamination in the waste is identified, and that such waste is not used
	Surface run-off from emplaced soils	Surface water bodies at the River Lea Diversion Channel, River Lee (Navigation), Pymmes Brook and Salmon Brook	Implementation of a CEMP for the works including measures to minimise run-off
	Surface run-off and dust emissions from emplaced soils	Construction workers and visitors to the Permitted Site and surrounding area	Implementation of a CEMP and DEMP for the works
Completed Development			
Potential contamination in waste emplaced within the Permitted Site to build up levels	Rainfall-driven migration of contamination to shallow groundwater via naturalised Pymmes Brook and new Brooks Park landscaping	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Chemical analysis of the waste has not identified potential for it to act as a contamination source. <u>Any waste recovered in Brooks Park will be subject to the more stringent cover soils reuse criteria</u> <u>The impermeable layer across Brooks Park in Phase 1 SIW, is required to prevent rainfall potentially mobilising contaminants in underlying soils to groundwater, rather than being necessary to protect underlying groundwater from the waste used as a plant growth medium.</u>
	Rainfall-driven migration of contamination to shallow groundwater via area not underlain by impermeable barrier at SIW Phase 2 area	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Chemical analysis of the waste has not identified potential for it to act as a contamination source
	Rainfall-driven migration of contamination to shallow groundwater in landscaped Edmonton Marshes	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Chemical analysis of the waste has not identified potential for it to act as a contamination source
	Surface run-off and dust emissions from	Visitors to the Permitted Site and	Completed area will be capped with hardstanding, buildings and new soft landscaping which will break

Source	Pathway	Receptor	Mitigation
	emplaced soils	surrounding area	linkages between soils and human health receptors
Existing shallow soils and groundwater contamination	Rainfall-driven migration of contamination to shallow groundwater via rain gardens, naturalised Pymmes Brook and new Brooks Park landscaping	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Remediation of existing contamination as set out in ARUP remediation strategies Furthermore, the new sustainable drainage installed will be lined to prevent infiltration to potentially contaminated surrounding ground. Naturalised Pymmes Brook and Brook Park landscaping at the Phase 1 SIW area will be underlain by an impermeable barrier and hydraulic cut off wall to prevent downward migration of surface water and subsequent mobilisation of contamination to shallow groundwater.
	Rainfall-driven migration of contamination to shallow groundwater in landscaped Edmonton Marshes	Shallow Secondary A Aquifer in the Kempton Park Gravel Member	Significant contamination has not been identified in the Edmonton Marshes area of the site. As such, installation of a liner to prevent rainwater infiltration is not considered necessary here due to lack of an in-situ contamination source.

4.3 The Priority Contaminants to be Modelled

Numerical modelling is considered unnecessary for this assessment for the reasons set out above.

4.4 Review of Technical Precautions

The inclusion of mitigation measures such as capping, a liner or leakage detection, leachate drainage system, leachate head control or groundwater and surface water management for the protection of groundwater are considered not necessary. Details of waste acceptance procedures and criteria are provided in the WAP.

During waste placement (earthworks) operations, control measures will be in place to prevent surface water runoff leaving the Permitted Site. These measures are detailed in the CEMP prepared for the works.

4.5 Numerical Modelling

Numerical modelling is considered unnecessary for this risk assessment. The remaining subsections are therefore not completed.

- Justification for Modelling Approach and Software
- Model Parameterisation
- Sensitivity Analysis
- Model Validation
- Accidents And Their Consequences

4.6 Emissions to Groundwater

Due to the lack of contamination identified within the waste, which will be further confirmed through the waste acceptance procedures to be put in place for the works, emissions to groundwater hazardous or non-hazardous substances from the recovered waste are not anticipated during the earthworks or in the completed development.

4.7 Hydrogeological Completion Criteria

During the earthworks, the waste placement activities will be managed to prevent contamination of ground or surface waters. Due to the nature of the waste, leachate will not arise and so will not require active management either during the earthworks or beneath the completed development. As such, no hydrogeological completion criteria are proposed, however a period of post works monitoring of groundwater is required to satisfy planning controls as detailed in Section 5.

5. Requisite Surveillance

5.1 The Risk Based Monitoring Scheme

A monitoring scheme for groundwater and surface water quality across both the SIW and wider Meridian Water Masterplan area has been devised as part of planning controls over future development of this area. The scheme is set out in the Waterman Controlled Waters Monitoring and Maintenance Plan provided for reference with the EP application. The monitoring locations set out in the plan target both shallow and deep groundwater, along with surface waters at the River Lea Diversion Channel, River Lee (Navigation), Pymmes Brook and Salmon Brook. As such, these proposed monitoring locations are also considered suitable for monitoring to confirm the recovery and use of waste at the SIW is not causing detriment to these water bodies.

5.1.1 Leachate Monitoring

Leachate monitoring is not required.

5.1.2 Groundwater Monitoring

The objective for groundwater monitoring is to determine that chemical quality within the shallow and deeper aquifers is not being adversely impacted by emplacement of the waste. This will be achieved by a regime of groundwater sampling at existing wells present across the Site, targeting both the shallow aquifer in the Kempton Park Gravel Member, and deeper aquifer in the Thanet Formation and Chalk Group.

As groundwater within the Lambeth Group was found not to form a consistent water body across the Permitted Site and wider Masterplan area, monitoring of this stratum is considered unnecessary.

Kempton Park Gravel Member

Previous monitoring of this stratum did not identify a consistent single flow direction, with groundwater levels generally highest in the central area at DZ4 and DZ5, trending downwards to the edges of the Site. Therefore, a series of eleven existing wells have been selected for monitoring centred around DZ4/DZ5, extending outwards to the surrounding wider masterplan area.

Thanet Formation / Chalk Group

Previous monitoring has determined the deep groundwater flow direction trend to be south-west to north-east across the Site. Therefore, a series of eight existing wells have been selected up-gradient, mid-gradient, and down-gradient for this water body.

The installation and locations of the monitoring wells relative to the Site are set out in Table 9. A plan showing the location of the selected wells is included in Appendix A (reproduced as D-ESSD10C) with associated borehole logs included in Appendix B.

Table 9: Monitoring Well Installation and Design for Groundwater Wells

Monitoring Well	Up / down hydraulic gradient	Ground Level (m OD)	Installation Details (screening section m bgl / m OD)
Kempton Park Gravel Member Secondary A Aquifer			
DZ4_BH2029	Up-gradient	+9.72	2.4 to 7.55m bgl +7.32 to +2.17m OD
DZ7_BH2053	Mid-gradient	+11.19	13.6 to 14.6m bgl -2.41 to -3.41m OD
DZ6_BH2066A	Mid-gradient	+10.94	3.6 to 6.7m bgl +7.34 to +4.24m OD

Monitoring Well	Up / down hydraulic gradient	Ground Level (m OD)	Installation Details (screening section m bgl / m OD)
DZ5_BH2022A	Mid-gradient	+9.59	1 to 3.5m bgl +8.59 to +6.09m OD
DZ5_BH2023	Mid-gradient	+10.8	3 to 6.3m bgl +7.8 to +4.5m OD
DZ4_BH2048 (Deep)	Down-gradient	+11.37	5.0 to 8.5m bgl +6.37 to +2.87m OD
DZ7_BH2049	Down-gradient	+11.42	5.5 to 6.8m bgl +5.92 to +4.62m OD
DZ7_BH2054	Down-gradient	+11.59	3.4 to 6.9m bgl +8.19 to +4.69m OD
DZ7_BH2058	Mid-gradient	+10.47	3.2 to 6.8m bgl +7.27 to +3.91m OD
DZ6_BH2069	Down-gradient	+10.68	3.2 to 6.1m bgl +7.48 to +4.58m OD
DZ4_BH2034 (Shallow)	Down-gradient	+10.71	3.6 to 7m bgl +7.11 to +3.71m OD
DZ5_BH2016	Down-gradient	+10.65	3.6 to 7.2m bgl +7.05 to +3.45m OD
DZ6_BH2068	Down-gradient	+10.34	3 to 7.3m bgl +7.34 to +3.04m OD
Thanet Formation / Chalk Group Principal Aquifer			
DZ4_BH2047	Up-gradient	+11.76	41 to 46m bgl -29.24 to -34.24m OD
DZ4_BH2034 (Deep)	Up-gradient	+10.71	21 to 23m bgl -10.29 to -12.29m OD
DZ6_BH2070	Up-gradient	+10.61	41 to 45m bgl -30.39 to -34.39m OD
DZ6_BH2067	Up-gradient	+10.19	41 to 45m bgl -30.81 to -34.81m OD
DZ7_BH2056	Mid-gradient	+10.57	38 to 43m bgl -27.43 to -32.43m OD
DZ5_BH2015	Down-gradient	+10.53	34.5 to 39.5m bgl -23.97 to -28.97m OD
DZ7_BH2050	Down-gradient	+11.56	39.5 to 44.5m bgl -27.94 to -32.94m OD
DZLV1_BH2071	Down-gradient	+12.31	44 to 48m bgl -31.69 to -35.69m OD

Maintenance of Monitoring Wells

Monitoring wells will be protected by concrete rings painted red and white in working areas. If wells become unusable, they will be decommissioned in accordance with EA best practice guidance.

Replacement monitoring wells will be positioned as close as possible to the previous well and installed with a similar monitoring well design. Details of the geology encountered during progression of the replacement monitoring wells and the installation design will be recorded and submitted to the EA (local area groundwater team) to demonstrate the replacement well is suitable for continued monitoring.

Monitoring Methodology

Ahead of sampling at each monitoring location, the depth to groundwater and depth to base of well will be measured using a dip meter to an accuracy of 0.01m.

Following this, groundwater samples will be taken using a low flow methodology (peristaltic pumps/bladder pumps) to ensure representative groundwater samples are recovered. Excessive purging will not be undertaken prior to sampling to avoid high levels of disturbance on the strata surrounding the well which may mobilise sediments and/or contaminants which would otherwise remain immobile.

Dedicated tubing will be used for each monitoring well, with the tubing tip positioned at the midpoint of the well response zone.

The groundwater samples will be collected once the following parameters detailed in Table 10 have been met or following at least ten minutes of continuous parameter monitoring.

Table 10: Low Flow Monitoring Stabilisation Parameters

Parameter	Stabilisation Levels
Dissolved Oxygen	±10% of reading or ±0.2mg/l, whichever is greater
Total Dissolved Solids	±10% of reading
Turbidity	±10% of reading
pH	±0.2 pH units
Eh or ORP	±20mV
Conductivity	±3% of reading

Once the stabilisation parameters have been met the groundwater samples will be placed in sampling containers appropriate for the required testing. The sampling containers will be stored in insulated boxes with cool packs and delivered to the laboratory to ensure samples are not marked as deviant by the testing laboratory. UKAS accredited laboratories will be used for the chemical analysis of water samples. Testing will be to the Environment Agency Monitoring Certification Scheme (MCERTS) standards.

5.1.3 Surface Water Monitoring

The objective for surface water monitoring is to demonstrate that that chemical quality within these water bodies is not being impacted by surface run-off, or lateral contamination migration through groundwater. Targeted surface water sampling will be completed alongside the proposed groundwater sampling.

River Lea Diversion Channel, River Lee (Navigation) and Pymmes Brook

A total of ten locations will be sampled each monitoring round (encompassing up-stream, mid-stream and down-stream of all rivers). Locations are set out in the plan in Appendix A.

Table 11: Monitoring Locations for Surface Waters

Monitoring Well	Up / downstream	Ground Level (m OD)	Installation Details (screening section m bgl / m OD)
Pymmes Brook and Salmon Brook Surface Waters			
DZ5_SW01	Up-stream	N/A	N/A
DZ5_SW02	Up-stream	N/A	N/A
DZ4_SW03	Mid-stream	N/A	N/A
DZ4_SW04	Down-stream	N/A	N/A
River Lea Diversion Channel			
DZLV1_SW08	Up-stream	N/A	N/A
DZLV1_SW09	Mid-stream	N/A	N/A
DZ6_SW10	Down-stream	N/A	N/A
River Lee (Navigation)			
DZ7_SW05	Up-stream	N/A	N/A
DZ4_SW06	Mid-stream	N/A	N/A
DZ4_SW07	Down-stream	N/A	N/A

Monitoring Methodology

Surface water samples will be obtained through direct collection into the sampling containers using a telescoop or similar device.

The surface waters will be inspected daily, and records kept of observations of the visual quality of the water.

UKAS certified laboratories will be used for the chemical analysis of water samples. Testing will be to the Environment Agency Monitoring Certification Scheme (MCERTS) standards.

5.2 Monitoring and Testing Regime

For all groundwater and surface water monitoring points, the regime of testing will be undertaken as follows:

- Two rounds completed at monthly intervals prior to earthworks (excavation, material movements and re-leveling) commencing to form a baseline;
- Quarterly monitoring throughout the duration of the SIW earthworks; and
- Three rounds monthly on completion of the SIW earthworks.

The purpose of the monitoring will be to demonstrate the works have not caused a deterioration in groundwater quality down hydraulic gradient of the Permitted Site. The contaminant threshold concentrations will therefore be dependent on the background groundwater quality as recorded during the baseline monitoring and in monitoring wells up hydraulic gradient of the Permitted Site during each monitoring event. Higher contaminant concentrations within down hydraulic gradient boreholes will signify a potential impact on the surrounding groundwater quality is being caused, and mitigation measures may be required. For each contaminant the following assessment criteria will also be used:

- For hazardous pollutants as classified in the Water Framework Directive, the trigger value will be set at the maximum concentration recorded in up hydraulic gradient monitoring points at each monitoring event;

- For non-hazardous/unclassified pollutants as classified in the Water Framework Directive, the trigger value will be set at 125% of the maximum concentration recorded in up hydraulic gradient monitoring points, at each monitoring event;

The trigger values will be used as a test for deviations from the baseline groundwater conditions and will be regarded as an early warning system to enable the appropriate investigation and corrective measures to be implemented.

Turbidity will be measured on-Site during sampling, with the results confirmed in an ex-situ sample tested in the laboratory.

Adherence to the trigger values identified for each monitoring event in down hydraulic boreholes will ensure the following:

- Hazardous substances are not released during construction;
- An upward trend in non-hazardous contaminants is not realised;

Contaminants included in the testing regime during the baseline monitoring and each monitoring event are included in Table 12.

Table 12: Contaminant Sampling Suite

Group	Contaminants
Organic Compounds	Total Petroleum Hydrocarbons (Aliphatic and Aromatic, C5-C35), to include Benzene, Toluene, Ethylbenzene, Xylenes; Polycyclic Aromatic Hydrocarbons; Phenol; PCBs; VOCs
Inorganic Compounds	Ammonia; Ammoniacal Nitrogen as N; Total Alkalinity as CaCO ₃ ; Total Cyanide; Free Cyanide; Sulphide; Sulphate.
Metals	Arsenic; Barium, Beryllium Cadmium; Chromium III, Chromium IV; Lead; Copper Mercury; Molybdenum, Nickel Selenium; Vanadium; Zinc
Water Quality Indicators	pH; Chemical Oxygen Demand, Turbidity

5.3 Reporting

The results will be reported to the Environment Agency (local area groundwater team²) three weeks after each monitoring round. On completion of all monitoring, a final factual report will be prepared including all in-situ and laboratory test results.

The submitted report will factually present the results, any amendments to the construction methodology, a general summary of activities undertaken on the Permitted Site and relevant activities up hydraulic gradient of the Permitted Site which could have impacted the groundwater monitoring results. Where necessary an interpretation of the results will be completed.

The data will also be included in the EP surrender report.

² Data will also be submitted if required by EP condition to the relevant team.

6. Conclusions

6.1 Compliance with the Landfill Directive

The Landfill Directive is not applicable as this is an application for a permanent deposit of recovered waste.

6.2 Compliance with the Groundwater Regulations (2009)

The recovered waste will not pose a threat to groundwater and surface water due to the absence of any complete source-pathway-receptor linkages to identified receptors.

APPENDICES

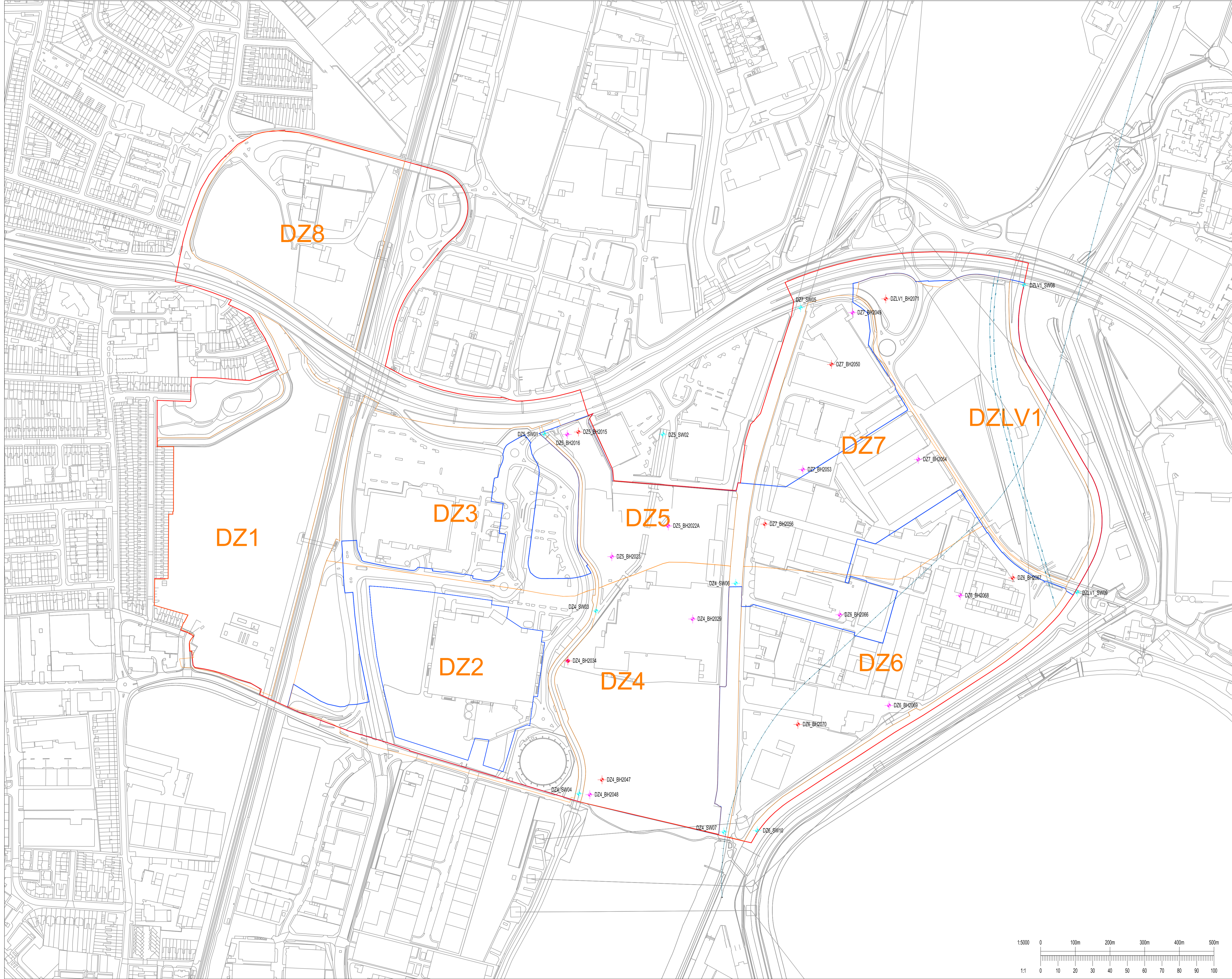
A. Site Plans

- Proposed groundwater and surface water monitoring locations plan
- Previous ground investigation monitoring well locations relevant to the SIW
- Previous ground investigation locations with soil chemical quality data completed within the historical landfill area

This drawing should not be scaled. Dimensions to be verified on site. Any discrepancies should be referred to the Engineer prior to work being put in hand.
 This drawing is the property of Waterman Infrastructure & Environment Limited, and the drawing is issued on the condition that it is not copied, reproduced, related or disclosed to any unauthorised person, either wholly or in part without the consent in writing of Waterman Infrastructure & Environment Limited
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GENERAL NOTES

- KEMPTON PARK GRAVEL MEMBER SECONDARY AQUIFER
- THANET FORMATION / CHALK GROUP PRINCIPAL AQUIFER
- PYMMES BROOK AND SALMON BROOK SURFACE WATERS (SW01-SW04)
- RIVER LEE NAVIGATION SURFACE WATERS (SW05-SW07)
- RIVER LEE SURFACE WATERS (SW08-SW10)
- STRATEGIC INFRASTRUCTURE WORKS BOUNDARY
- MASTERPLAN BOUNDARY
- DEVELOPMENT ZONE BOUNDARIES
- THAMES WATER TUNNEL



P01	11.10.21	PRELIMINARY ISSUE	DC	RM
Status	Date	Description	By	CHK
Amendments				

Project
MERIDIAN WATER S.I.W

Title
CONTROLLED WATERS MONITORING PLAN

Client
 LONDON BOROUGH OF ENFIELD

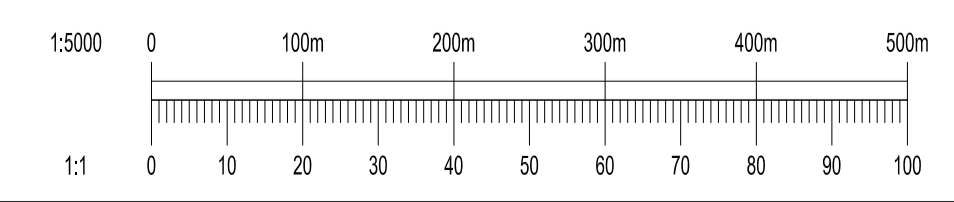


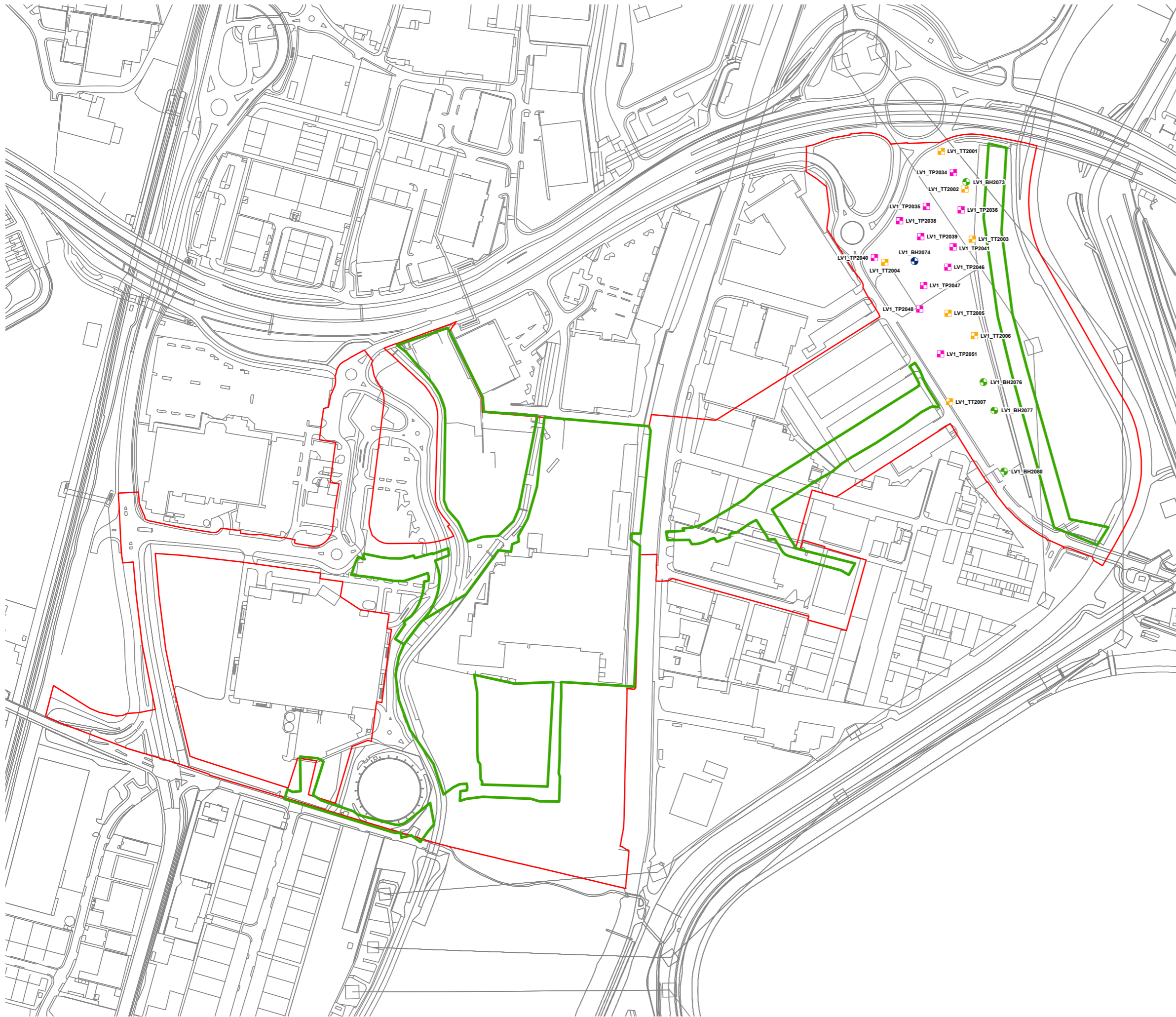
Pickfords Wharf Clink Street London SE1 9DG
 1 020 7928 7888
 mail@watermangroup.com www.watermangroup.com

Status
PRELIMINARY

Designed By	RM	Director	RM	Waterman Ref	WIE 16279-160
Drawn By	DC	Date	OCTOBER 2021	Scales @ A1	1:5000

Project - Originator - Volume - Level - Type - Role - Number
SIW-WAT-XX-XX-DR-C-911008 P01

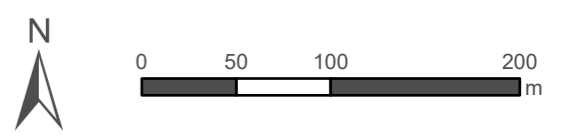




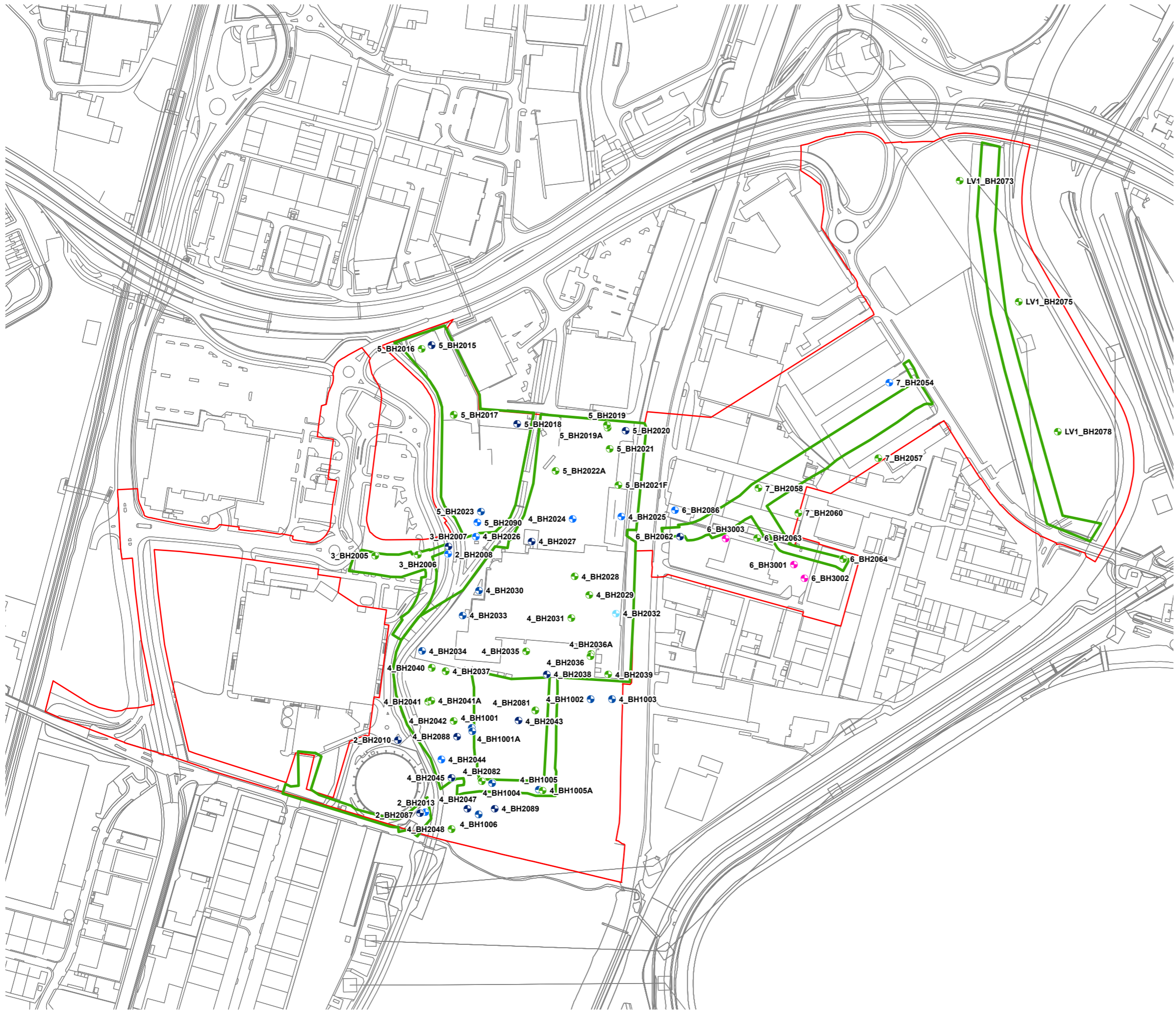
- SIW Boundary
- Environmental Permit Boundary

Previous Ground Investigation

- ⊕ Chalk Installation
- ⊕ KPGR Installation
- Trial Pit
- Trial Trench



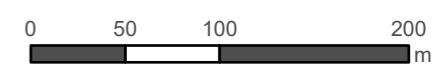
Project Details	WIE16279-300: Meridian Water SIW
Figure Title	Figure B1: Previous investigation locations with soil chemical quality data completed within the historical landfill area
Figure Ref	WIE116279-300_GIS_HRA_2B
Date	March 2024
File Location	N:\Projects\WIE16279-300\GIS\WIE16279-300_GIS_LQD



- SIW Boundary
- Environmental Permit Boundary

Previous Ground Investigation

- + Chalk Installation
- + BWB KPGR & Lambeth Group Installation
- + KPGR Installation
- + Lambeth Group Installation
- + KPGR & Lambeth Group Installation
- + SLR Borehole



Project Details	WIE16279-300: Meridian Water SIW
Figure Title	Figure A1: Previous Ground Investigation Locations relevant to SIW
Figure Ref	WIE116279-300_GIS_HRA_1B
Date	March 2024
File Location	N:\Projects\WIE16279-300\GIS\WIE16279-300_GIS_LQD

B. Exploratory Hole Records

- Exploratory hole logs for wells to be used for groundwater monitoring

Appendices



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 17/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535896.64 N191985.98
Project No. : GTS-19-250		Crew Name: DB	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ7_BH2085	Hole Type CP	Level 11.44m AOD	Logged By AM+Del Bowman
		Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		0.30	11.44	Concrete / hardstanding. [MADE GROUND]	
		0.30 - 0.52	B					
		0.30	PID	PID = 4 ppm	0.50	11.14	Soft, dark grey, sandy, slightly gravelly clay. Gravel is angular to subrounded, fine to medium, flint, brick, quartzite. [MADE GROUND]	
		0.70	ES					
		0.70	PID	PID = 1 ppm				
		0.75 - 1.00	B					
		1.05	ES		1.00	10.94	Grey, slightly clayey, gravelly, fine to coarse SAND. [MADE GROUND]	1
		1.05 - 1.20	B					
		1.05	PID	PID = 0 ppm				
		1.50 - 2.00	B		1.50	10.44	Soft, blueish grey mottled brown, slightly gravelly CLAY. Gravel is angular to subrounded, fine to coarse, flint, quartzite and concrete. Frequent decaying rootlets (<2mm). [MADE GROUND]	2
	1.50	cSPT	N=2 (1.0/1.0,1.0)					
	2.40	B		2.40	9.94	Soft, blueish grey mottled brown, slightly peaty CLAY. Frequent decaying rootlets (<2mm). [ALLUVIUM]		
	2.50	ES						
	2.50 - 2.95	D						
	2.50 - 3.00	B						
	2.50	SPT	N=4 (1,1/1,1,1,1)					
	2.50	PID	PID = 1 ppm	3.00	9.04	Soft, dark greyish brown, slightly sandy, slightly gravelly, peaty CLAY. Gravel is subangular to subrounded, fine to medium, flint and extremely weak siltstone. Sand is fine to coarse. [ALLUVIUM]	3	
	3.50 - 3.95	UT						
	4.50 - 4.95	D						
	4.50 - 5.00	B						
	4.50	SPT	N=0 (1,0/0,0,0,0)					
	5.00	EW						

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.40	200	3.00	200								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 1.40 m to 3.40 m. 4. Single install with 50 mm pipe. Response zone from 6.10 m to 8.10 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 17/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535896.64 N191985.98
Project No. : GTS-19-250		Crew Name: DB	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ7_BH2085	Hole Type CP	Level 11.44m AOD	Logged By AM+Del Bowman
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00	EW		6.10	8.44		Soft, dark greyish brown, slightly sandy, slightly gravelly, peaty CLAY. Gravel is subangular to subrounded, fine to medium, flint and extremely weak siltstone. Sand is fine to coarse. [ALLUVIUM]
		5.50 - 5.95	UT					
		6.00	EW		PID = 0 ppm			Dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]
		6.10	B					
		6.20	ES					
		6.20	PID					
		7.00	EW		N=32 (2,3/5,5,9,13)			Stiff, fissured, dark grey, slightly sandy CLAY. Sand is fine to medium. Fissures are 5-10 degrees, undulating, rough. Frequent light grey sand / silt partings. [LONDON CLAY FORMATION]
		7.00	B					
		7.00 - 7.50	ES					
		7.00	cSPT					
	8.10	B		PID = 0 ppm	8.10		Stiff, fissured, dark grey, slightly sandy CLAY. Sand is fine to medium. Fissures are 5-10 degrees, undulating, rough. Frequent light grey sand / silt partings. [LONDON CLAY FORMATION]	
	8.30	ES						
	8.30	PID						
	8.50 - 8.95	UT			9.10		single pyritized nodule (<50mm) at 8.95 m.	
	8.95 - 9.00	D						
	9.00	D		End of Borehole at 9.10m				

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
9.10	150	8.10	150								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 1.40 m to 3.40 m. 4. Single install with 50 mm pipe. Response zone from 6.10 m to 8.10 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 22/06/2021 - 24/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535915.31 N192033.49
Project No. : GTS-19-250	Crew Name: NC	Drilling Equipment: Dando 2000 Hand Tools

Borehole Number GI_DZ7_BH2084	Hole Type CP	Level 11.45m AOD	Logged By AB	Scale 1:25	Page Number Sheet 1 of 2
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							Reinforced CONCRETE. [MADE GROUND]	
	0.28 - 0.40	B			0.28	11.45	Stiff brown mottled dark grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse flint brick and concrete. [MADE GROUND]	
	0.28 - 0.40	D			0.40	11.17		
	0.30	ES					Stiff dark brown mottle dark grey to black slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse brick, concrete with ash. [MADE GROUND]	
	0.30	PID	PID = 0 ppm					
	0.40 - 0.60	B					Firm dark greenish grey slightly sandy slightly gravelly silty CLAY. Sand is fine. Gravel is angular to subangular fine and medium flint. Hydrocarbon odour. [ALLUVIUM]	
	0.40	PID	PID = 0 ppm					
	0.50	ES					silty from 1.95 to 2.00 m.	
	0.50 - 0.80	B			0.80	11.05		
	0.50 - 0.80	D					peat lens from 2.40 to 2.50 m. gravelly between 2.50 and 2.70 m.	
	0.50	PID	PID = 0 ppm					
	0.60 - 0.80	B					thickly laminaed between 3.15 and 3.20 m.	
	0.60	PID	PID = 0 ppm					
	0.80 - 1.10	B					Medium dense dark grey and brown sandy GRAVEL. Sand is medium and coarse. Gravel is subangular to subrounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]	
	0.80 - 1.10	B						
	0.80 - 1.10	D					N=4 (1,0/1,1,1,1)	
	0.80 - 1.10	PID	PID = 0 ppm					
	0.80	PID	PID = 0 ppm				N=20 (1,1/1,4,7,8)	
	1.00	ES						
	1.00	PID	PID = 0 ppm				N=19 (3,5/5,4,5,5)	
	1.10 - 1.20	B						
	1.10	PID	PID = 0 ppm					
	1.20 - 1.65	D						
	1.20 - 2.00	B						
	1.20 - 2.00	D						
	1.20	SPT	N=4 (1,0/1,1,1,1)					
	1.30 - 3.20	B						
	1.50 - 1.60	D						
1.50	PID	PID = 1 ppm						
2.00	ES							
2.00 - 2.50	UT							
2.00	PID	PID = 1 ppm						
2.50	D							
2.50 - 2.60	D							
2.50 - 3.00	B							
2.50 - 3.00	D							
2.50	PID	PID = 1 ppm						
3.00	ES							
3.00 - 3.45	D							
3.00 - 4.00	B							
3.00 - 4.00	D							
3.00	SPT	N=4 (1,0/1,1,1,1)						
3.00	PID	PID = 2 ppm						
4.00	B							
4.00	ES							
4.00 - 4.45	D							
4.00	SPT	N=20 (1,1/1,4,7,8)		4.20	10.65			
4.00	PID	PID = 1 ppm						
4.05	EW							
4.20 - 5.00	B							
4.20 - 5.00	D							
4.50	ES							
4.50	PID	PID = 10 ppm						
4.55 - 5.00	D							
4.55	SPT	N=19 (3,5/5,4,5,5)						
5.00	EW							

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.80	200	1.80	200								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 0.80 m to 1.80 m. 4. Single install with 50 mm pipe. Response zone from 4.20 m to 8.40 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021 - 24/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535915.31 N192033.49
Project No. : GTS-19-250		Crew Name: NC	Drilling Equipment: Dando 2000 Hand Tools
Borehole Number GI_DZ7_BH2084	Hole Type CP	Level 11.45m AOD	Logged By AB
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00 - 6.00	B		8.30	7.25		Medium dense dark grey and brown sandy GRAVEL. Sand is medium and coarse. Gravel is subangular to subrounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]
		5.50 - 6.00	D					
		6.00	ES					
		6.00	EW					
		6.00	EW					
		6.00	EW					
		6.00	EW					
		6.00 - 6.45	D					
		6.00 - 7.00	B					
		6.00	SPT	N=26 (5,5/10,6,5,5)				
		6.00	PID	PID = 2 ppm				
		6.50	EW					
		6.50 - 7.00	D					
		7.00	ES					
		7.00 - 7.45	D					
	7.00 - 8.00	B						
	7.00	SPT	N=25 (5,6/5,7,6,7)					
	7.00	PID	PID = 2 ppm					
	7.50 - 8.00	D						
	8.00 - 8.10	ES						
	8.00 - 8.45	D						
	8.00	SPT	N=24 (5,5/6,7,5,6)					
	8.00	PID	PID = 1 ppm					
	8.70 - 8.80	ES						
	8.70	PID	PID = 1 ppm					
				9.40	3.15		Stiff dark greyish brown sandy CLAY. Sand is fine to coarse. [LONDON CLAY FORMATION]	
							End of Borehole at 9.40m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
9.40	150	9.40	150								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 0.80 m to 1.80 m. 4. Single install with 50 mm pipe. Response zone from 4.20 m to 8.40 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535747.30 N191884.16
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Archway Dart
Borehole Number GI_DZ6_WS2086	Hole Type WS	Level 10.41m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.20 - 1.40 1.20 - 2.00 1.20	ES L PID	PID = 3 ppm	0.20	10.41		Reinforced concrete. [MADE GROUND]
					1.00	10.21		Soft dark greyish brown slightly sandy slightly gravelly clay. Gravel is angular to rounded fine to coarse, metal, flint, brick and concrete. Sand is fine to coarse. [MADE GROUND]
		1.58	9.41		Brown clayey sandy GRAVEL. Sand fine to coarse. Gravel angular to subrounded fine to coarse flint brick and clinker. [MADE GROUND] <i>black slightly clayey from 1.26 to 1.58 m.</i>			
		1.84	8.83		Soft grey and black sandy CLAY with possible decayed textile material giving rise to apparent lamination. Sand fine to coarse. [MADE GROUND]			
		2.00 - 3.00 2.10 - 2.30 2.10	L ES PID	PID = 45 ppm	3.00	8.57		<i>firm dark brownish grey slightly gravelly clay with shell fragments (20 mm) between 1.73 and 1.84 m. Gravel is angular fine and medium flint and glass.</i> Firm brownish grey slightly organic CLAY with extremely closely spaced brown silt partings and root traces. [ALLUVIUM] <i>infill from strata above from 2.00 to 2.36 m.</i> <i>dark grey organic with occasional white shell fragments (<2 mm) between 2.36 and 2.64 m. frequent decayed roots between 2.44 and 2.64 m.</i>
					3.00	8.57		End of Borehole at 3.00m

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



GROUND TECHNOLOGY
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Tel: 01953 459462

Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ6_WS2086

Project ID: GTS-19-250



WS2086 1 - 3



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 27/07/2021 - 28/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535842.72 N191852.54
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ6_TP2069	Location Type TP	Level 10.42m AOD	Logged By AM
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.42		Reinforced concrete with rebar. [MADE GROUND]	
		0.50 0.50 0.50	B ES PID	PID=1.30	0.20	10.22	Greyish brown, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, flint, quartzite, ASBESTOS PIPE, coal ash, brick, concrete, metal, plastic and glass. High cobble and boulder content of subangular to subrounded ASBESTOS PIPE, concrete and brick. Frequent pockets of clay (<0.2m). [MADE GROUND]	
		1.00 1.00 1.00	D ES PID	PID=1.50			concrete from 1.20 to 1.35 m.	
		1.70 1.70 1.70	B ES PID	PID=1.20	1.50	8.92	Soft to firm, fissured, greenish grey CLAY. Fissures are randomly oriented, planar and polished. Frequent brown iron oxide staining. Slight organic odour. [ALLUVIUM]	
		2.50	D		2.40	8.02	Soft, greenish grey mottled brown, silty CLAY. [ALLUVIUM] From 2.70m: Peaty clay with frequent lenses of fibrous peat (<0.2m). peaty clay with frequent lenses of fibrous peat (<0.2m) from 2.70 to 3.20 m.	
		2.80 2.80 2.80	D ES PID	PID=0.00				
	▼	3.30	B		3.20	7.22	Brown, gravelly, fine to coarse SAND. Gravel is angular to rounded, fine to medium, flint and quartzite. [KEMPTON PARK GRAVEL FORMATION]	
		3.50 3.50 3.50	B ES PID	PID=0.70	3.40 3.50	7.02	Brown mottled grey, sandy GRAVELS. Gravel is angular to rounded, fine to coarse, flint and quartzite. [KEMPTON PARK GRAVEL FORMATION] End of Trial Pit at 3.50m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.60		Stable		Groundwater struck at 3.30 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers.



GROUND TECHNOLOGY
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Tel: 01953 459462

Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ6_TP2069

Project ID: GTS-19-250



1. Prior to excavation



2. Broken out



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 25/07/2021 - 27/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535741.76 N191875.10	
Project No. : GTS-19-250		Crew Name: RF		Drilling Equipment: Hand Tools Dando 2000	
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 1 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20	10.39		Reinforced concrete with rebar. [MADE GROUND]
		0.30	ES					Soft dark greyish brown, sandy, gravelly clay. Gravel is angular to rounded, fine to coarse, metal, flint, quartzite, coal ash, brick and concrete. Sand is fine to coarse. [MADE GROUND]
		0.30	PID	PID = 1 ppm				
		0.50	ES					
		0.50	PID	PID = 1 ppm				
		0.80 - 1.00	B					
		1.25	D					
		1.50 - 1.70	B					
		1.50	SPT	N=5 (1,1/1,2,1,1)				
		1.70 - 2.00	B		1.70	10.19		
		2.00	ES					
		2.00	PID	PID = 62 ppm				
		2.25	D					
		2.50 - 2.95	UT		2.50	8.69		Soft fissured, greenish grey, silty CLAY. Fissures are randomly oriented, planar and smooth. Slight hydrocarbon odour. [ALLUVIUM]
		2.50 - 3.00	B					
		2.80	ES					
		2.80	PID	PID = 56 ppm				
		2.95 - 3.15	D		3.00	7.89		Soft, dark brown, silty, fibrous PEAT. Frequent wood fragments (<50mm). Slight hydrocarbon odour. [ALLUVIUM]
		3.00 - 3.30	B					
		3.18	EW					
		3.19	EW					
		3.30	ES					
		3.30	PID	PID = 271 ppm				
		3.45	D		3.55	7.39		Medium dense multicoloured, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. Strong hydrocarbon odour. [KEMPTON PARK GRAVEL FORMATION]
		3.50	D					
		3.50 - 4.00	B					
		3.50	SPT	N=15 (2,2/3,3,5,5)				
		3.85	ES					
		3.85	PID	PID = 174 ppm				
		4.00	EW					
		4.00	EW					
		4.00	EW					
		4.00	EW					
		4.25	D					
		4.50 - 5.00	B					
		4.50	cSPT	N=17 (2,2/3,3,5,6)				



Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.50	300	2.50	300								

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 25/07/2021 - 27/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535741.76 N191875.10
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 2 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.25	D		7.00	6.84	 <p>Medium dense multicoloured, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. Strong hydrocarbon odour. [KEMPTON PARK GRAVEL FORMATION]</p>	
		5.50 - 6.00 5.50	B cSPT	N=22 (3,4/3,5,7,7)				
		6.25	D					
		6.50 - 7.00 6.50	B cSPT	N=19 (2,3/4,4,5,6)				
		7.25 7.30 7.30	D ES PID	PID = 11 ppm				
		7.50 - 7.95	UT					
		7.95 - 8.15	D					
		8.25	D					
		8.50 - 9.00 8.50	B SPT	N=21 (2,3/4,5,5,7)				
		9.25	D					
		9.50 - 9.95	UT					
		9.95 - 10.15	D					
							 <p>Stiff, fissured, dark grey, slightly sandy, micaceous CLAY. Fissures are randomly oriented, planar and rough. Sand is fine. Occasional light grey fine sand / silt partings (<2mm). [LONDON CLAY FORMATION]</p>	

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
7.00	250	7.00	250								
8.45	200	8.45	200								

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 25/07/2021 - 27/07/2021		
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535741.76 N191875.10		
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000		
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 3 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.25	D				Stiff, fissured, dark grey, slightly sandy, micaceous CLAY. Fissures are randomly oriented, planar and rough. Sand is fine. Occasional light grey fine sand / silt partings (<2mm). [LONDON CLAY FORMATION]		
		10.50 - 11.00 10.50	B SPT	N=29 (4,5/6,7,8,8)					11
		11.25	D				Stiff, fissured, dark grey, slightly sandy CLAY. Fissures are randomly oriented, planar, smooth. Sand is fine. Frequent pockets of fine sandy to very sandy clay (<40mm). [LONDON CLAY FORMATION]		
		11.50 - 11.95	UT						12
		11.95 - 12.15	D		12.00	3.39	Very stiff, light greenish grey mottled red brown silty CLAY. [LAMBETH GROUP - UPPER MOTTLED CLAY]		
		12.25	D						13
		12.50	SPT	N=50 (5,8/10,10,11,19)	12.75	-1.61			
		12.95 - 13.00 13.00	B ES PID	PID = 1 ppm					14
		13.25	D						
		13.50 - 14.50 13.50	B SPT	N=35 (7,8/3,8,8,11)					15
		14.25	D						
		14.50 - 14.95 14.50 - 15.00	UT B						
		14.95 15.00	D EW						

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 25/07/2021 - 27/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535741.76 N191875.10
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 4 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		15.25	D		15.50	-2.36	Very stiff, light greenish grey mottled red brown silty CLAY. [LAMBETH GROUP - UPPER MOTTLED CLAY]	
		15.50 - 16.50 15.50	D SPT	N=28 (4,4/5,6,8,9)			Very stiff, light grey mottled orange brown slightly sandy, locally very sandy CLAY. Sand is fine. [LAMBETH GROUP - LOWER MOTTLED CLAY]	
		16.25	D		16.95	-5.11	Very dense light brown grey mottled clayey SAND. Sand is fine. [LAMBETH GROUP - LOWER MOTTLED CLAY]	
		16.37	EW					
		16.50 - 16.80 16.50 - 17.50	UT B					
		16.95 17.00	D EW					
		17.25	D		18.00			
		17.50 - 18.50 17.50	B SPT	50 (6 12/50 for 225mm)				
		18.00	EW EW					
		18.25	D					
		18.40 18.50 - 19.50	SPT B	0 (8,17.0 for 0mm)				
		19.00	EW		19.00			
		19.00	EW					
		19.00	EW					
		19.25	D		19.50 - 20.50			
	19.60	SPT	N=50 (4,9/50 for 250mm)					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 25/07/2021 - 27/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535741.76 N191875.10
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 5 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.25	D		21.50	-6.56		Very dense light brown grey mottled clayey SAND. Sand is fine. [LAMBETH GROUP - LOWER MOTTLED CLAY]
		20.50 - 21.50 20.50	B SPT	N=50 (15,12/50 for 230mm)				
		21.25	D					
		21.50 - 22.50 21.50	B SPT	N=41 (4,4/5,8,14,14)				
		22.25	D					
		22.50 - 23.50 22.50	B SPT	N=45 (2,5/7,10,12,16)				
		23.25	D					
		23.50 - 24.50 23.50	B SPT	N=50 (5,7/11,14,12,13)				
		24.25	D					
		24.50 - 25.50	B					

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 25/07/2021 - 27/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535741.76 N191875.10
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ6_BH2086	Hole Type CP	Level 10.39m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 6 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		25.25	D	PID = 0 ppm	25.50	-11.11		Dense, becoming very dense, dark brownish grey silty SAND with burrows infilled (<10 mm) with stiff dark grey clay and grey sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]	26
		25.50 - 26.50	B					Dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]	
		25.80 25.80	ES PID						
		26.25	D						
					26.50	-15.11		End of Borehole at 26.50m	27
									28
									29
									30

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, surface concrete broken out with a JCB and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques to the top of the Thanet Sand Formation. 3. Environmental seals installed from 1.50 m to 2.50 m and from 7.00 m to 8.00 m. 4. Dual install with 50 mm pipe. Response zones from 3.55 m to 7.00 m and from 17.00 m to 21.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 20/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535532.60 N191857.55
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Dando Terrier
Borehole Number GI_DZ5_WS2090A	Hole Type WS	Level 10.32m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
					0.22	10.32		Concrete. [MADE GROUND]		
					0.95	10.10		Dark yellowish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded flint, brick, and concrete. [MADE GROUND]		
		1.00	PID	PID = 0 ppm	1.35	9.37		Firm brown sandy gravelly CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse brick concrete and flint. Slight petrol odour. [MADE GROUND]	1	
		1.20 1.20 - 2.00	ES L					Firm slightly greenish grey CLAY with common black rootlets and wood fragments wood fragments have occasional orange tinge. [ALLUVIUM] <i>slight unpleasant odour between 1.35 and 1.60 m.</i> <i>small pyritised wood fragment at 1.39 m.</i>		
		2.00 - 3.00	L					<i>orange mottling between 2.20 and 2.50 m.</i>	2	
						2.55	8.97		Plastic very dark brown pseudo-fibrous PEAT with common gravel sized dark brown wood fragments. [ALLUVIUM] <i>black organic clay band between 2.55 and 2.60 m.</i>	
						2.85 3.00	7.77 7.47		Thinly laminated dark brownish grey clayey gravelly SAND with common gypsum crystals. Sand is fine to medium. Gravel is fine to coarse angular flint. [ALLUVIUM]	3
End of Borehole at 3.00m								4		

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques. 3. Hole progressed under specialist Radiological supervision engineer owing to site history



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ5_WS2090A

Project ID: GTS-19-250



WS2090A 1.2 - 3.0



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535533.27 N191857.42
Project No. : GTS-19-250	Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000

Borehole Number GI_DZ5_BH2090A	Hole Type CP	Level 10.28m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 1 of 5
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.22 - 0.95	B		0.22	10.28	[MADE GROUND]	Concrete.
		0.50 - 0.60 0.50	ES PID	PID = 1 ppm			[MADE GROUND]	Dark brown mottled yellowish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded flint, brick, and concrete.
		1.00 - 1.10 1.00	ES PID	PID = 1 ppm	0.95	10.06	[MADE GROUND]	Lightly brown mottled grey slightly silty slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular fine to coarse brick and concrete.
		1.20 1.30 - 1.50	D B					
		1.50 - 2.00 1.50	B SPT	N=5 (1,1/2,1,1,1)	1.50	9.34	[ALLUVIUM]	Firm to stiff grayish brown slightly gravelly slightly sandy CLAY. Sand is fine and medium. Gravel is subangular fine flint.
		2.20 - 2.30 2.20	ES PID	PID = 0 ppm				
		2.40 2.50 - 2.95	D UT					
		3.20 - 3.30 3.20	ES PID	PID = 2 ppm				
		3.40 3.50 - 4.00 3.50	D B cSPT	N=22 (3,3/3,6,7,6)	3.40	8.78	[KEMPTON PARK GRAVEL FORMATION]	Medium dense brown sandy GRAVEL. Sand is medium and coarse. Gravel is subangular to subrounded fine to coarse flint.
		4.20 - 4.30 4.20	ES PID	PID = 1 ppm				
		4.40 4.50 4.50	D EW EW					
		4.50 - 5.00 4.50	B cSPT	N=23 (3,3/5,4,7,7)				
		5.00	EW					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.15	300	3.15	300								

Remarks
 1. Position relocated from BH2090 which terminated in the hand excavated pit on concrete obstructions. 2. Location CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 3. Hole completed using cable percussive techniques into the Lambeth Group. 4. Environmental seals installed from 1.00 m to 3.15 m and from 6.40 m to 7.40 m. 5. Dual install with 50 mm pipe. Response zones from 3.40 m to 6.25 m and from 16.0 m to 20.50 m. 6. Hole progressed under specialist Radiological supervision engineer owing to site history.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535533.27 N191857.42
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ5_BH2090A	Hole Type CP	Level 10.28m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 2 of 5

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00	EW				Medium dense brown sandy GRAVEL. Sand is medium and coarse. Gravel is subangular to subrounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]	
		5.20 - 5.30	ES	PID = 1 ppm				
		5.20	PID					
		5.40	D					
		5.50 - 6.00	B	N=32				
		5.50	cSPT	(5,5/4,6,9,13)				
		6.20 - 6.30	ES	PID = 0 ppm	6.25	6.88		
		6.20	PID					
		6.25 - 6.40	D					
		6.30 - 6.95	UT					
		6.95 - 7.15	UT				Stiff greyish brown laminated CLAY. Laminations are extremely closely spaced thin silt. [LONDON CLAY FORMATION]	
		7.20 - 7.30	ES	PID = 1 ppm				
		7.20	PID					
		7.40	D					
		7.50 - 8.00	B	N=18 (3,3/3,5,5,5)				
		7.50	SPT					
		8.20 - 8.30	ES	PID = 0 ppm				
		8.20	PID					
		8.40	D					
		8.50 - 8.95	UT					
		9.20 - 9.30	ES	PID = 1 ppm				
		9.20	PID					
		9.40	D					
		9.50 - 10.00	B	N=17 (2,4/4,4,4,5)				
		9.50	SPT					
		10.00	EW					

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
7.40	200	6.50	200								

Remarks
 1. Position relocated from BH2090 which terminated in the hand excavated pit on concrete obstructions. 2. Location CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 3. Hole completed using cable percussive techniques into the Lambeth Group. 4. Environmental seals installed from 1.00 m to 3.15 and from 6.40 m to 7.40 m. 5. Dual install with 50 mm pipe. Response zones from 3.40 m to 6.25 m and from 16.0 m to 20.50 m. 6. Hole progressed under specialist Radiological supervision engineer owing to site history.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535533.27 N191857.42
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ5_BH2090A	Hole Type CP	Level 10.28m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 3 of 5

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
█		10.20 - 10.30	ES	PID = 1 ppm	12.50	4.04		Stiff greyish brown laminated CLAY. Laminations are extremely closely spaced thin silt. [LONDON CLAY FORMATION]
		10.20	PID					
		10.40	D					
		10.50 - 10.95	UT					
		11.20	EW					
		11.20 - 11.30	ES					
		11.40	D					
		11.50 - 11.85	D					
		11.50 - 12.00	B					
		11.50	SPT	N=50 (6,7/50 for 200mm)				
		12.40	D					
		12.50 - 12.95	D					
		12.50 - 13.00	B					
		12.50	SPT	N=39 (6,6/8,9,11,11)				
		12.60	ES					
		12.80	ES					
		12.80	PID	PID = 0 ppm				
		13.30	D					
		13.50	D					
		13.50 - 14.00	B					
	13.50	SPT	N=32 (5,6/7,8,8,9)					
	14.30	D						
	14.50 - 14.95	D						
	14.50 - 15.00	B						
	14.50	SPT	N=33 (6,5/7,8,8,10)					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position relocated from BH2090 which terminated in the hand excavated pit on concrete obstructions. 2. Location CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 3. Hole completed using cable percussive techniques into the Lambeth Group. 4. Environmental seals installed from 1.00 m to 3.15 and from 6.40 m to 7.40 m. 5. Dual install with 50 mm pipe. Response zones from 3.40 m to 6.25 m and from 16.0 m to 20.50 m. 6. Hole progressed under specialist Radiological supervision engineer owing to site history.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535533.27 N191857.42
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ5_BH2090A	Hole Type CP	Level 10.28m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 4 of 5

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Well Diagram]		15.30	D		16.50	-2.22	[Pattern]	Very stiff, light greenish grey mottled red brown silty CLAY. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		15.50 - 15.95 15.50 - 16.00 15.50	D B SPT	N=45 (7,7/8,11,12,14)				
		16.30	D					
		16.50 - 16.85 16.50 - 17.00 16.50	D B SPT	N=50 (11,14/50 for 200mm)				
		17.30	D					
		17.50 17.50 17.50 - 17.95 17.50 - 18.00 17.50	EW EW D B SPT	N=53 (25 for 100mm/50 for 150mm)				
		18.30	D					
		18.50 - 18.95 18.50 - 19.00 18.50	D B SPT	N=50 (5,10/10,13,12,15)				
		19.30	D					
		19.50 - 19.90 19.50 - 20.00 19.50	D B SPT	N=48 (3,9/48 for 250mm)				
		19.80 19.80	ES PID	PID = 0 ppm				

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position relocated from BH2090 which terminated in the hand excavated pit on concrete obstructions. 2. Location CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 3. Hole completed using cable percussive techniques into the Lambeth Group. 4. Environmental seals installed from 1.00 m to 3.15 and from 6.40 m to 7.40 m. 5. Dual install with 50 mm pipe. Response zones from 3.40 m to 6.25 m and from 16.0 m to 20.50 m. 6. Hole progressed under specialist Radiological supervision engineer owing to site history.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535533.27 N191857.42
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ5_BH2090A	Hole Type CP	Level 10.28m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 5 of 5

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		20.30	D		21.50	-9.22		Very dense dark greenish grey silty SAND. Sand is fine. [LAMBETH GROUP - UPNOR FORMATION]				
		20.50 - 20.95 20.50 - 21.00 20.50	D B SPT	N=50 (3,3/10,11,14,15)								
		21.30	D				23.00	-11.22		Very stiff thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION]		
		21.50 - 21.85 21.50 - 22.00 21.50	D B SPT	N=50 (25 for 100mm/50 for 150mm)								
		22.30	D						End of Borehole at 23.00m			
		22.50 - 22.95 22.50	D SPT	N=50 (7,7/10,11,13,16)								

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
23.00	150	22.00	150								

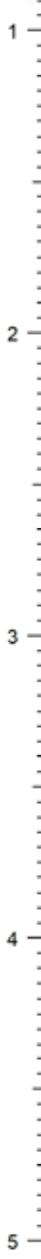
Remarks
 1. Position relocated from BH2090 which terminated in the hand excavated pit on concrete obstructions. 2. Location CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 3. Hole completed using cable percussive techniques into the Lambeth Group. 4. Environmental seals installed from 1.00 m to 3.15 and from 6.40 m to 7.40 m. 5. Dual install with 50 mm pipe. Response zones from 3.40 m to 6.25 m and from 16.0 m to 20.50 m. 6. Hole progressed under specialist Radiological supervision engineer owing to site history.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535528.52 N191860.46
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools
Borehole Number GI_DZ5_BH2090	Hole Type CP	Level 10.30m AOD	Logged By JF
		Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.22	10.30		Concrete. [MADE GROUND]
		0.50 - 0.60 0.50	ES PID	PID = 2 ppm	0.52	10.09		Dark brown mottled yellowish brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is subangular to rounded flint, brick, and concrete. [MADE GROUND]
								End of Borehole at 0.52m



Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 0.52 m using hand tools - position clear of services. 2. Hole terminated owing to concrete obstructions. Hole moved to adjacent location BH2090A.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 1 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
[Well Diagram]		0.00 - 0.82 0.10 0.10 - 0.20 0.10	B ES D PID	PID = 1 ppm						Grass on light brown very silty slightly sand CLAY with common fine root. Sand is fine and medium. [MADE GROUND]
		0.82 - 1.42 0.90 - 1.00 0.95 0.95	B D ES PID	PID = 0 ppm					0.82 (12.14)	Dark brown slightly clayey gravelly SAND. Sand is fine to coarse. Gravel is subangular to subangular fine to coarse flint, brick, and concrete. Slight hydrocarbon odour. [MADE GROUND] <i>geotextile membrane at 0.82 m.</i>
		1.40 - 1.50 1.42 - 2.29 1.60 1.60	D B ES PID	PID = 12 ppm					1.42 (11.32)	Dark brown very clayey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse flint, brick, and concrete with rare metal and rubber. Hydrocarbon odour. [MADE GROUND]
		2.29 - 2.84 2.30 - 2.40 2.40 2.40	B D ES PID	PID = 56 ppm					2.29 (10.72)	Firm light orange brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse flint, brick, concrete and rubber. [MADE GROUND] <i>hydrocarbon odour becoming strong at 2.29 m.</i>
		2.84 - 3.00 2.90 - 3.00 3.00 3.00 - 3.45 3.00 - 3.50 3.00	B D ES D B PID	PID = 9 ppm					3.00 (9.85)	Firm brown slightly organic CLAY with black amorphous peat pockets and hydrocarbon odour. [ALLUVIUM]
		3.60 - 3.70 3.60 3.80 - 3.90	ES PID D	PID = 0 ppm						
		4.00 - 4.50 4.00	B SPT	N=11 (1,1/1,2,3,5)						
		4.60 - 5.60 4.60	ES PID	PID = 0 ppm						
		5.00 - 5.45	UT							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
3.50	250	3.50	250										

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 2 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		5.10 5.10		HVP (kPA) =146 HVP (kPA) =31						Firm brown slightly organic CLAY with black amorphous peat pockets and hydrocarbon odour. [ALLUVIUM] <i>dark grey organic clay from 5.15 to 5.45 m.</i>
		5.45 - 5.60	D					5.45 (9.14)		Dark brown to black clayey pseudo fibrous to amorphous PEAT. [ALLUVIUM]
		5.80 - 5.90	D							
		6.00 - 6.50 6.00	B cSPT	N=15 (1,2/3,5,3,4)				6.00 (6.69)		Medium dense dark grey sandy GRAVEL with hydrocarbon odour and sheen. Sand medium and coarse. Gravel angular to rounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]
		6.60 6.60	ES PID	PID = 61 ppm						
		6.80 - 6.90	D							<i>slightly sandy from 6.80 to 8.60 m.</i>
		7.00 - 7.50 7.00	B cSPT	N=14 (2,2/3,3,4,4)						
		7.75 - 7.85	D							
		8.00 - 8.50 8.00	B cSPT	N=19 (4,8/8,4,4,3)						
		8.20 - 9.70	C							
		8.60 - 9.00	D					8.60 (6.14)		Firm greyish brown slightly sandy CLAY with black hydrocarbon staining and odour. [LONDON CLAY FORMATION]
		9.00 - 9.45 9.10 9.10	UT	HVP (kPA) =23 HVP (kPA) =3	67					<i>stiff brown from 9.20 m.</i>
		9.45 - 9.60	D							
		9.70 9.70 - 11.00 9.70 9.70	ES C SPT PID	N=25 (2,4/5,6,7,7) PID = 0 ppm				9.80 (3.54)		Firm thinly laminated dark grey silty CLAY occasional pyrite nodules up to 6mm and thin sandy beds. [LONDON CLAY FORMATION]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
9.60	200	9.00	200										

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 02/07/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535548.82 N191549.19	
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB		Drilling Equipment: JCB 3CX Commachio 405	
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW	Scale 1:25	Page Number Sheet 3 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
11		10.60 10.60	ES PID	PID = 1 ppm	100				Firm thinly laminated dark grey silty CLAY occasional pyrite nodules up to 6mm and thin sandy beds. [LONDON CLAY FORMATION]	
		10.78 - 10.98	CS							
		11.00 - 12.60 11.00	C SPT	N=19 (2,3/4,4,5,6)	100					
		12.07 - 12.33	CS							
		12.60 - 14.10 12.60	C SPT							
12									pyrite nodule (6 mm) at 11.87 m.	
									thin sandy bed between 12.08 and 12.09 m.	
13		13.72 - 14.10	CS	N=19 (2,3/3,5,5,6)	100					
		14.10 - 15.70 14.10	C SPT							
14				N=28 (2,4/4,5,9,10)	75				13.90 (2.34)	Medium dense dark greyish brown dense clayey SAND with occasional white foraminifera. Sand fine and medium slightly glauconitic. [HARWICH FORMATION - SWANSCOMBE MEMBER] AZCL between 14.10 and 14.58 m.
		15.00 - 15.25	CS							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 4 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		15.70 - 17.20 15.70	C SPT	N=40 (2,5/7,9,11,13)					15.90 (-1.76)	Medium dense dark greyish brown dense clayey SAND with occasional white foraminifera. Sand fine and medium slightly glauconitic. [HARWICH FORMATION - SWANSCOMBE MEMBER] <i>DINI between 15.44 and 15.67 m.</i>
		16.65 - 16.95	CS		90				16.80 (-3.76)	Dense thinly laminated greenish brownish grey slightly sandy glauconitic SAND with occasional shelly fragments and clay beds. Clay beds are very stiff thinly laminated brownish grey. [HARWICH FORMATION - SWANSCOMBE MEMBER] <i>very glauconitic at 15.93 m. very glauconitic band between 16.13 and 16.15 m. brown grey very stiff clay band between 16.26 and 16.36 m. black and white streaked shelly bed between 16.76 and 16.80 m.</i>
		17.20 - 18.70 17.20	C SPT	N=43 (5,7/10,9,11,13)					17.28 (-4.66)	Brownish grey silty SAND. Sand is fine to coarse [HARWICH FORMATION - SWANSCOMBE MEMBER] <i>pebble bed between 17.23 and 17.28 m. Pebbles are cobbles and coarse gravel rounded black flints.</i>
		17.80	ES		103					Very stiff blueish grey mottled reddish brown to purple and occasionally orangish brown slightly sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		18.34 - 18.60	CS							
		18.70 - 20.20 18.70	C SPT	N=37 (2,5/7,9,9,12)						
		19.68 - 20.00	CS		113					

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 5 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description			
		Depth (m)	Type	Results	TCR	SCR	RQD						
1		20.20 - 21.70 20.20	C SPT	N=44 (3,7/8 10,12,14)					20.10 (-5.14)	Very stiff blueish grey mottled reddish brown to purple and occasionally orangish brown slightly sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - UPPER MOTTLED CLAY] Firm grey mottled purple and orange sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY] <i>fine black rootlets between 20.87 and 20.95 m.</i>	21		
		21.70 - 23.10 21.70 - 23.20 21.70	C C SPT	N=50 (4,16/50 for 105mm)					100 95	22.50 (-7.96)	overlapping core from 21.7 to 24.6 to drill out environmental seal. Very dense light bluish grey mottled orange clayey SAND. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]	22	
		23.10 - 24.60 23.10	C SPT	N=50 (2,17/50 for 90mm)								23	
		23.20 - 24.70	C							100 67		<i>pebble bed from 24.75 to 24.90 m. Pebbles are cobbles and coarse gravel rounded occasionally angular black occasionally white flints.</i>	24
		24.70 - 26.00 24.70	C SPT	N=50 (4,8/50 for 180mm)							24.90 (-10.36)	Very dense greenish grey clayey glauconitic SAND. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>thin black organic clayey sand bed between 24.90 and 25.00 m.</i>	25

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
22.40	176	22.40	176										

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 6 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
1		26.00 - 27.50	C		31			[Pattern]	26.10 (-12.76)	Very dense greenish grey clayey glauconitic SAND. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] AZCL between 25.10 and 26.00 m.
		26.91 - 27.10	CS		100				26.10 (-12.76)	Stiff thinly to thickly laminated dark brownish grey sandy CLAY with silty sand laminae. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] sandy burrow infill between 26.89 and 26.94 m..
		27.50 - 29.00 27.50	C SPT	N=50 (2.5/50 for 270mm)				[Pattern]	28.10 (-13.96)	Very dense thinly laminated dark greenish grey clayey glauconitic SAND with abundant shell fragments. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] oyster shell (70 mm x 40 mm) at 28.32 m.
		28.00 28.05 - 28.15	EW CS		77				28.10 (-13.96)	
		29.00 - 30.50	C		40				28.10 (-13.96)	lignite fragments between 28.94 and 28.98 m. DINI at 29.75 m. frequent dark grey clay beds up to 15mm thick between 29.90 and 30.50 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 02/07/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535548.82 N191549.19	
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB		Drilling Equipment: JCB 3CX Commachio 405	
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW	Scale 1:25	Page Number Sheet 7 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		30.50 - 32.00 30.50	C SPT	N=50 (4,9/50 for 185mm)						Very dense thinly laminated dark greenish grey clayey glauconitic SAND with abundant shell fragments. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]
		31.68 - 31.91	CS		73				31.03 (-15.96)	Dark grey thinly laminated CLAY with abundant clayey sand beds (up to 50 mm) abundant shell fragments and pebbles. Pebbles are fine to coarse predominantly black occasionally dark brown sub rounded flint. [LAMBETH GROUP - UPNOR FORMATION] <i>shelly bed between 31.22 and 31.28 m.</i>
		32.00 - 33.50 32.00	C SPT	N=50 (3,7/50 for 90mm)						<i>pebble bed between 32.00 and 32.10 m. Pebbles are coarse gravel and small cobbles, sub rounded flint.</i>
		32.20 - 32.50 32.20	ES PID	PID = 1 ppm	90				32.10 (-18.89)	Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		33.10 - 33.25	CS							
		33.50 - 35.00 33.50	C SPT	N=50 (25 for 90mm/50 for 70mm)						
		34.10 - 34.30	CS		94					
		35.00 - 35.28	CS							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021		
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19		
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405		
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW	Scale 1:25	Page Number Sheet 8 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		35.00 - 36.50	C						Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]	36
		36.50 - 38.00 36.50	C SPT	N=50 (5,18/50 for 90mm)	97					37
					27					38
		38.00 - 39.50	C							39
		39.50 - 41.00 39.50	C SPT	N=50 (4,14/50 for 145mm)	19					40
		39.80 - 40.05	CS							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
37.10	146												

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 9 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
										Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		40.35 (-19.96)			60					medium and coarse gravel to cobble sized glauconite coated black occasionally brown subrounded flints between 40.30 and 40.35 m (Bullhead Beds).
		41.00 - 42.50 41.00	C SPT	N=50 (3,5/50 for 140mm)						Very weak medium density white CHALK with light grey burrowing mottling. Fractures are closely to medium spaced, clean and infilled with fine sand and very pale greyish white silt, tight, horizontal to inclined, planar, rough and smooth. Occasional flints, CIRIA Grade B3. [WHITE CHALK SUBGROUP]
		41.60 - 41.73	CS							putty chalk and fragmented medium flints from 41.00 to 41.20 m.
		41.75 - 41.95 41.75	ES PID	PID = 1 ppm	100	20	10			DINI between 41.20 and 41.35 m. fragmented medium flint at 41.35 to 41.45 m.
		42.00	EW							NP=24mm. DINI between 41.77 and 42.50 m.
		42.50 - 44.00 42.50	C SPT	N=50 (3,8/50 for 245mm)						
		43.36 - 43.63	CS		100	70	62			DINI between 42.50 and 42.93 m. SPT disturbed. medium flint at 42.92 m.
		43.50 43.50	EW EW							small flint at 43.26 m. small flint at 43.54 m.
		44.00 - 45.60 44.00	C SPT	N=50 (3,7/50 for 260mm)						NP=22mm.
					94	69	46			large flints between 44.20 and 44.30 m. DINI between 44.30 and 44.55 m. Putty chalk due to SPT.
										NP=18mm large fragmented flints between 44.72 and 44.82 m. NP=22mm.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 02/07/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535548.82 N191549.19
Project No. : GTS-19-250		Crew Name: RF+CB+RF / CB	Drilling Equipment: JCB 3CX Commachio 405
Borehole Number GI_DZ4_BH2089	Hole Type CP+RC	Level 12.14m AOD	Logged By AB / JF / DW
		Scale 1:25	Page Number Sheet 10 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		45.60 - 47.10 45.60	C SPT	N=50 (4,7/50 for 270mm)					46	Very weak medium density white CHALK with light gray burrowing mottling. Fractures are closely to medium spaced, clean and infilled with fine sand and very pale greyish white silt, tight, horizontal to inclined, planar, rough and smooth. Occasional flints. CIRIA Grade B3. [WHITE CHALK SUBGROUP] <i>DINI between 45.60 and 46.25 m. Putty chalk over SPT interval.</i>
		46.24 - 46.44	CS		100				47	<i>NP=20mm.</i> <i>medium fragmented flint at 46.77 m.</i>
									47.10 (-28.21)	End of Borehole at 47.10m
									48	
									49	
									50	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
								8.20	47.10	Water Polymer	0	0	

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated with JCB to 3.00 m prior to drilling due to expected obstructions in the made ground. 3. Hole progressed through backfilled trial pit with cable percussive techniques into the top of the London Clay Formation. 4. Environmental seals installed from 1.50 m to 3.50 m, from 7.70 m to 9.70 m and from 22.60 to 24.60 m. 5. Rotary follow on from 9.70 m. 6. Single install with 50 mm pipe. Response zone from 41.10 m to 47.10 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



GROUND TECHNOLOGY
 Victory Park, Attleborough
 Norfolk, NR17 1ZA
 Tel: 01953 459462

Photographic Report

GI_DZ4_BH2089

Project: Meridian Water HIF and Infrastructure Ground Investigation

Project ID: GTS-19-250



2089 8.2 - 9.7



2089 9.7 - 11.0



2089 11.0 - 12.6



2089 12.6 - 14.1



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Photographic Report

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 Infrastructure Ground Investigation

Project ID: GTS-19-250



2089 14.1 - 15.7



2089 15.7 - 17.2



2089 17.2 - 18.7



2089 18.7 - 20.2



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Photographic Report

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2089 20.2 - 21.7



2089 21.7 - 23.1



2089 21.7 - 24.7



2089 23.1 - 24.6



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Photographic Report

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Project ID: GTS-19-250



2089 24.7 - 26



2089 26 - 27.5



2089 27.5 - 29



2089 29 - 30.5



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Photographic Report

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Project ID: GTS-19-250



2089 30.5 - 32



2089 32 - 33.5



2089 33.5 - 35



2089 35 - 36.5



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Project ID: GTS-19-250



2089 36.5 - 38



2089 38 - 39.5



2089 39.5 - 41



2089 41 - 42.5



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ4_BH2089

Project ID: GTS-19-250



2089 42.5 - 44



2089 44 - 45.6



2089 45.6 - 47.1



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation Client: London Borough of Enfield Date: 21/07/2021
 Location: Meridian Water, Enfield Engineer: Ground Technology Services Limited Co-ords: E535503.89 N191630.48
 Project No. : GTS-19-250 Crew Name: NC Equipment: JCB 3CX

Location Number: GI_DZ4_BH2088B Location Type: TP Level: 12.09m AOD Logged By: AM Scale: 1:20 Page Number: Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES			12.09	Firm, brown, slightly sandy, slightly gravelly clay. Gravel is angular to subrounded, fine to medium, flint, quartzite and brick. Sand is fine. [MADE GROUND]	
		0.20	PID	PID=0.40				
		0.30	B				Blackish grey, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, coal ash, brick, concrete, flint and quartzite. Low cobble content of subrounded coal ash. [MADE GROUND] <i>geotextile membrane at 0.40 m.</i>	
		0.30	ES		0.40	11.69		
		0.30	PID	PID=0.50				
		0.50	ES					
		0.50	PID	PID=3.50				
		0.60	B					
		0.80	ES		0.90	11.19	Reinforced concrete with rebar. [MADE GROUND]	
		0.80	PID	PID=3.80				
		1.50	D		1.40	10.69	Blackish grey, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, coal ash, brick, concrete, flint and quartzite. Low cobble content of subrounded coal ash. [MADE GROUND]	
		1.50	ES					
		1.50	PID	PID=4.00				
		1.80	B		1.90	10.19	Soft brown mottled light brown, slightly silty clay. Slight organic odour. Rare peaty wood fragments (<40mm). [MADE GROUND]	
		2.20	D		2.40	9.69		
		2.20	ES					
		2.20	PID	PID=1.40				
		2.50	D				Blackish grey, very sandy gravel. Gravel is angular to subrounded, fine to coarse, coal ash, brick and flint. Low cobble content of subrounded coal ash. [MADE GROUND]	
		2.80	B		2.80			
		2.80	ES					
		2.80	PID	PID=1.20			End of Trial Pit at 2.80m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.70				Groundwater strike at 2.80 m. Oily.			
Weather:								

Remarks
 1. Position excavated due to samples lost in BH2088. 2. Position scanned using a CAT prior to digging. 3. Oily sheen on groundwater. 4. Trial pit back filled with arising and compacted in 300 mm layers.



GROUND TECHNOLOGY
Victory Park, Attleborough
Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ4_BH2088B

Project ID: GTS-19-250



1. Prior to excavation

2. Excavation to top of concrete



3. Complete excavation



4. Base and sides



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GI_DZ4_BH2088B

Project: Meridian Water HIF and
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Project ID: GTS-19-250



5. Excavation side



6. Excavation and spoil



7. Spoil



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 1 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description		
		Depth (m)	Type	Results	TCR	SCR	RQD					
		0.00	D									
		0.00 - 0.15	B					0.15 (12.09)	Light brown and white GRAVEL. Gravel is rounded to angular medium and coarse flint. [MADE GROUND]			
		0.10 - 0.20	ES								Stiff brown mottled bluish grey slightly sandy slightly gravelly CLAY with very few very fine roots. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint - Capping layer [MADE GROUND]	
		0.10	PID	PID = 0 ppm								
		0.15 - 0.50	B						0.35 (11.94)		Dark brown and reddish brown sandy GRAVEL. Sand is fine to coarse. Gravel is angular fine to coarse brick and concrete. [MADE GROUND]	
		0.30 - 0.40	ES									
		0.30	PID	PID = 1 ppm								
		0.50	D									
		0.50 - 0.60	ES								0.80 (11.74)	Dark brown to black slightly gravelly SAND. Sand is fine to coarse. Gravel is subangular fine to coarse brick and concrete. Hydrocarbon odour. [MADE GROUND]
		0.50	PID	PID = 0 ppm								
		0.80 - 0.90	D									
		0.80 - 1.10	B									
		0.80 - 1.10	B									
		0.90 - 1.00	ES									
		0.90	PID	PID = 1 ppm					1.10 (11.29)		Strong CONCRETE. 30-40% aggregate of subangular medium and coarse flint. Up to 5% small voids. [MADE GROUND]	
		1.00 - 1.10	ES									
		1.60	B									
		1.60 - 1.70	D									
		1.60 - 2.60	B									
		1.90 - 2.00	ES									
	1.90	PID	PID = 0 ppm									
	2.90 - 3.00	ES										
	2.90	PID	PID = 2 ppm									
	3.00 - 3.45	D										
	3.00 - 3.50	B										
	3.00	SPT	N=13 (1,0/2,3,4,4)									
	3.30 - 3.40	ES										
	3.50	PID	PID = 111 ppm									
	3.60 - 4.10	UT										
	3.60 - 4.20	B										
	4.20 - 4.30	ES										
	4.20	PID	PID = 330 ppm									
	4.30 - 4.60	B										
	4.60 - 4.70	ES										
	4.60 - 5.60	B										
	4.60	SPT	N=13 (2,2/3,4,3,3)									
	4.60	PID	PID = 649 ppm									
	4.90 - 5.00	ES										
	4.90	PID	PID = 259 ppm									

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
3.00	300	3.00	300										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 2 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		5.60 - 6.60 5.60	B cSPT	N=12 (2,2/3,3,3,3)						Medium dense multi coloured slightly sandy GRAVEL. Sand is fine and medium. Gravel is subrounded to subangular fine to coarse flint. Strong hydrocarbon odour and oily sheen. [KEMPTON PARK GRAVEL FORMATION]
		5.90 - 6.00 5.90	ES PID	PID = 191 ppm						
		6.60 - 6.70 6.60 - 7.60 6.60	D B cSPT	N=12 (1,2/2,3,3,4)						
		6.90 - 7.00 6.90 7.00 - 7.50	ES PID C	PID = 14 ppm						
		7.50 7.50 - 9.30 7.60 - 7.70 7.60 - 8.00 7.60	EW C D B cSPT	N=11 (1,2/2,2,3,4)						
		7.90 - 8.00 7.90 8.00 - 8.10 8.00 - 9.00	ES PID D B	PID = 2 ppm						
		8.30 - 8.40 8.30	ES PID	PID = 1 ppm	100					
		8.60 - 9.15	UT							
		9.00 - 9.10 9.00 - 9.15	D D							
		9.30 - 10.50 9.30	C SPT	N=23 (6,4/5,5,6,7)	28					
					96					

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
8.00	250	8.00	250										
9.81	200	9.81	200										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/06/2021 - 08/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535503.89 N191630.48	
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB		Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX	
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND	Scale 1:25	Page Number Sheet 3 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		10.30 - 12.40 10.30	C SPT	N=16 (1,3/2,4,4,6)						Dark grey silty laminated CLAY. Laminations are very closely spaced and thin slit. Frequent pyritic nodules throughout (up to 21 mm). [LONDON CLAY FORMATION]
					71				11	
		12.40 - 14.00 12.40	C SPT	N=22 (2,4/4,6,6,6)					12	
					100				13	
		14.00 - 15.30 14.00	C SPT	N=30 (3,4/6,7,8,9)					14	<i>silty sand laminae and with thin medium spaced slightly sandy beds from 14.00 to 15.02 m.</i> <i>with rare black lignite fragments from 14.37 to 15.02 m.</i> <i>with very closely spaced stiff clay pockets (<10 mm) between 16.64 and 15.02 m.</i> <i>fissures 80 degrees, planar smooth tight clean between 14.86 and 15.02 m.</i> <i>with green glauconitic sand laminae between 14.99 and 15.02 m.</i>
					100				15	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 4 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		15.30	SPT	N=50 (8,13/50 for 130mm)					15.02 (4.09)	Dark grey silty laminated CLAY. Laminations are very closely spaced and thin slit. Frequent pyritic nodules throughout (up to 21 mm). [LONDON CLAY FORMATION]
		15.60 - 16.90	C							Very dense dark greyish brown clayey SAND with very closely spaced stiff clay <10mm pockets and occasional white foraminifera. Sand fine and medium slightly glauconitic. (SWANSCOMBE) [HARWICH FORMATION - SWANSCOMBE MEMBER]
		16.10 - 16.30 16.10	ES PID	PID = 0 ppm					15.90 (-2.93)	<i>very thinly interbedded with clay and sandy clay from 15.30 to 15.60 m.</i> Stiff fissured blueish grey mottled orangish brown CLAY. Fissures 0-90 degrees extremely to closely spaced planar to undulating polished tight clean. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		16.30 - 18.50 16.32 - 16.55	C CS		100					<i>with occasional rounded medium to coarse white flint gravel from 15.90 to 15.15 m. occasionally mottled orangish and reddish brown between 16.30 and 16.70 m. Shear dipping at 45 degrees planar striated between 16.73 and 16.74 m.</i>
		16.90	SPT	N=27 (1,3/5,6,7,9)						
		17.49 - 17.73	CS		73					<i>grey occasionally mottled orangish and reddish brown between 17.15 and 18.60 m.</i>
		18.50 - 20.00 18.50	C SPT	N=40 (3,5/8,8,11,13)					18.60 (-3.81)	Very stiff blueish grey mottled reddish brown to purple and occasionally orangish brown slightly sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		19.05 - 19.31	CS		100					<i>fissured mottled orangish and occasionally reddish brown from 19.28 to 19.62 m. Fissures 0-90 degree planar to undulating polished very tight clean. Light blueish grey and white calcareous from 19.62 to 19.70 m.</i>
									19.70 (-6.51)	Extremely weak white occasionally blueish grey CALCRETE with closely spaced stiff clay bands (<20 mm). [LAMBETH GROUP - MID LAMBETH HIATUS]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 5 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		20.00	SPT	N=50 (6,19/50 for 120mm)						Extremely weak white occasionally blueish grey CALCRETE with closely spaced stiff clay bands (<20 mm). [LAMBETH GROUP - MID LAMBETH HIATUS] <i>light blueish grey mottled orange and white calcareous clay from 20.10 to 20.36 m.</i> <i>medium strong between 20.36 and 20.48 m.</i>	
		20.50 - 21.50 20.58 - 20.83	C CS		90				20.48 (-7.61)	Very stiff greenish grey mottled orange sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY] <i>mottled orange and brown very sandy from 20.95 to 21.35 m.</i>	21
		21.50 - 22.90	C						21.35 (-8.39)	Dark greenish grey silty glauconitic SAND with very closely spaced burrows infilled (<10 mm) with firm brown sandy clay. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]	22
		22.90 - 24.50 22.90	C SPT	N=50 (6,1/50 for 105mm)					22.75 (-9.26)	[LAMBETH GROUP - LOWER MOTTLED CLAY] <i>AZCL between 22.75 and 23.65 m.</i>	23
		24.00 - 24.20 24.00	ES PID	PID = 0 ppm	56				23.65 (-10.66) 23.82 (-11.56)	Light yellowish brown clayey very gravelly SAND. Sand is fine and medium. Gravel is angular to rounded fine to coarse flint. [LAMBETH GROUP - LOWER MOTTLED CLAY] Very dense dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with stiff dark grey clay. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>stiff sandy clay lamina between 23.98 and 23.99 m.</i> <i>light grey sand burrow infill from 24.50 to 23.82 m.</i>	24
		24.50 - 25.90 24.50	C SPT	N=50 (15,10/50 for 220mm)							
		25.00	EW								25

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
21.50	176	21.50	176										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/06/2021 - 08/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535503.89 N191630.48	
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB		Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX	
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND	Scale 1:25	Page Number Sheet 6 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		25.00	EW							Very dense dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with stiff dark grey clay. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>black lignite fragment at 25.27 m.</i>	
		25.90 - 27.40 25.90	C SPT	N=50 (4,8/50 for 240mm)					25.95 (-11.73)	<i>frequent white shell fragments between 25.79 and 25.82 m.</i> <i>occasional white shell fragments between 25.82 and 26.67 m.</i> Very stiff thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]	26
									26.45 (-13.86)	Dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with stiff dark grey clay and grey sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>frequent white shell fragments between 26.67 and 26.71 m.</i>	
		27.40 - 28.70 27.40	C SPT	N=50 (4,7/50 for 265mm)					26.98 (-14.36)	Very stiff thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>interlaminated between 27.20 and 27.80 m.</i>	27
										<i>interlaminated between 27.92 and 28.51 m.</i>	28
		28.70 - 30.50 28.70	C SPT	N=50 (5,8/50 for 230mm)					28.70 (-14.89)	[LAMBETH GROUP - UPNOR FORMATION] <i>AZCL between 28.70 and 29.40 m.</i>	29
		30.00	EW						29.40 (-16.61)	Dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with stiff dark grey clay and grey sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>gravelly from 29.65 to 29.84 m. Gravel is rounded fine to coarse flint.</i> <i>gravelly from 29.92 to 30.12 m. Gravel is rounded fine and medium flint.</i>	30

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 7 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		30.00	EW							Dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with stiff dark grey clay and grey sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] sandy gravel bed between 30.30 and 30.40 m. Gravel rounded fine to coarse. Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		30.50 - 32.00 30.50	C SPT	N=50 (4, 13/50 for 110mm)					30.40 (-17.31)	
		30.60 - 30.80 30.60	ES PID	PID = 0 ppm						
		32.00 32.00 - 33.50 32.00	EW C SPT	N=50 (25 for 135mm/50 for 100mm)	100					
		33.50 - 35.00 33.50	C SPT	N=50 (4, 10/50 for 110mm)	100					
		35.00 - 36.50	C		100					31
										32
										33
										34
										35

black sandy silt lamina (2 mm) at 34.46 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/06/2021 - 08/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535503.89 N191630.48	
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB		Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX	
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND	Scale 1:25	Page Number Sheet 8 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		35.00	SPT	N=53 (25 for 140mm/50 for 130mm)						Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		36.50 - 38.00 36.50	C SPT	N=50 (6,14/50 for 135mm)	100					with white shell fragments between 35.62 and 35.64 m.
		37.32 - 37.52 37.32	ES PID	PID = 0 ppm	100				37.22 (-18.31)	with white shell fragments between 36.28 and 36.30 m. with rare black lignite fragments between 36.46 and 37.22 m.
		37.52 - 37.72	CS							sandy gravel from 37.13 to 37.22 m. Gravel angular to subrounded medium and coarse flint. (Bullhead Beds)
		38.00 - 39.60 38.00	C SPT	N=50 (5,19/50 for 150mm)						Very weak medium density white CHALK with light gray mottling. Fractures 0-80 degrees very closely to medium spaced (30/170/310) planar smooth to rough tight with probable flush coating. CIRIA Grade B3 [WHITE CHALK SUBGROUP]
		39.12 - 39.32	CS		94	100	87			black sponge bed between 38.96 and 38.98 m.
		39.60 - 41.10 39.60	C SPT	N=53 (25 for 45mm/50 for 155mm)						NP=21mm. DINI between 39.62 and 39.86 m. fragmented nodular large flint at 39.72 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/06/2021 - 08/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535503.89 N191630.48
Project No. : GTS-19-250		Crew Name: NC / CB+NC+CB	Drilling Equipment: Hand Tools Dando 2000 Commachio 405 JCB 3CX
Borehole Number GI_DZ4_BH2088	Hole Type CP+RC	Level 12.09m AOD	Logged By AB / JF / ND
		Scale 1:25	Page Number Sheet 9 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
									40.42 (-25.13)	Very weak medium density white CHALK with light gray mottling. Fractures 0-80 degrees very closely to medium spaced (30/170/310) planar smooth to rough tight with probable flush coating. CIRIA Grade B3 [WHITE CHALK SUBGROUP] <u>NP=20mm.</u> <u>abundant <20mm platyceramus shell fragments between 40.10 and 40.30 m.</u> <u>Extremely weak to very weak from 40.10 to 40.42 m.</u>
		40.91 - 41.04	CS							<u>NP=27mm.</u> <u>DINI between 40.32 and 40.42 m.</u>
		41.10 - 42.60 41.10	C SPT	N=41 (6,5/6 10,12,13)						Very weak medium density white CHALK with light gray mottling. Fractures 0-80 degrees very closely to medium spaced (80/290/740) planar smooth to rough tight clean locally with probable flush coating. CIRIA Grade A2 [WHITE CHALK SUBGROUP] <u>FINI between 40.57 and 40.73 m.</u> <u>nodular large flint at 40.63.</u> <u>NP=18mm.</u> <u>DINI between 41.04 and 41.10 m.</u> <u>DINI between 41.10 and 41.66 m. SPT disturbed.</u> <u>very small flints between 41.71 and 41.78 m.</u> <u>NP=19mm.</u> <u>small finger flints between 42.09 and 49.27 m.</u>
		41.80 - 41.92	CS		100	100	100			<u>NP=16mm.</u> <u>fragmented small flint at 42.60 m.</u> <u>DINI between 42.60 and 43.06. SPT disturbed.</u>
		42.50 42.60 - 44.10 42.60	EW C SPT	N=41 (2,5/7,9,12,13)						<u>NP=16mm.</u>
		44.10 - 45.60 44.10	C SPT	N=50 (4,8/50 for 255mm)	100	100	95			<u>small flint at 43.65 m.</u> <u>FINI between 43.65 and 43.69 m.</u> <u>DINI between 43.79 and 43.83 m.</u>
					100	100	100			<u>NP=15mm.</u> <u>DINI between 44.10 and 44.43 m. SPT disturbed.</u> <u>NP=16mm.</u> <u>small flint at 44.61 m.</u> <u>fragmented medium flint at 44.85 m.</u>

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. concrete obstruction found - obstructions removed to 2.60 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into 1th the top of the London Clay Formation. 3. Environmental seals installed from 1.00 m to 3.00 m, from 7.15 m to 9.15 m and from 19.50 to 21.50 m. 5. Rotary follow on from 9.15 m. 6. Single install with 50 mm pipe. Response zone from 40.50 m to 45.60 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



GROUND TECHNOLOGY
Victory Park, Attleborough
Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

GI_DZ4_BH2088

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2088 9.40 - 10.90



2088 10.90 - 12.40



2088 12.40 - 14.00



2088 14.00 - 15.30



GROUND TECHNOLOGY
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Photographic Report

GI_DZ4_BH2088

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2088 14.00 - 15.60



2088 15.60 - 16.90



2088 16.90 - 18.50



2088 18.50 - 20.00



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2088 20.00 - 21.50



2088 21.50 - 22.90



2088 22.90 - 24.50



2088 24.50 - 25.90



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2088 25.90 - 27.40



2088 27.40 - 28.70



2088 28.70 - 30.50



2088 30.50 - 32.00



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Photographic Report

GI_DZ4_BH2088

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2088 32.00 - 33.50



2088 33.50 - 35.00 photo board depth mislabelled 36.50 - 38.00



2088 35.00 - 36.50



2088 36.50 - 38.00



GROUND TECHNOLOGY
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Photographic Report

GI_DZ4_BH2088

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2088 38.00 - 39.60



2088 41.1 - 42.60



2088 42.6 - 44.1



2088 44.1 - 45.6



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 07/07/2021 - 12/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535662.24 N191572.48
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: JCB 3CX Dando 2000
Borehole Number GI_DZ4_BH2083	Hole Type CP	Level 12.69m AOD	Logged By AB / JF
		Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Well Diagram]					0.05	12.69	[Pattern]	Light brownish grey GRAVEL. Gravel angular to well rounded medium and coarse flint. [MADE GROUND]
					0.30	12.64	[Pattern]	Firm brown CLAY. [MADE GROUND]
		0.50	ES	PID = 0 ppm				Dark greyish brown to black sandy very clayey GRAVEL with medium cobble and boulder content with black hydrocarbon staining and odour and occasional timber plastic and metal fragments. [MADE GROUND] <i>geotextile membrane at 0.30 m.</i> <i>slightly clayey from 0.70 to 1.50 m.</i>
		0.50 - 0.60	B					
		0.50 - 0.60	D					
		0.50	PID					
		1.50	ES	PID = 51 ppm				<i>clayey from 1.50 to 2.70 m.</i>
		1.50 - 1.60	B					
		1.50 - 1.60	D					
		1.50	PID					
	2.50	ES	PID = 10 ppm	2.70	12.39	[Pattern]	Reinforced CONCRETE. [MADE GROUND]	
	2.50 - 2.60	B						
	2.50 - 2.60	D						
	2.50	PID						
	3.10	ES	PID = 85 ppm	2.85	9.99	[Pattern]	Firm dark grey to black slightly sandy slightly gravelly CLAY with black hydrocarbon staining and odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [ALLUVIUM]	
	3.10 - 3.20	B						
	3.10 - 3.20	D						
	3.10	PID						
	4.10	ES	PID = 656 ppm					
	4.10	PID						
	4.20 - 4.70	B						
	4.20	SPT	N=7 (1,1/1,2,2,2)					
	4.80	D						
	4.90	D						

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
4.70	250	4.70	250								

Remarks
 1. Position CAT scanned - position clear of services. Inspection pit terminated due to obstructions 2. Hole excavated through made ground to 3.60 m by JCB to clear concrete obstructions and backfilled. 3. Hole completed using cable percussive techniques through the backfilled trial pit into the top of the London Clay Formation. 4. Environmental seal installed from 3.70m to 4.70 m. Additional seal installed from 8.00 m to 9.65 m to protect contamination migration whilst borehole standing over the weekend. Seal drilled out after the weekend. 5. Single install with 50 mm pipe. Response zone from 5.50m to 8.70 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 07/07/2021 - 12/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535662.24 N191572.48
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: JCB 3CX Dando 2000
Borehole Number GI_DZ4_BH2083	Hole Type CP	Level 12.69m AOD	Logged By AB / JF
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.10 5.10 5.20 - 5.65	ES PID UT	PID = 1638 ppm	6.00	9.84	Firm dark grey to black slightly sandy slightly gravelly CLAY with black hydrocarbon staining and odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [ALLUVIUM]	
		5.90	D					
		6.10 6.10 6.20 - 6.70 6.20	ES PID B cSPT	PID = 2130 ppm N=12 (2,3/2,3,3,4)		6	Medium dense dark grey sandy GRAVEL. Sand is medium and coarse. Gravel is angular to rounded fine to coarse multicoloured flint. Hydrocarbon odour and sheen. [KEMPTON PARK GRAVEL FORMATION]	
		6.50 6.50 6.50	EW EW EW					
		7.00 7.00 7.00 7.20 - 7.70 7.20	D EW EW B cSPT	N=22 (1,3/3,4,7,8)		7		
		8.00	D					
		8.20 - 8.70 8.20	B cSPT	N=21 (2,3/3,4,7,7)		8		
		8.70 - 9.00	D		8.70	6.69	Very stiff thinly laminated brownish grey slightly sandy CLAY [LONDON CLAY FORMATION]	
		9.10 9.10 9.20	ES PID SPT	PID = 2008 ppm N=28 (3,3/6,6,7,9)		9		
					9.65	3.99	End of Borehole at 9.65m	10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
9.20	200	9.20	200								

Remarks
 1. Position CAT scanned - position clear of services. Inspection pit terminated due to obstructions 2. Hole excavated through made ground to 3.60 m by JCB to clear concrete obstructions and backfilled. 3. Hole completed using cable percussive techniques through the backfilled trial pit into the top of the London Clay Formation. 4. Environmental seal installed from 3.70m to 4.70 m. Additional seal installed from 8.00 m to 9.65 m to protect contamination migration whilst borehole standing over the weekend. Seal drilled out after the weekend. 5. Single install with 50 mm pipe. Response zone from 5.50m to 8.70 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 14/07/2021 - 15/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535532.64 N191579.85
Project No. : GTS-19-250	Crew Name: RF	Drilling Equipment: Dando 2000 JCB 3CX

Borehole Number GI_DZ4_BH2082	Hole Type CP	Level 12.21m AOD	Logged By AB / AM	Scale 1:25	Page Number Sheet 1 of 3
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Well ID]		0.20	ES		0.30	12.21	[MADE GROUND]	Dark brown silty fine SAND. [MADE GROUND]
		0.20 - 0.30	B					
		0.20 - 0.30	D					
		0.20	PID	PID = 0 ppm	0.50	11.91	[MADE GROUND]	Stiff brown CLAY. [MADE GROUND]
		0.40	ES					
		0.40 - 0.50	B					
		0.40 - 0.50	D		0.65	11.71	[MADE GROUND]	Mass CONCRETE. [MADE GROUND]
		0.40	PID	PID = 0 ppm				
		0.40	PID	PID = 0 ppm				
		1.00	ES		1.60	11.56	[MADE GROUND]	Brown to black sandy clayey GRAVEL with medium cobble and boulder content plastic metal and timber fragments and black hydrocarbon staining and odour. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker brick and concrete. Cobbles and boulders angular concrete and brick. [MADE GROUND]
		1.00 - 1.10	B					
		1.00 - 1.10	D					
		1.00	PID	PID = 16 ppm	2.00	10.61	[MADE GROUND]	Dark brown COBBLES with many boulders and some sandy gravel. Cobbles and boulders angular brick and concrete. Sand fine to coarse. Gravel angular clinker brick and concrete. [MADE GROUND]
		2.50	ES					
		2.50 - 2.60	B					
		2.50 - 2.60	D		2.50	10.21	[MADE GROUND]	Brown to black sandy clayey GRAVEL with medium cobble and boulder content plastic metal and timber fragments and black hydrocarbon staining and odour. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker brick and concrete. Cobbles and boulders angular concrete and brick. [MADE GROUND]
		2.50	PID	PID = 32 ppm				
		2.50	PID	PID = 32 ppm				
	2.90	ES		2.90	9.71	[MADE GROUND]	Dark brown COBBLES with many boulders and some sandy gravel. Cobbles and boulders angular brick and concrete. Sand fine to coarse. Gravel angular clinker brick and concrete. [MADE GROUND]	
	3.10	B						
	3.10 - 3.20	D						
	3.10 - 3.20	B		3.10	9.31	[MADE GROUND]	Firm dark grey to black CLAY with black hydrocarbon staining and odour and sandy gravel <100mm lenses with liquid hydrocarbon. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [MADE GROUND]	
	3.10 - 3.50	B						
	3.10	PID	PID = 130 ppm					
	3.50	ES		3.70	9.11	[MADE GROUND]	Soft blackish grey, slightly peaty, slightly sandy, slightly gravelly clay. Gravel is angular to subrounded, fine to medium, brick, fabric, flint, metal. Sand is fine to coarse. Strong hydrocarbon odour and oily. [MADE GROUND]	
	3.50	PID	PID = 108 ppm					
	3.70 - 4.15	UT						
	4.15 - 4.30	D		4.50	9.11	[ALLUVIUM - REWORKED]	Firm to stiff, fissured, grey mottled brownish grey occasionally mottled dark grey CLAY. Fissures are randomly orientated, planar smooth. Likely reworked - presence of anthropogenic material in underlying beds. [ALLUVIUM - REWORKED]	
	4.50	ES						
	4.50	PID	PID = 2 ppm					
	4.60	D		4.70	9.11	[ALLUVIUM - REWORKED]	Firm to stiff, fissured, grey mottled brownish grey occasionally mottled dark grey CLAY. Fissures are randomly orientated, planar smooth. Likely reworked - presence of anthropogenic material in underlying beds. [ALLUVIUM - REWORKED]	
	4.70 - 5.20	B						
	4.70	SPT	N=9 (1,1/2,2,2,3)					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.50	250	3.50	250								

Remarks
 1. Position CAT scanned - position clear of services. 2. Concrete in attempted inspection pit excavated by JCB. Made Ground excavated and backfilled to 3.10 m. 3. Hole progressed using cable percussive techniques through the backfill and into the top of the London Clay Formation. 4. Environmental seal installed from 2.90 m to 3.90 m. 5. Single install with 50 mm pipe. Response zone from 5.70 m to 9.20 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 14/07/2021 - 15/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535532.64 N191579.85
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Dando 2000 JCB 3CX
Borehole Number GI_DZ4_BH2082	Hole Type CP	Level 12.21m AOD	Logged By AB / AM
		Scale 1:25	Page Number Sheet 2 of 3

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		5.25 - 5.35	D	PID = 4 ppm	5.25	8.51	Firm to stiff, fissured, grey mottled brownish grey occasionally mottled dark grey CLAY. Fissures are randomly orientated, planar smooth. Likely reworked - presence of anthropogenic material in underlying beds. [ALLUVIUM - REWORKED]				
		5.35 - 5.70	B								
		5.55	ES	PID = 4 ppm	5.90	6.96	Soft dark grey, silty, peaty CLAY. Frequent fibrous wood fragments (<40mm) and rootlets. Likely reworked - presence of anthropogenic material in underlying beds. [ALLUVIUM - REWORKED]				
		5.55	PID								
		5.70 - 6.15	UT								
			6.20 - 6.50	D	N=21 (2,3/3,5,7,6) PID = 3 ppm	5.90	6.96	Medium dense multicoloured sandy GRAVEL. Gravel is fine to coarse, brick, flint and quartzite. Sand is fine to coarse. Hydrocarbon odour. Likely reworked owing to anthropogenic inclusions to 8.50 m. [KEMPTON PARK GRAVEL FORMATION - REWORKED]			
		6.50	ES								
		6.50	EW								
		6.50 - 7.00	B								
		6.50	cSPT								
		6.50	PID								
			7.00	EW	N=26 (2,3/5,5,8,8)	5.90	6.96				
	7.00	EW									
	7.25	D									
	7.50	EW									
		7.50 - 8.00	B	N=14 (2,3/4,5,3,2)	5.90	6.96					
	7.50	cSPT									
		8.25	D								
		8.50 - 9.00	B	N=14 (2,3/4,5,3,2)	5.90	6.96					
	8.50	cSPT									
		9.30 - 9.50	D	PID = 11 ppm	9.30	6.31	Stiff, fissured, dark grey, slightly sandy CLAY. Sand is fine. Fissures are randomly orientated, undulating, rough. Occasional gypsum crystals (<1mm). Occasional light grey fine sand / silt partings. [LONDON CLAY FORMATION]				
	9.55	ES									
	9.55	PID									
		9.60 - 10.05	UT								

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		9.50	200								

Remarks
 1. Position CAT scanned - position clear of services. 2. Concrete in attempted inspection pit excavated by JCB. Made Ground excavated and backfilled to 3.10 m. 3. Hole progressed using cable percussive techniques through the backfill and into the top of the London Clay Formation. 4. Environmental seal installed from 2.90 m to 3.90 m. 5. Single install with 50 mm pipe. Response zone from 5.70 m to 9.20 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 14/07/2021 - 15/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535532.64 N191579.85	
Project No. : GTS-19-250		Crew Name: RF		Drilling Equipment: Dando 2000 JCB 3CX	
Borehole Number GI_DZ4_BH2082	Hole Type CP	Level 12.21m AOD	Logged By AB / AM	Scale 1:25	Page Number Sheet 3 of 3

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.30	D		10.30	2.91		Stiff, fissured, dark grey, slightly sandy CLAY. Sand is fine. Fissures are randomly orientated, undulating, rough. Occasional gypsum crystals (<1mm). Occasional light grey fine sand / silt partings. [LONDON CLAY FORMATION] End of Borehole at 10.30m
								11
								12
								13
								14
								15

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
10.30	200										

Remarks
 1. Position CAT scanned - position clear of services. 2. Concrete in attempted inspection pit excavated by JCB. Made Ground excavated and backfilled to 3.10 m. 3. Hole progressed using cable percussive techniques through the backfill and into the top of the London Clay Formation. 4. Environmental seal installed from 2.90 m to 3.90 m. 5. Single install with 50 mm pipe. Response zone from 5.70 m to 9.20 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021 - 02/08/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535589.36 N191656.94
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: JCB 3CX Dando 2000
Borehole Number GI_DZ4_BH2081A	Hole Type CP	Level 11.52m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Well Diagram]					0.40	11.52	[Pattern]	Firm brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint quartz and brick. [MADE GROUND]
					1.70	11.12	[Pattern]	Firm to stiff greyish brown sandy gravelly CLAY with high cobble and medium boulder content and occasional metal plastic and wood fragments. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint brick concrete and clinker. Cobbles are angular and subangular brick and concrete. Boulder subangular concrete. [MADE GROUND] <i>geotextile membrane at 0.40 m.</i>
					3.20	9.82	[Pattern]	Dark grey to black fine to coarse SAND and GRAVEL with frequent white putty <100mm pockets and strong hydrocarbon odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint quartz brick and clinker. Frequent pockets of white putty material, possible ash deposit (<100mm). Strong hydrocarbon odour. [MADE GROUND]
		3.00 - 4.00	B	PID = 16 ppm	3.20	9.82	[Pattern]	Firm black silty CLAY hydrocarbon stained and odour. [ALLUVIUM]
		3.00 - 4.00	ES					
		3.00	PID					
		3.20 - 3.65	UT					
		3.65 - 3.75	D				[Pattern]	Stiff grey mottled brown slightly organic clay with extremely closely spaced orangish brown silt partings and black hydrocarbon staining between 3.40 and 4.20 m.
		3.80 - 4.00	D				[Pattern]	
		4.00 - 5.00	B	PID = 1 ppm	4.20	8.32	[Pattern]	Firm dark brown to black clayey amorphous PEAT with hydrocarbon odour. [ALLUVIUM]
	4.00 - 5.00	ES						
	4.00	PID						
	4.20 - 4.65	D	N=17 (2,3/3,4,5,5)	4.20	8.32	[Pattern]		
	4.20	SPT						
	4.80 - 5.00	D				[Pattern]		
	5.00 - 6.00	B		5.00	7.32	[Pattern]		

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
4.00	250	4.00	250								

Remarks
 1. Position redrilled adjacent to BH2081 after early termination. 2. Sampling commenced from the base of the trial pit sampled in BH2081. 3. Hole completed using cable percussive techniques into the top of the London Clay Formation. 4. Environmental seal installed from 3.50 m to 5.50 m. 5. Single install with 50 mm pipe. Response zone from 5.00 m to 7.00 m. 6. UXO clearance undertaken by a specialist. 7. ES samples from 3.00 - 4.00 m, 4.00 - 5.00 m and 5.00 - 6.00 m taken at a later date from Bulk samples after original samples were lost.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021 - 02/08/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535589.36 N191656.94
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: JCB 3CX Dando 2000
Borehole Number GI_DZ4_BH2081A	Hole Type CP	Level 11.52m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00 - 6.00	ES		7.00	6.52		Medium dense dark grey slightly sandy GRAVEL with hydrocarbon odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION]
		5.00	PID	PID = 1 ppm				
		5.20	cSPT	N=25 (4,4/7,6,6,6)				
		5.30	ES					
		5.30	PID	PID = 0 ppm				
		5.40	EW					
		5.50	EW					
		5.80	EW					
		5.80	EW					
		5.80 - 6.00	D					
		6.00 - 7.00	B					
		6.20	cSPT	N=21 (4,5/5,4,6,6)				
		6.80 - 7.00	D					
		7.00 - 8.00	B					
		7.20 - 7.65	D					
	7.20	SPT	N=25 (5,6/5,6,6,8)					
	7.30	ES						
	7.30	PID	PID = 0 ppm					
	7.80 - 8.00	D						
	8.00 - 8.45	UT						
	8.45 - 8.55	D						
				8.55	4.52		Stiff dark greyish brown slightly sandy CLAY with light to dark grey silty sand impersistent partings occasional white forams rare black lignite fragments and hydrocarbon odour. [LONDON CLAY FORMATION]	
							End of Borehole at 8.55m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position redrilled adjacent to BH2081 after early termination. 2. Sampling commenced from the base of the trial pit sampled in BH2081. 3. Hole completed using cable percussive techniques into the top of the London Clay Formation. 4. Environmental seal installed from 3.50 m to 5.50 m. 5. Single install with 50 mm pipe. Response zone from 5.00 m to 7.00 m. 6. UXO clearance undertaken by a specialist. 7. ES samples from 3.00 - 4.00 m, 4.00 - 5.00 m and 5.00 - 6.00 m taken at a later date from Bulk samples after original samples were lost.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 27/07/2021 - 29/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535590.28 N191655.13	
Project No. : GTS-19-250		Crew Name: GH		Drilling Equipment: Dando 2000 JCB 3CX	
Borehole Number GI_DZ4_BH2081	Hole Type CP	Level 11.43m AOD	Logged By AM	Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
█		0.20 0.20 0.20	D ES PID	PID = 0 ppm	0.40	11.43	[MADE GROUND]	Firm brown slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded, fine to medium, flint, quartzite and brick. [MADE GROUND]
		0.70 0.70 0.70	B ES PID	PID = 2 ppm				Firm to stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is angular to rounded fine to coarse flint, quartzite, brick, concrete, metal, plastic, coal ash, wood and rebar. High cobble content of subangular to subrounded brick and concrete. Medium boulder content of subrounded concrete. [MADE GROUND]
		1.40	D		1.70	11.03	[MADE GROUND]	geotextile membrane at 0.40 m.
		2.00 2.00 2.00	B ES PID	PID = 20 ppm				Dark grey to black fine to coarse SAND and GRAVEL with frequent white putty <100mm pockets and strong hydrocarbon odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint quartz brick and clinker. Frequent pockets of white putty material, possible ash deposit (<100mm). Strong hydrocarbon odour. [MADE GROUND]
		3.00 3.00 3.00 - 4.00 3.00 3.00	B ES B SPT PID	N=23 (2,3/4,6,6,7) PID = 6 ppm	3.20	9.73	[ALLUVIUM]	Firm black silty CLAY hydrocarbon stained and odour. [ALLUVIUM]
		3.50 3.50 - 3.95 3.50	ES UT PID	PID = 11 ppm				
		3.80 - 4.00 3.85 - 3.95 4.00 - 5.00	D D B		4.20	8.23	[ALLUVIUM]	Firm dark brown to black clayey amorphous PEAT with hydrocarbon odour. [ALLUVIUM]
		4.50	SPT	N=24 (3,4/5,5,6,8)				
		5.00 - 6.00	B		5.00	7.23		

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.50	200	3.50	200								

Remarks
 1. Position CAT scanned, and inspection pit dug to 120 m using hand tools - position clear of services. 2. Trial pit excavated to 3.00 m with JCB to clear location of obstructions. 3. Hole terminated at 7.00 m - hole could not be progressed further after chiselling. 4. Environmental seal installed from 2.50 m to 4.50 m. 5. Hole relocated to BH2081A. 6. UXO clearance undertaken by a specialist.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 27/07/2021 - 29/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535590.28 N191655.13
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: Dando 2000 JCB 3CX
Borehole Number GI_DZ4_BH2081	Hole Type CP	Level 11.43m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.50	cSPT	N=0 (25 for 70mm/0 for 0mm)	7.00	6.43		Medium dense dark grey slightly sandy GRAVEL with hydrocarbon odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION]
		5.80 - 6.00	D					SPT refusal on seating blows at 5.50 m. Possible cobble.
		6.50	cSPT	N=21 (6,8/6,5,5,5)				
		End of Borehole at 7.00m						

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Trial pit excavated to 3.00 m with JCB to clear location of obstructions. 3. Hole terminated at 7.00 m - hole could not be progressed further after chiselling. 4. Environmental seal installed from 2.50 m to 4.50 m. 5. Hole relocated to BH2081A. 6. UXO clearance undertaken by a specialist.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 28/06/2021 - 29/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535476.41 N191670.99
Project No. : GTS-19-250	Crew Name: NC	Drilling Equipment: Dando 2000 JCB 3CX

Borehole Number GI_DZ4_BH2041A	Hole Type CP	Level 11.03m AOD	Logged By AB	Scale 1:25	Page Number Sheet 1 of 2
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.10	11.03		Light brownish grey GRAVEL. Gravel angular to well rounded medium and coarse flint. [MADE GROUND]	
					0.30	10.93		Firm brown CLAY. [MADE GROUND]	
		0.50	ES	PID = 1 ppm				Firm greyish brown to black sandy gravelly CLAY with medium cobble and boulder content and occasional metal timber and plastic fragments. [MADE GROUND]	
		0.50 - 0.60	B						
		0.50 - 0.60	D						
		0.50	PID						
								<i>very gravelly from 0.90 to 1.20 m. No cobbles and boulders.</i>	
						1.20	10.73		Firm brownish grey silty CLAY with rare gravel and hydrocarbon odour. Gravel angular fine to coarse brick. [MADE GROUND]
		1.40	ES	PID = 2 ppm				Firm brownish grey mottled brown slightly organic CLAY with silt partings rare gravel and with black hydrocarbon staining and odour. Gravel angular to rounded fine and medium flint. [ALLUVIUM]	
		1.40 - 1.50	B						
		1.40 - 1.50	D						
		1.40	PID						
								<i>grey mottled brown from 2.50 to 3.60 m.</i>	
						1.80	9.83		
		2.50	ES	PID = 1 ppm				<i>no hydrocarbon staining and odour between 3.00 and 3.60 m. Possible gypsum crystals.</i>	
		2.50 - 2.60	B						
		2.50 - 2.60	D						
		2.50	PID						
		3.00 - 3.50	B	HVP=23 HVP=34				Dark brown to black clayey pseudo fibrous and amorphous PEAT with soft grey clay pockets. [ALLUVIUM]	
	3.00 - 3.50	UT							
	3.10								
	3.10								
	3.30	ES	PID = 0 ppm				Medium dense dark brownish grey slightly sandy GRAVEL. Sand medium and coarse. Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION]		
	3.30	PID							
	3.50	D							
	3.50	ES							
	3.50 - 3.60	B	PID = 0 ppm		3.65	9.23			
	3.50 - 3.60	D							
	3.50 - 4.00	B							
	3.50 - 4.00	D							
	3.50	PID	N=23 (4,4/5,6,6,6)						
	3.65 - 4.00	B							
	3.65 - 4.00	D							
	3.65 - 7.00	D							
	3.80	ES	PID = 1 ppm						
	3.80	PID							
	4.00 - 4.45	D							
	4.00	SPT							
	4.10 - 5.00	B	PID = 0 ppm						
	4.10 - 5.00	D							
	4.40	ES							
	4.40	PID							
	4.50	EW	PID = 0 ppm						
	4.50 - 5.00	D							
	5.00 - 5.45	D							

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.50	200	3.50	200								

Remarks
 1. Position redrilled adjacent to phase 1 borehole to install missing standpipe. 2. Position CAT scanned - position clear of services. 3. Trial pit excavated to 3.00 m using JCB to remove made ground obstructions. 4. Hole progressed through backfilled pit using cable percussive techniques into the top of the London Clay Formation. 5. Environmental seal installed from 1.50 m to 3.50 m. 6. Single install with 50 mm pipe. Response zone from 4.10 m to 7.30 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 28/06/2021 - 29/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535476.41 N191670.99
Project No. : GTS-19-250		Crew Name: NC	Drilling Equipment: Dando 2000 JCB 3CX
Borehole Number GI_DZ4_BH2041A	Hole Type CP	Level 11.03m AOD	Logged By AB
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00 - 6.00	B	N=41 (12,13/10,10,11,10)	7.35	6.93		Medium dense dark brownish grey slightly sandy GRAVEL. Sand medium and coarse, Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION]
		5.00	SPT					
		5.40	ES	PID = 0 ppm				
		5.40	PID					
		5.50	EW					
		5.50 - 6.00	D					
		5.80	EW	N=24 (7,6/7,6,6,5)				
		5.80	EW					
		5.80	EW					
		6.00 - 6.45	D					
	6.00 - 7.00	B	PID = 0 ppm					
	6.00	SPT						
	6.40	ES	PID = 0 ppm					
	6.40	PID						
	6.50 - 7.00	D	N=28 (9,7/8,7,6,7)					
	7.00 - 7.35	B						
	7.00 - 7.45	D						
	7.00	SPT						
	7.40 - 7.80	D	HVP=15 HVP=78					
	7.40 - 8.40	B						
	7.80	ES	HVP=15 HVP=78					
	7.80 - 8.30	UT						
	7.90	UT						
	8.25 - 8.30	D	End of Borehole at 8.40m					
	8.30	D						

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
8.40	150	7.50	150								

Remarks
 1. Position redrilled adjacent to phase 1 borehole to install missing standpipe. 2. Position CAT scanned - position clear of services. 3. Trial pit excavated to 3.00 m using JCB to remove made ground obstructions. 4. Hole progressed through backfilled pit using cable percussive techniques into the top of the London Clay Formation. 5. Environmental seal installed from 1.50 m to 3.50 m. 6. Single install with 50 mm pipe. Response zone from 4.10 m to 7.30 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 06/07/2021 - 07/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535594.64 N191564.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Dando 2000 JCB 3CX
Borehole Number GI_DZ4_BH1005A	Hole Type CP	Level 12.80m AOD	Logged By JF
		Scale 1:25	Page Number Sheet 1 of 3

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Well Diagram]					0.20	12.80	[Pattern]	Dark brown silty fine SAND. [MADE GROUND]
		0.40	ES		0.50	12.60	[Pattern]	Stiff brown mottled orange and grey slightly sandy gravelly CLAY Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [MADE GROUND]
		0.40 - 0.50	B					
		0.40 - 0.50	D					
		0.40	PID	PID = 0 ppm				
		0.80	ES		1.50	12.30	[Pattern]	Firm dark brown sandy gravel CLAY with medium cobble content. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobbles angular brick and concrete. [MADE GROUND]
		0.80 - 0.90	B					
		0.80 - 0.90	D					
		0.80	PID	PID = 2 ppm				
		1.70	ES		1.70	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]
		1.70 - 1.80	B					
		1.70 - 1.80	D					
	1.70	PID	PID = 153 ppm					
	2.80	ES		2.80	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	2.80 - 2.90	B						
	2.80 - 2.90	D						
	2.80	PID	PID = 34 ppm					
	3.20	ES		3.20	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	3.20	PID	PID = 9 ppm					
	3.40	D						
	3.50 - 4.00	B		3.50	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	3.50	cSPT	N=22 (2,3,5,6,8)					
	4.00	ES		4.00	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	4.00 - 4.10	B						
	4.00 - 4.10	D						
	4.00	PID	PID = 51 ppm					
	4.20	ES		4.20	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	4.20	PID	PID = 19 ppm					
	4.40	D						
	4.50 - 5.00	B		4.50	12.30	[Pattern]	Dark grey to black sandy clayey GRAVEL with low cobble content black hydrocarbon staining and odour and occasional timber and metal fragments. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker concrete brick and flint. Cobble angular brick and concrete. [MADE GROUND]	
	4.50	cSPT	N=14 (1,2/3,3,4,4)					
				5.00	11.30			

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated to 3.00 m owing to obstructions. 3. Hole progressed through backfilled trial pit using cable percussive techniques into the top of the London Clay Formation. 4. Environmental seal installed from 3.50 m to 5.50 m. 5. Single install with 50 mm pipe. Response zone from 6.40 m to 9.20 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 06/07/2021 - 07/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535594.64 N191564.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Dando 2000 JCB 3CX
Borehole Number GI_DZ4_BH1005A	Hole Type CP	Level 12.80m AOD	Logged By JF
		Scale 1:25	Page Number Sheet 2 of 3

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.20 5.20	ES PID	PID = 498 ppm	5.80	7.80	Soft grey mottled brown slightly organic CLAY with hydrocarbon odour. Possibly reworked in area of previous remediation. [ALLUVIUM]	
		5.50 - 5.95 5.60 5.60	UT	HVP=23 HVP=5			<i>organic with black amorphous peat pockets between 5.50 and 5.80 m.</i>	
		6.20 6.20	ES PID	PID = 1036 ppm			Dark brown slightly sandy clayey pseudo fibrous PEAT with hydrocarbon odour. Sand fine and medium. Possibly reworked in area of previous remediation. [ALLUVIUM]	
		6.40 6.50 6.50 - 6.95 6.50 - 7.00 6.50	D EW D B SPT	N=17 (2,2/3,4,4,6)	6.50	7.00	Medium dense dark grey sandy GRAVEL with green hydrocarbon sheen and strong odour. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. Driller noted re-bar - possibly reworked in area of former remediation. [KEMPTON PARK GRAVEL FORMATION]	
		7.00	EW				<i>slightly sandy from 7.50 to 9.20 m.</i>	
		7.20 7.20 - 7.30 7.20 7.40 7.50 - 8.00 7.50	ES D PID D B cSPT	PID = 65 ppm N=15 (2,2/3,3,4,5)	8.70	6.30	with medium cobble content between 8.50 and 9.20 m. Cobbles subangular and subrounded flint.	
		8.00 8.00 8.00	EW EW EW				Very stiff dark greyish brown CLAY with extremely closely spaced silty fine sand partings and grey burrows and occasional black lignite fragments. hydrocarbon odour. [LONDON CLAY FORMATION]	
		8.50 - 9.00 8.50	B cSPT	N=9 (5,7/3,2,2,2)			Very stiff dark greyish brown CLAY with extremely closely spaced silty fine sand partings and grey burrows and occasional black lignite fragments. hydrocarbon odour. [LONDON CLAY FORMATION]	
		9.00	ES		9.20	4.10		
		9.20 9.20 - 9.50 9.20	ES D PID	PID = 58 ppm				
		9.50 - 9.95 9.60 9.60	UT	HVP=150 HVP=17				
		9.95 - 10.15	D					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.50	250	5.50 9.50	250 200								

Remarks
 1. Position CAT scanned - position clear of services. 2. Trial pit excavated to 3.00 m owing to obstructions. 3. Hole progressed through backfilled trial pit using cable percussive techniques into the top of the London Clay Formation. 4. Environmental seal installed from 3.50 m to 5.50 m. 5. Single install with 50 mm pipe. Response zone from 6.40 m to 9.20 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535411.43 N191825.58
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Dando Terrier
Borehole Number GI_DZ3_WS2005	Hole Type WS	Level 9.93m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	G		0.10	9.93	Concrete with tarmac surfacing. [MADE GROUND]	1 2 3 4
					0.40	9.83	Greyish brown gravelly SAND. Sand fine to coarse. Gravel angular to rounded fine to coarse flint brick and concrete. [MADE GROUND]	
		1.00 - 1.20 1.00	ES PID	PID = 0 ppm				
		1.20 - 2.00	L				<i>firm sandy gravelly clay band between 1.30 and 1.35 m. high cobble content of angular concrete and clinker from 1.35 to 1.60 m.</i>	
		2.00 - 2.20 2.00 - 3.00 2.00	ES L PID	PID = 0 ppm	1.90	9.53	<i>soft light brown sandy gravelly clay band between 1.83 and 1.92 m.</i> Soft grey slightly organic CLAY with extremely closely spaced orangish brown silt partings and root traces. [ALLUVIUM]	
		2.40 - 2.60 2.40	ES PID	PID = 0 ppm	2.28	8.03	<i>infill from strata above between 2.00 and 2.34 m. dark grey organic from 2.20 to 2.28 m.</i> Firm dark brown to black clayey pseudo fibrous PEAT. [ALLUVIUM]	
				3.00	7.65		End of Borehole at 3.00m	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques 3. Single install with 50 mm pipe. Response zone from 0.50 m to 1.50 m.



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Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ3_WS2005

Project ID: GTS-19-250



WS2005 1 - 3



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535388.21 N191865.88
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ3_TP2011	Location Type TP	Level 10.38m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 - 0.50 0.40 - 0.50 0.40 - 0.50 0.40 0.50	B D ES PID ES	PID=0.00		10.38	Grass over Firm light brown slightly sandy gravelly CLAY. Gravel is subangular to subrounded brick, concrete, flint, glass and ceramics. Abundant rootlets to 0.30 m depth. [MADE GROUND] <u>rare inclusion of wire and hose between 0.60 and 0.70 m.</u>	
		1.50 - 1.60 1.50 - 1.60 1.50 - 1.60 1.50	B D ES PID	PID=0.10	1.40	8.98	Stiff dark grey slightly sandy CLAY. Sand is fine. [MADE GROUND] <u>rare boulders of concrete at 1.80 m.</u>	
					2.00		End of Trial Pit at 2.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	0.55		Stable	Not required	No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ3_TP2011

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Before excavation



2. Complete Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 01/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535380.15 N191971.91
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ3_TP2010	Location Type TP	Level 10.77m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.05	10.77		Grass over topsoil. [TOPSOIL]
		0.40 - 0.50 0.40 - 0.50 0.40 - 0.50 0.40	B D ES PID	PID=0.30		10.72		Light brown very sandy very silty GRAVEL. Gravel is subangular to subrounded flint, brick, ceramics, concrete. Sand is fine to coarse. [MADE GROUND]
								concrete cobble at 0.70 m.
					1.00	9.77		Large concrete obstruction approx. 1.0 m x 1.0 m x 0.30m (removed by excavator) [MADE GROUND]
		1.40 - 1.50 1.40 - 1.50 1.40 - 1.50 1.40	B D ES PID	PID=0.10	1.30	9.47		Stiff orange brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse flint. [ALLUVIUM]
		1.90 - 2.00 1.90 - 2.00 1.90 - 2.00 1.90	B D ES PID	PID=0.00	1.80	8.97		Stiff dark orange brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium flint. [KEMPTON PARK GRAVEL FORMATION]
					2.00			End of Trial Pit at 2.00m

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.00		Stable	Not required	No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging, 2. Concrete broken out between 1.0 -1.3 m 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision.



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GI_DZ3_TP2010

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Upper excavation



3. Complete excavation



4. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535395.38 N191982.16
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ3_TP2009	Location Type TP	Level 10.78m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	ES		0.05	10.78 10.73	Tarmac [MADE GROUND]	
		0.20 - 0.30	B	PID=0.30			Subgrade recovered as light brown sandy slightly silty GRAVEL. Gravel is subangular fine to coarse brick, concrete, tarmac. Sand is fine to coarse. Low cobble content of brick [MADE GROUND]	
		0.20 - 0.30	D					
		0.20 - 0.30	ES					
		0.20	PID					
		1.10 - 1.20	B	PID=0.40	1.00	9.78	Loose black GRAVEL. Gravel is medium possibly bitumen. Infrequent inclusions of plastic and wood [MADE GROUND]	
		1.10 - 1.20	D					
		1.10 - 1.20	ES					
		1.10	PID					
		1.40 - 1.50	B	PID=0.20	1.30	9.48	Firm light grey becoming light brown CLAY with occasional inclusions of brick. [MADE GROUND] <i>brick at 1.30 m.</i>	
		1.40 - 1.50	D					
		1.40 - 1.50	ES					
		1.40	PID					
		1.72	B	PID=0.20	1.65	9.13	Medium dense yellow brown silty sandy GRAVEL. Sand is fine to coarse. Gravel is subrounded fine to medium flint [KEMPTON PARK GRAVEL FORMATION]	
		1.72 - 1.85	B					
		1.75 - 1.85	D					
		1.75 - 1.85	ES					
		1.75	PID		2.00		End of Trial Pit at 2.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	0.40		Stable	Not required	No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Position floor sawed and concrete lifted out by JCB in sections 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision.



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GI_DZ3_TP2009

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Floor saw



2. Excavated pit



3. Arisings



4. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535341.78 N191842.94
Project No. : GTS-19-250	Crew Name:	Equipment: Vacuum Extraction Unit

Location Number GI_DZ3_TP2008	Location Type TP	Level 9.90m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.30 0.30 0.30	B ES PID	PID=0.00	0.40	9.90			
		0.70 0.70 0.70	B ES PID	PID=0.30		9.50			
		1.20 1.20 1.20	B ES PID	PID=0.70	1.00	8.90		1	
		1.70	B				<i>silty from 1.60 to 1.90 m.</i>		
	▼	2.10 2.10 2.10	D ES PID	PID=0.20	1.90 2.10	8.00		2	
End of Trial Pit at 2.10m									
								3	
								4	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.00	1.00		Stable		Groundwater seepage at 2.10 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ3_TP2008

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Prior to excavation



2. Excavation



3. Excavation base



4. Excavation side



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535303.86 N191852.01
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ3_TP2007	Location Type TP	Level 10.34m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.34		Grass over soft, dark brown, sandy, slightly gravelly clay topsoil. Gravel is angular to subrounded, fine to medium, flint, brick and metal. Sand is fine to coarse. Frequent rootlets. [TOPSOIL]		
		0.15			10.19				
		0.30	B				Greyish brown, fine to coarse very sandy gravel. Gravel is angular to subrounded, fine to coarse, flint, quartzite, brick, concrete, coal ash, metal and glass. Low cobble content of subangular to subrounded brick and concrete. Frequent lenses of sandy gravelly clay (<0.40m). [MADE GROUND]		
		0.30	ES	PID=1.20					
		0.30	PID						
		0.70	B				<i>thin concrete slab (0.10m-0.20m thick) at 0.30 m.</i>		
		0.70	B				<i>large pieces of railway track running width of pit at 0.70 m. Slight hydrocarbon odour.</i>		
		0.70	ES	PIC=83.50					
		0.70	PID		0.90	9.44	Soft blackish grey, sandy, slightly gravelly clay. Gravel is angular to subrounded, fine to medium, flint, quartzite and brick. Sand is fine to medium. [MADE GROUND]	1	
		1.00	B						
		1.00	ES	PID=0.00					
		1.00	PID						
		1.20				9.14	Soft to firm, greyish brown, slightly sandy, slightly gravelly clay. Gravel is subangular to subrounded, fine to coarse, flint, quartzite, brick, slate and concrete. Sand is fine to coarse. [MADE GROUND]		
		1.30	D						
		1.30	ES	PID=0.00					
		1.30	PID						
		1.50				8.84	Soft, orange brown mottled grey, very sandy, slightly gravelly CLAY. Gravel is angular to subangular, fine to medium, flint and quartzite. Frequent pockets of sand (<0.20m). [ALLUVIUM]		
		1.70	B						
		1.70	ES	PID=0.00					
		1.70	PID						
		1.90				8.44	Grey mottled brown, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	2	
		2.20	B						
		2.20	ES	PID=0.00					
		2.20	PID						
							End of Trial Pit at 2.20m		

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Unstable		Groundwater seepage at 2.10 m.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Position excavated in grass verge on car park edge 3. Trial pit terminated at 2.20 m due to instability. 4. Trial pit back filled with arising and compacted in 300 mm layers. 5. Trial pit excavated under archaeological supervision.



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GI_DZ3_TP2007

Project: Meridian Water HIF and
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1. Prior to excavation



2. Location prior to excavation



3. Railway track in pit wall



4. Complete excavation



GROUND TECHNOLOGY
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Project: Meridian Water HIF and
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Project ID: GTS-19-250



5. Base and groundwater



6. Excavation side



7. Spoil and excavation



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535494.98 N191838.84	
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT		Drilling Equipment: Hand Tools Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 1 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
								0.12 (10.04)	Asphalt: hard standing and concrete. [MADE GROUND]	
								0.15 (9.92)	Concrete sub base. [MADE GROUND]	
		0.50	ES	PID = 0 ppm					Greyish brown, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, brick, tile, concrete, glass, coal ash, flint and quartzite. [MADE GROUND]	
		0.50	PID							
		1.00	ES	PID = 3 ppm				0.85 (9.89)	Dark grey, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, coal ash, concrete, brick and flint. [MADE GROUND]	
		1.00 - 1.20	B							
		1.00	PID							
		1.20	B							
		1.20	B							
		1.40	D							
		1.50	D							
		1.50 - 2.00	B	N=11 (1,2/2,3,3,3)				1.65 (9.19)	Firm, grey mottled brown CLAY. Frequent buried rootlets and iron oxide staining. [ALLUVIUM]	
		1.50	SPT							
		2.00	ES	PID = 0 ppm						
		2.00	PID							
		2.25	D							
		2.50 - 2.95	UT							
		2.95 - 3.15	D	PID = 2 ppm				2.75 (8.39)	Medium dense multicoloured very sandy GRAVEL. Gravel is angular to rounded, fine to coarse flint and quartzite. Sand is fine to coarse [KEMPTON PARK GRAVEL FORMATION]	
		3.05	ES							
		3.05	PID							
		3.20	D							
		3.25	D							
		3.50 - 4.00	B	N=12 (2,2/3,3,3,3)						
		3.50	cSPT							
		4.20	D							
		4.25	D							
		4.50 - 5.00	B	N=29 (2,3/5,6,10,8)						
		4.50	cSPT							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
2.50	300	2.50	300										

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535494.98 N191838.84	
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT		Drilling Equipment: Hand Tools Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 2 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		5.25	D							Medium dense multicoloured very sandy GRAVEL. Gravel is angular to rounded, fine to coarse flint and quartzite. Sand is fine to coarse [KEMPTON PARK GRAVEL FORMATION]
		5.50 - 6.00 5.50	B cSPT	N=16 (3,2/3,4,4,5)						
		6.25	D							Stiff, fissured, dark grey, slightly sandy CLAY. Fissures are 5-10 degrees and randomly oriented extremely closely spaced, planar, rough and smooth. Occasional light grey fine sand / silt partings (<1 mm). [LONDON CLAY FORMATION]
		6.50 - 7.00 6.50	B cSPT	N=14 (2,3/3,5,3,3)						
		7.00 - 7.50	D							Stiff dark greyish brown slightly sandy CLAY with extremely to closely spaced light to dark grey silty sand. Impersistent laminae and partings (<1 mm). [LONDON CLAY FORMATION] <i>AZCL between 8.20 and 8.46 m.</i>
		7.25 7.25	ES PID	PID = 2 ppm						
		7.50 - 7.95	UT							<i>very stiff from 8.90 m.</i>
		7.95 - 8.15	D							
		8.20 - 9.45	C							<i>with occasional white forams and rare black lignite fragments (<20 mm) from 9.50 to 11.27 m.</i>
		8.66 - 8.90	CS		88					
		9.45 - 10.95 9.45	C SPT	N=24 (2,3/4,6,7,7)						<i>with rare iron pyrites nodules (<40 mm) between 9.81 and 11.27 m.</i>

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
8.15	200	8.15	200										

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535494.98 N191838.84
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT	Drilling Equipment: Hand Tools Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 3 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		10.55 - 10.80	CS							Stiff dark greyish brown slightly sandy CLAY with extremely to closely spaced light to dark grey silty sand. Impersistent laminae and partings (<1 mm). [LONDON CLAY FORMATION]
		10.95 - 12.45 10.95	C SPT	N=40 (3,4/7,9,10,14)						
		11.27 (1.84)								glauconitic laminae and partings between 11.20 and 11.27 m.
		11.87 - 12.05	CS							Dark brownish grey clayey SAND with very closely spaced stiff brown clay <20mm pockets. Sand fine and medium slightly glauconitic. [HARWICH FORMATION - SWANSCOMBE MEMBER] with white shell fragments (<10 mm) from 11.52 to 11.58 m.
		12.40 - 12.60 12.40 12.45 - 13.95 12.45	ES PID C SPT	PID = 1 ppm N=32 (3,4/6,9,8,9)						thinly to thickly laminated stiff brown clay with clayey sand laminae from 11.84 to 12.05 m. dark green glauconitic sand band from 12.03 to 12.08 m. gravelly between 12.08 and 12.17 m. Gravel is rounded medium and coarse black and white flint.
		13.24 - 13.49	CS							Very stiff fissured blueish grey occasionally mottled yellowish and reddish brown CLAY. Fissures 0-90 degrees extremely to closely spaced planar to undulating polished tight clean. [LAMBETH GROUP - UPPER MOTTLED CLAY] mottled reddish brown from 12.48 to 12.63 m.
		13.95 - 15.45 13.95	C SPT	N=29 (2,3/6,7,7,9)						
		14.67 14.67 - 14.89	CS CS							grey occasionally mottled yellowish and reddish brown from 14.06 to 14.83 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535494.98 N191838.84
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT	Drilling Equipment: Hand Tools Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 4 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		15.45 - 16.95 15.45	C SPT	N=50 (4,7/9 12,14,15)					15.02 (-2.13)	Very stiff fissured blueish grey occasionally mottled yellowish and reddish brown CLAY. Fissures 0-90 degrees extremely to closely spaced planar to undulating polished tight clean. [LAMBETH GROUP - UPPER MOTTLED CLAY]	16
					87				16.32 (-4.98)	Very stiff light blueish grey occasionally mottled reddish and yellowish brown slightly sandy CLAY. [LAMBETH GROUP - LOWER MOTTLED CLAY] <i>sandy from 16.54 to 17.77 m. mottled from 16.73 to 17.27 m.</i>	
		16.95 - 18.45 16.95	C SPT	N=50 (4,9/50 for 160mm)						AZCL between 16.95 and 17.24 m. <i>light grey from 17.27 to 17.77 m.</i>	17
		17.77 (-6.28)			93					Light grey clayey SAND. Sand fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY] <i>sandy clay band from 18.17 to 18.24 m.</i>	18
		18.45 - 19.95 18.45	C SPT	N=50 (4,8/50 for 85mm)						AZCL between 18.45 and 18.60 m. <i>with pockets of (<170 mm) very stiff fissured dark grey clay and slightly sandy clay between 18.7 and 19.04 m. Probably transition beds towards underlying Upnor Formation. grey sandy clay band from 19.04 to 19.13 m. grey silty sand from 19.13 to 19.45 m.</i>	19
		19.45 (-7.73)			87					Dark brownish grey silty SAND with closely spaced burrows (<10 mm) infilled with stiff dark grey clay. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>NI and with stiff dark grey Clay <10mm laminae from 19.83 to 19.92 m.</i>	20
		19.95 (-9.41)	ES PID	PID = 0 ppm						[LAMBETH GROUP - UPNOR FORMATION] AZCL between 19.95 and 20.60 m.	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535494.98 N191838.84
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT	Drilling Equipment: Hand Tools Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 5 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
[Redacted]	[Redacted]	19.95	SPT	N=42 (25 for 101mm/13,7,10,12)	53			[Pattern]	20.60 (-9.91)	[LAMBETH GROUP - UPNOR FORMATION] Recovered as black GRAVEL. Gravel angular to rounded fine to coarse flint. [LAMBETH GROUP - UPNOR FORMATION]
		20.84 (-10.56)	Dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with very stiff dark grey clay and light grey sand. Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>thinly interlaminated with stiff clay from 20.84 to 21.03 m.</i> <i>black 20mm lignite fragment at 21.08 m.</i>							
		21.81 (-10.80)	<i>gravelly from 21.78 to 21.81 m. Gravel angular to rounded medium to coarse flint.</i> Stiff indistinctly thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION]							
		21.45 - 22.95	C		100			[Pattern]	22.75 (-11.77)	Dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with very stiff dark grey clay and light grey sand. Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION]
		22.95 - 24.45 22.95	C SPT	N=50 (4,7/9,11,12,18)	100			[Pattern]	23.05 (-12.71)	Very stiff thinly to thickly laminated dark brownish grey CLAY with laminae (<10 mm) of dark to light grey silty sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION] <i>interlaminated from 23.47 to 23.85 m.</i> <i>light brown clay lamina from 23.49 to 23.50 m.</i>
		24.45 - 25.95	C					[Pattern]	24.45 (-13.01)	[LAMBETH GROUP - UPNOR FORMATION] <i>AZCL between 24.45 and 25.16 m.</i>
		25.00	EW							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

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Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535494.98 N191838.84	
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT		Drilling Equipment: Hand Tools Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 6 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		25.00 25.00 25.00	EW EW EW						25.16 (-14.41)	[LAMBETH GROUP - UPNOR FORMATION] Recovered as dark brownish grey sandy clayey GRAVEL with stiff clay laminae (<10 mm) fragments. Sand fine and medium. Gravel subrounded and rounded fine to coarse flint.	
		25.70 - 25.90 25.70	ES PID	PID = 44 ppm	53				25.51 (-15.12)	[LAMBETH GROUP - UPNOR FORMATION] Dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium.	
		25.95 - 27.45 25.95	C SPT	N=53 (25 for 125mm/50 for 122mm)					25.95 (-15.47)	[THANET SAND FORMATION] AZCL between 25.95 and 26.50 m.	26
		26.47	EW						26.50 (-15.91)	Dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium.	
		26.70	EW		73					[THANET SAND FORMATION]	27
		27.45 - 28.95	C							AZCL between 27.45 and 27.63 m. black sandy silt lamina (5 mm) at 27.77 m.	28
		28.95 - 30.45 28.95	C SPT	N=53 (25 for 85mm/50 for 115mm)						AZCL between 28.95 and 29.10 m.	29
					87						
					93					firm sandy clay lamina (2 mm) at 29.65 m.	30

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535494.98 N191838.84
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT	Drilling Equipment: Hand Tools Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 7 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		30.45 - 31.95	C					X		Dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]	
							100		31		
		31.95 - 33.45 31.95	C SPT	N=50 (8,12/50 for 215mm)					100		32
											33
		33.45 - 34.95	C							AZCL between 33.45 and 33.67 m.	
										34	
		34.95 - 36.45	C							AZCL between 34.95 and 35.05 m. Bullhead Beds not present.	
										35	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 16/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535494.98 N191838.84	
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT		Drilling Equipment: Hand Tools Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND	Scale 1:25	Page Number Sheet 8 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
[Well Diagram]		34.95	SPT	N=50 (5,6/50 for 95mm)					35.05 (-16.46)	Dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		35.05 - 35.25 35.05	ES PID	PID = 5 ppm					35.40 (-25.01)	
		36.45 - 37.95 36.45	C SPT	N=48 (4,8/12,10,13,13)	27				36.45 (-25.36)	fragmented large flint between 35.05 and 35.15 m. FINI between 35.05 and 35.40 m. fragmented very large flint between 35.25 and 35.40 m. [WHITE CHALK SUBGROUP]
		37.40 - 37.65	CS		100	99	96			AZCL between 35.40 and 36.45 m. Flint scrubbed.
		37.95 - 39.45 37.95	C SPT	N=50 (7,15/50 for 287mm)						Very weak medium density white CHALK with light gray mottling. Fractures 0-90 degrees very closely to medium spaced (NI/160/460) planar to undulating smooth tight and clean. CIRIA Grade A3 [WHITE CHALK SUBGROUP]
		38.50 38.50 38.61 - 38.81	EW EW CS		93	77	72			DINI - SPT disturbance from 36.45 to 36.87 m. probable black sponge bed between 36.79 and 36.81 m. NP=17mm. black sponge bed from 36.95 to 36.98 m. very small finger flints between 37.00 and 37.36 m. NP=16mm.
	39.45 - 41.00 39.45	C SPT	N=50 (3,11/50 for 285mm)						AZCL between 37.95 and 38.10 m. DINI - SPT disturbance between 38.10 and 38.38 m. fragmented small flint at 38.32	
										NP=15mm. pseudo flint at 38.71 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535494.98 N191838.84
Project No. : GTS-19-250		Crew Name: RF / JT+RF+JT	Drilling Equipment: Hand Tools Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2007	Hole Type CP+RC	Level 10.04m AOD	Logged By AM / ND
		Scale 1:25	Page Number Sheet 9 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		40.66 - 40.87	CS		97				41.00 (-26.41)	Very weak medium density white CHALK with light gray mottling. Fractures 0-90 degrees very closely to medium spaced (NI/160/460) planar to undulating smooth tight and clean. CIRIA Grade A3 [WHITE CHALK SUBGROUP]
										End of Borehole at 41.00m

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
								8.20	41.00	Water Polymer	0	0	

Remarks
 1. Position CAT scanned, concrete cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 1.50 m to 2.50 m, from 6.20 m to 8.20 m and from 19.45 to 21.45. 5. Rotary follow on from 8.20 m. 6. Single install with 50 mm pipe. Response zone from 36.00 m to 41.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 8.2 - 9.45



2007 9.45 - 10.95



2007 10.95 - 12.45



2007 12.45 - 13.95



GROUND TECHNOLOGY
 Victory Park, Attleborough
 Norfolk, NR17 1ZA
 Tel: 01953 459462

Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
 Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 13.95 - 15.45



2007 15.45 - 16.95



2007 16.95 - 18.45



2007 18.45 - 19.95



GROUND TECHNOLOGY
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Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 19.95 - 21.45



2007 21.45 - 22.95



2007 22.95 - 22.45



2007 22.95 - 24.45



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Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
 Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 24.45 - 22.95



2007 25.95 - 27.45



2007 27.45 - 28.95



2007 28.95 - 30.45



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Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
 Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 30.45 - 31.95



2007 31.95 - 33.45



2007 33.45 - 34.95



2007 34.95 - 36.45



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Photographic Report

GI_DZ3_BH2007

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2007 36.45 - 37.95



2007 37.95 - 39.45



2007 39.45 - 41



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 15/07/2021 - 21/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535468.74 N191830.50	
Project No. : GTS-19-250		Crew Name: NC		Drilling Equipment: Hand Tools JCB 3CX Dando 2000	
Borehole Number GI_DZ3_BH2006	Hole Type CP	Level 10.01m AOD	Logged By TB / AM	Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00	ES	PID = 0 ppm	0.09	10.01	Tarmac [MADE GROUND]	
		0.00	PID					
		0.09	ES					
		0.40	B	PID = 6 ppm			Light brown very gravelly SAND. Gravel is sub-rounded to sub-angular, fine to coarse of flint, brick, concrete, tarmac. [MADE GROUND]	
		0.40	D					
		0.40	ES					
		0.40	PID					
					1.15	9.92	Concrete obstruction across full area of pit base - breaker used to remove. [MADE GROUND]	
					1.30	8.86	Dark blackish brown very gravelly SAND. Gravel is sub-rounded to sub-angular, fine to coarse of flint, brick, concrete, tarmac and clinker. [MADE GROUND]	
					1.60	8.71	Firm, dark grey silty CLAY. Possible hydrocarbon odour near top of unit. [ALLUVIUM]	
		1.80	B	PID = 1 ppm	2.00	8.41	Soft, greenish grey mottled brown, slightly gravelly slightly sandy CLAY. Gravel is angular to subangular, fine to medium, flint and quartzite. [ALLUVIUM]	
		1.80	ES					
		1.80	PID					
		2.00 - 2.50	B					
		2.50	ES	PID = 1 ppm			Soft, grey, sandy CLAY. Sand is fine to medium. Frequent decaying roots (<5mm) and rootlets. 1no. peat inclusion (<10mm). [ALLUVIUM]	
		2.50 - 2.95	UT					
		2.50 - 3.20	B					
		2.50 - 3.20	D					
		2.50	PID	N=16 (6,4/4,4,3,5)	3.60	7.06	Medium dense multicoloured very sandy silty GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		2.95 - 3.10	D					
		3.00	ES					
		3.00	PID					
		3.20 - 4.20	B	PID = 0 ppm				
		3.50	cSPT					
		4.00	ES					
		4.00 - 4.20	D					
		4.00	PID	N=18 (1,1/5,5,5,3)				
		4.20 - 5.20	B					
		4.50	EW					
		4.50	EW					
		4.50	cSPT	EW				
		4.90	EW					
		4.92	EW					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.50	200	2.50	200								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found in base of pit - JCB used to remove obstruction. Trial pit dug to 2.00 m and backfilled. 3. Hole completed using cable percussive techniques through the backfilled trial pit into the top of the London Clay Formation. 3. Environmental seal installed from 2.00 m to 2.50 m. 4. Dual install with 50 mm pipe. Response zones from 0.50 m to 2.00 m and from 3.60 m to 7.00 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 15/07/2021 - 21/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535468.74 N191830.50
Project No. : GTS-19-250		Crew Name: NC	Drilling Equipment: Hand Tools JCB 3CX Dando 2000
Borehole Number GI_DZ3_BH2006	Hole Type CP	Level 10.01m AOD	Logged By TB / AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.00	EW		7.00	6.41		Medium dense multicoloured very sandy silty GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	6
		5.00 - 5.20	D						
		5.20 - 6.20	B						
		5.40	cSPT	N=12 (4,4/3,3,3,3)					
		5.60	EW						
		5.60	EW						
		6.00 - 6.20	D						
		6.20 - 7.00	B						
		6.40	cSPT	N=15 (5,3/3,4,4,4)					
		6.80 - 7.00	D						
		7.00	D						
		7.00 - 8.00	B						
	7.30	ES							
	7.30	PID	PID = 4 ppm						
	7.80 - 8.00	D							
	8.00	UT							
	8.00 - 8.45	U							
	8.45 - 8.60	D							
				8.60	3.01			End of Borehole at 8.60m	9

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
8.60	150	7.00	150								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found in base of pit - JCB used to remove obstruction. Trial pit dug to 2.00 m and backfilled. 3. Hole completed using cable percussive techniques through the backfilled trial pit into the top of the London Clay Formation. 3. Environmental seal installed from 2.00 m to 2.50 m. 4. Dual install with 50 mm pipe. Response zones from 0.50 m to 2.00 m and from 3.60 m to 7.00 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 03/08/2021 - 04/08/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535410.97 N191829.38
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: Dando 2000 Hand Tools
Borehole Number GI_DZ3_BH2005	Hole Type CP	Level 9.99m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 1.00	B		0.10	9.99	Concrete core with tarmac running surface [MADE GROUND]		
		0.20	ES		0.40	9.89	Greyish brown very sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint brick and concrete. [MADE GROUND]		
		0.20	PID	PID = 0 ppm					
		0.50	ES		0.80 - 1.00	9.59	Soft varying to firm dark greyish brown to brown slightly sandy slightly gravelly CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse flint brick and clinker. [MADE GROUND]		
		0.50	PID	PID = 0 ppm					
		1.00 - 2.00	B		1.20	8.79	Firm grey mottled brown slightly organic CLAY with frequent orangish brown silt partings. [ALLUVIUM]		
		1.20 - 1.65	D						
		1.20	SPT	N=4 (1,1/1,1,1,1)					
		1.30	ES						
		1.30	PID	PID = 0 ppm					
		1.80 - 2.00	D		2.60	8.79	firm dark brown clayey amorphous peat bed between 2.40 and 2.60 m.		
		2.00 - 3.00	B						
		2.40	ES						
		2.40 - 2.85	D						
		2.40	SPT	N=21 (1,2/4,5,6,6)					
	2.40	PID	PID = 0 ppm						
	2.80 - 3.00	D		3.00	3.00	Medium dense dark brownish grey slightly sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION]			
	3.00 - 4.00	B							
	3.00	ES							
	3.00 - 4.00	PID	PID = 0 ppm						
	3.30	cSPT	N=9 (3,2/2,2,2,3)						
	3.80 - 4.00	D		4.80	4.80				
	4.00	EW							
	4.00	EW							
	4.00 - 5.00	B							
	4.20	cSPT	N=11 (2,2/2,3,3,3)						
	4.80	EW							
	4.80	EW							
	4.80 - 5.00	D							
	5.00	EW							

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.40	250	2.40	250								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 1.60 m to 2.60 m. 4. Single install with 50 mm pipe. Response zone from 2.70 m to 7.30 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 03/08/2021 - 04/08/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535410.97 N191829.38
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: Dando 2000 Hand Tools
Borehole Number GI_DZ3_BH2005	Hole Type CP	Level 9.99m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00	EW		6.80	7.39		Medium dense dark brownish grey slightly sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint occasional quartz. [KEMPTON PARK GRAVEL FORMATION] <i>loose from 5.30 m</i>
		5.00 - 6.00	B					
		5.30	cSPT	N=7 (1,1/1,2,2,2)				
		5.50	EW					
		5.50	EW					
		5.80 - 6.00	D					
		6.00 - 7.00	B					
		6.30	cSPT	N=6 (1,1/1,1,2,2)				
		6.80 - 7.00	D					
		7.00 - 8.00	B					
	7.60	ES		6.80	7.39		Firm dark greyish brown CLAY.. [LONDON CLAY FORMATION]	
	7.60	PID	PID = 0 ppm					
	7.80 - 8.00	D						
	8.30 - 8.75	UT						
	8.75 - 8.85	D		8.85	3.19			End of Borehole at 8.85m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
8.40	200	8.00	200								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seal installed from 1.60 m to 2.60 m. 4. Single install with 50 mm pipe. Response zone from 2.70 m to 7.30 m.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 30/06/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535268.16 N191865.61	
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH		Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 1 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		0.22 - 0.30	B							Tarmac over concrete [MADE GROUND]
		0.22 - 0.30	D						0.22 (10.29)	Brown slightly silty GRAVEL subangular to subrounded fine to coarse concrete, brick, flint and type 1 gravel [MADE GROUND]
		0.22 - 0.30	ES						0.30 (10.07)	
		0.22	PID	PID = 0 ppm						
		0.30 - 0.60	B							Grey slightly sandy slightly silty GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint, brick, concrete, type 1, rebar and disused pipes. [MADE GROUND]
		0.30 - 0.60	D						0.60 (9.99)	
		0.50 - 0.60	B							
		0.50 - 0.60	D							
		0.50 - 0.60	ES							
		0.50	PID	PID = 0 ppm						
		0.60 - 0.80	B							Greish brown slightly sandy GRAVEL. Sand is fine to medium. Gravel is subangular to subrounded fine to coarse flint, brick, concrete, type 1, rebar and disused pipes and empty fuel container. [MADE GROUND]
		0.60 - 0.80	D							
		0.70 - 0.80	ES							
		0.70	PID	PID = 1 ppm						
		0.80 - 1.20	B							greyish red brown at 0.80 m. concrete slab at 0.90 m.
		0.80 - 1.20	D							
		1.00 - 1.10	ES							
		1.00	PID	PID = 0 ppm						
		1.20 - 1.50	B							boulders of concrete, waste plastic pipes, covers, terracotta tiles and plastic bags from 1.30 to 1.50 m.
		1.20 - 1.50	D						1.50 (9.69)	
		1.40	ES							
		1.40	PID	PID = 0 ppm						
		1.50	ES							
		1.50 - 1.60	B							Reddish brown very sandy GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]
		1.50 - 1.60	D							
		1.50	PID	PID = 0 ppm						
		1.60 - 2.20	B							
		1.60 - 2.20	D							
		1.90	ES							
		1.90	PID	PID = 0 ppm						
		2.20 - 3.20	B							Dense yellow brown very sandy GRAVEL to very gravelly SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. [KEMPTON PARK GRAVEL FORMATION]
		2.30 - 2.75	D						2.50 (8.79)	
		2.30	SPT	N=48 (5,6/5,12,15,16)						
		2.50	ES							
		2.50	PID	PID = 0 ppm						
		3.20 - 3.65	D							
		3.20 - 4.20	B							
		3.20	SPT	N=36 (4,5/7,8,9,12)						
		3.70 - 4.20	D							
		4.20 - 4.65	D							Low cobble content of flint between 4.20 and 5.20 m.
		4.20 - 5.20	B							
		4.20	SPT	N=35 (5,7/8,9,10,8)						
		4.70 - 5.20	D							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
3.50	250	3.50	250										

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535268.16 N191865.61
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH	Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 2 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
1		5.20 - 5.65 5.20 - 6.20 5.20 - 6.20 5.20	D B D SPT	N=26 (5,4/5,7,7,7)						Dense yellow brown very sandy GRAVEL to very gravelly SAND. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of flint. [KEMPTON PARK GRAVEL FORMATION] <i>medium dense from 5.20 m.</i>
		6.20 - 6.70 6.20 - 6.70	B D							
		6.70 - 7.50 6.70 - 7.50 6.70	B D SPT	N=7 (1,0/1,2,2,2)						<i>loose between 6.70 and 7.15 m.</i>
		7.15	SPT	N=14 (1,0/3,4,3,4)						
		7.50 - 7.90 7.50 - 7.95	D B						7.50 (7.79)	Greyish brown very sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]
		7.95 - 8.20 7.95 - 8.25	B D						7.95 (2.79)	Very stiff laminated dark brown slightly sandy CLAY with very closely spaced silty sand laminae (<1 mm). Sand is fine. [LONDON CLAY FORMATION]
		8.20 - 8.65 8.30 8.30	UT ES PID	PID = 0 ppm						
		8.65 - 8.85 8.85	D SPT	N=21 (2,2/4,5,5,7)						
		9.30 - 9.49 9.30 - 9.95	CS C						9.60 (2.34)	Stiff thinly laminated brownish grey sandy and slightly shelly locally glauconitic CLAY with occasional angular and rounded medium and coarse black gravel. Sand is fine to medium. [HARWICH FORMATION - SWANSCOMBE MEMBER] <i>glauconitic sand from 9.76 to 9.82 m. clay bed with fine to coarse rounded flint gravel between 9.82 and 9.90 m.</i>
		9.95 - 11.35	C							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
9.30	200	9.30	200										

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535268.16 N191865.61
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH	Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 3 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		9.95	SPT	N=50 (4,5/50 for 247mm)						Stiff thinly laminated brownish grey sandy and slightly shelly locally glauconitic CLAY with occasional angular and rounded medium and coarse black gravel. Sand is fine to medium. [HARWICH FORMATION - SWANSCOMBE MEMBER] <i>shell fragments between 10.03 and 10.07 m.</i>
		10.30 - 10.55 10.30	ES PID	PID = 7 ppm						
					64					
		10.92 (0.69) 11.00 (-0.63) 11.10 (-0.71)								Fine to medium very dark greenish grey and black SAND with abundant shelly fragments. [HARWICH FORMATION - SWANSCOMBE MEMBER]
		11.35 - 12.95 11.35	C SPT	N=26 (2,3/5,6,7,8)						Brownish grey clayey SAND, with a thin basal gravel bed from 11.08 m. Gravel is rounded medium black flint. [HARWICH FORMATION - SWANSCOMBE MEMBER]
		11.96 - 12.16 11.96	ES PID	PID = 4 ppm						Stiff bluish grey mottled red purple and occasionally orange CLAY. [LAMBETH GROUP - UPPER MOTTLED CLAY] <i>AZCL across SPT interval between 11.35 and 11.80 m.</i>
		12.55 - 12.78	CS							
		12.95 - 14.45 12.95	C SPT	N=32 (2,4/6,8,10,8)						
					107					
		14.22 (-0.81)								Firm bluish grey mottled red and orange sandy CLAY with rare small pebbles. [LAMBETH GROUP - UPPER MOTTLED CLAY] <i>AZCL between 14.45 and 14.55 m.</i>
		14.45 - 15.95 14.45	C SPT	N=50 (4,10/50 for 210mm)						
		15.00	D							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535268.16 N191865.61
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH	Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 4 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		15.60 - 15.80	CS							Firm bluish grey mottled red and orange sandy CLAY with rare small pebbles. [LAMBETH GROUP - UPPER MOTTLED CLAY] <u>gravel of fine rounded flint between 15.12 and 15.14 m.</u> AZCL between 15.35 and 15.95 m.
		15.95 - 16.95 15.95	C SPT	N=50 (6,11/50 for 161mm)						
		16.60 - 18.45 16.95	C SPT	N=50 (7,9/50 for 150mm)					16.60 (-3.93)	Very dense fine light grey clayey SAND with black organic rich intervals up to 200mm thick. [LAMBETH GROUP - LOWER MOTTLED CLAY] <u>stiff very sandy clay band from 16.60 to 16.80 m.</u> <u>dark grey organic sandy CLAY at 16.80 m.</u> <u>poor recovery between 16.95 and 18.45 m.</u> <u>SPT void in core indicates recovered core is from top of run.</u>
		18.45 - 19.45 18.45	C SPT	N=50 (6,13/50 for 217mm)						
		18.20 - 18.22								<u>gravelly from 18.20 to 18.22 m. Gravel is fine to medium angular to rounded flint.</u> AZCL between 18.45 and 19.30 m.
		19.45 - 20.35 19.45	C SPT	N=50 (15 for 90mm/50 for 131mm)					19.45 (-6.31)	<u>gravelly from 19.30 to 19.45 m. Gravel is fine to medium subrounded flint.</u> Stiff thinly laminated bluish grey mottled red purple sandy CLAY. [LAMBETH GROUP - LOWER MOTTLED CLAY] AZCL from 19.45 to 20.25 m. Very poor recovery.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
19.40	176	19.40	176										

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 30/06/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535268.16 N191865.61	
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH		Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 5 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
█	█	20.35 - 21.55	C						21	Stiff thinly laminated bluish grey mottled red purple sandy CLAY. [LAMBETH GROUP - LOWER MOTTLED CLAY] AZCL from 20.35 to 21.15 m. Very poor recovery.	
									21.15 (-9.16)	Firm bluish grey mottled orange sandy CLAY with rare small pebbles. [LAMBETH GROUP - LOWER MOTTLED CLAY]	
									21.40 (-10.86)	Very stiff laminated dark grey CLAY with closely spaced clayey sand beds up to 40mm thick and rare shell fragments. Sand is fine. [LAMBETH GROUP - UPNOR FORMATION] pebble bed from 21.40 to 21.75 m. Medium and coarse gravel rounded black flints.	
		21.55 - 22.85	C						22		
		22.85 - 24.35 22.85	C SPT	N=50 (5,6/50 for 255mm)					23		
		23.90 - 24.15	CS						24		
								25			
		24.35 - 25.85	C								
		25.00	EW								

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 30/06/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535268.16 N191865.61	
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH		Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 6 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		25.00 25.00 25.06 - 25.22	EW EW CS							Very stiff laminated dark grey CLAY with closely spaced clayey sand beds up to 40mm thick and rare shell fragments. Sand is fine. [LAMBETH GROUP - UPNOR FORMATION]
		25.85 - 27.35 25.65	C SPT	N=50 (25 for 95mm/50 for 137mm)	53				25.82 (-11.11)	pebble bed from 25.67 to 25.82. Medium and coarse gravel subrounded black flints. Very dense dark greenish grey silty SAND with extremely to closely spaced black sandy silt partings and pockets (<10 mm). Sand fine and medium. [THANET SAND FORMATION] No recovery between 25.85 and 27.35 m.
		26.48	EW		0					
		27.25 27.35 - 27.60 27.35 - 28.85 27.35	PID ES C SPT	PID = 12 ppm N=50 (25 for 100mm/50 for 90mm)						
		28.00	EW		67					
		28.60 - 28.85 28.85 - 30.35	CS C							
		30.00 - 30.22	CS		100					

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 30/06/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535268.16 N191865.61	
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH		Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 7 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		30.35 - 31.85 30.35	C SPT	N=53 (25 for 85mm/50 for 125mm)				[Pattern]	31	Very dense dark greenish grey silty SAND with extremely to closely spaced black sandy silt partings and pockets (<10 mm). Sand fine and medium. [THANET SAND FORMATION]
		30.65 - 30.88	CS							
		31.85 - 33.35 32.00 - 32.25	C CS					[Pattern]	32	
		33.35 - 34.85 33.35	C SPT	N=50 (6,9/50 for 158mm)				[Pattern]	33	
		33.87 - 34.10	CS							
		34.85 - 35.07 34.85 - 36.35	ES C					[Pattern]	34	medium coarse gravel to cobble sized glauconite coated black occasionally brown subrounded flints from 34.45 to 34.60 m. Bullhead beds.
								[Pattern]	34.60 (-15.53)	Very weak medium density white CHALK with light grey mottled burrowing at the top. Fractures medium spaced, tight clean and unstained. CIRIA Grade B3. [WHITE CHALK SUBGROUP] DINI from 34.60 to 35.35 m.
								[Pattern]	35	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 30/06/2021 - 16/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535268.16 N191865.61
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH	Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND
		Scale 1:25	Page Number Sheet 8 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		34.85	SPT	N=48 (3,5/10,10,11,17) PID = 0 ppm						Very weak medium density white CHALK with light gray mottled burrowing at the top. Fractures medium spaced, tight clean and unstained. CIRIA Grade B3. [WHITE CHALK SUBGROUP] AZCL between 35.35 and 36.35 m.
		34.85 35.00 35.00	PID EW EW		33					
		36.35 - 37.85 36.35	C SPT	N=39 (6,5/9 10, 10, 10)						fragmented nodular large flint between 36.35 and 36.46 m. DINI from 36.55 to 35.58 m. NP=21mm. fragmented large flint between 36.69 and 36.72 m. DIF between 36.86 and 36.94 m. DINI between 36.98 and 37.20 m.
		37.10 - 37.45	CS		93	93	68			Natural fracture 30 degrees partly open and infilled with calcite between 37.24 and 37.27 m. DINI between 37.43 and 37.46 m. coarse gravel sized flints from 37.60 to 37.64 m.
		37.85 - 38.65 37.85	C SPT	N=28 (4,5/6,6,7,9)						putty chalk due to SPT disturbance between 37.85 and 38.34 m.
		38.34 - 38.48	CS		53	9	9			
		38.65 - 39.35	C							DINI between 38.48 and 38.65 m with cobble flint at base. AZCL between 38.65 and 39.35 m. Flint cobble stuck in catcher, rest of run assumed scrubbed out.
		39.35 - 40.85 39.35	C SPT	N=48 (4,7/7,11,11,19)	0					
										putty chalk due to SPT disturbance between 39.35 and 39.80 m. medium flint at 39.95 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 30/06/2021 - 16/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535268.16 N191865.61	
Project No. : GTS-19-250		Crew Name: NC / MH+NC+MH		Drilling Equipment: Hand Tools JCB 3CX Dando 2000 Commachio 405	
Borehole Number GI_DZ3_BH2004	Hole Type CP+RC	Level 10.29m AOD	Logged By JF / ND	Scale 1:25	Page Number Sheet 9 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		40.26 - 40.44	CS		83	65	26		41	Very weak medium density white CHALK with light gray mottled burrowing at the top. Fractures medium spaced, tight clean and unstained. CIRIA Grade B3. [WHITE CHALK SUBGROUP] NP=24mm. small fragmented flints between 40.27 and 40.32 m.
		40.85	SPT	N=50 (4,6/50 for 235mm)					41.29 (-24.31)	End of Borehole at 41.29m
									42	
									43	
									44	
									45	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
40.85	146							9.30	40.85	Water Polymer	0	0	

Remarks
 1. CAT scan performed and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole commenced using cable percussive techniques. Unable to install casing due to obstructions. 3. Trial pit excavated using JCB to 2.00 m to clear concrete rubble and obstructions. 4. Cable percussive drilling commenced through backfilled trial pit to 8.20 m. Borehole not progressed further with cable percussive techniques due to rig fault. 5. Environmental seals installed from 7.30 m to 8.20 m and 17.40 to 19.40 m. 6. Rotary follow on from 8.20 m. 7. Single install with 50 mm ppe. Response zone from 35.00 m to 41.00 m. 8. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



GROUND TECHNOLOGY
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Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

GI_DZ3_BH2004

Project: Meridian HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2004 9.3 - 11.2



2004 11.35 - 12.95



2004 12.95 - 14.45



2004 14.45 - 15.95



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Photographic Report

GI_DZ3_BH2004

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2004 15.95 - 16.95



2004 16.95 - 18.45



2004 18.45 - 19.45



2004 19.45 - 20.35



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Photographic Report

GI_DZ3_BH2004

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Project ID: GTS-19-250



2004 20.35 - 21.55



2004 21.55 - 22.85



2004 22.85 - 24.35



2004 24.35 - 25.85



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Photographic Report

GI_DZ3_BH2004

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2004 25.85 - 27.35



2004 27.35 - 28.85



2004 28.85 - 30.35



2004 30.35 - 31.85



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Photographic Report

GI_DZ3_BH2004

Project: Meridian Water HIF and
 Infrastructure Ground Investigation

Project ID: GTS-19-250



2004 31.85 - 33.35



2004 33.35 - 34.85



2004 34.85 - 36.35



2004 36.35 - 37.85



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ3_BH2004

Project ID: GTS-19-250



2004 37.85 - 38.65



2004 39.35 - 40.85



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 22/07/2021 - 27/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535184.59 N191870.31	
Project No. : GTS-19-250		Crew Name: GH		Drilling Equipment: Hand Tools Dando 2000	
Borehole Number GI_DZ3_BH2003	Hole Type CP	Level 10.47m AOD	Logged By	Scale 1:25	Page Number Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 1.00	B		0.20	10.47		Topsoil [MADE GROUND]
		0.20	ES PID	PID = 0 ppm				
		0.50	ES PID	PID = 2 ppm				
		0.80	ES D					
		0.80 - 1.00	PID	PID = 1 ppm				
		1.00 - 2.00	B					
		1.20	cSPT	N=7 (1,2/3,1,1,2)	1.20	10.27		Dark brown, very clayey, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick and concrete. [MADE GROUND]
		1.60	ES PID	PID = 0 ppm	1.60	9.27		Soft light brown, sandy, gravelly clay. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick and concrete. Sand is fine to coarse. [MADE GROUND]
		1.80 - 2.00	D					
		2.00 - 3.00	B		2.00	8.87		Medium dense light orangish brown very sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse, flint and quartz. [KEMPTON PARK GRAVEL FORMATION]
		2.20 - 2.65	D					
		2.20	SPT	N=17 (2,3/3,3,5,6)				
		2.30	ES					
		2.30	PID	PID = 0 ppm				
		2.80 - 3.00	D					
	3.00 - 4.00	B						
	3.20	cSPT	N=30 (6,6/8,8,7,7)					
	3.80 - 4.00	D						
	3.80 - 4.00	D						
	4.00 - 5.00	B		4.00	8.47		Medium dense greyish brown very sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse, flint and quartz. [KEMPTON PARK GRAVEL FORMATION]	
	4.00 - 5.00	B						
	4.20	cSPT	N=21 (3,3/5,5,5,6)					
	4.50	EW						
	4.50	EW						
	4.50	EW						
	4.50	EW						
	4.50	EW						
	4.80	ES						
	4.80 - 5.00	D						
	4.80 - 5.00	D					<i>black hydrocarbon staining and odour between 4.80 and 7.20 m.</i>	

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		2.00	250								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Dual install with 50 mm pipe. Response zones from 0.5 m to 1.50 m and from 2.00 m to 8.10 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/07/2021 - 27/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535184.59 N191870.31
Project No. : GTS-19-250		Crew Name: GH	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ3_BH2003	Hole Type CP	Level 10.47m AOD	Logged By
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		4.80	PID	PID = 3 ppm	7.60	6.47		Medium dense greyish brown very sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse, flint and quartz. [KEMPTON PARK GRAVEL FORMATION]	6
		5.00 - 6.00	B						
		5.00 - 6.00	B						
		5.20	cSPT	N=22 (2,4/4,6,6,6)					
		5.80 - 6.00	D						
		5.80 - 6.00	D						
		6.00	EW						
		6.00 - 7.00	B						
		6.00 - 7.00	B						
		6.10	EW						
	6.10	EW							
	6.20	cSPT	N=22 (3,4/5,5,6,6)						
	6.80 - 7.00	D							
	6.80 - 7.00	D							
	7.00 - 8.00	B							
	7.20	ES							
	7.20	cSPT	N=22 (4,4/5,5,6,6)						
	7.20	PID	PID = 106 ppm						
							<i>hydrocarbon sheen and odour at 7.20 m.</i>		
	7.80 - 8.00	D							
	7.90	ES							
	7.90	PID	PID = 568 ppm						
	8.20 - 8.65	U							
	8.65 - 8.75	D							
				8.75	2.87		Very stiff laminated dark greyish brown slightly sandy CLAY with very closely spaced silty sand laminae (<1 mm). Sand is fine. [LONDON CLAY FORMATION]	8	
							End of Borehole at 8.75m	9	
								10	

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		8.00	200								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the top of the London Clay Formation. 3. Dual install with 50 mm pipe. Response zones from 0.5 m to 1.50 m and from 2.00 m to 8.10 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535444.80 N191626.52
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Archway Dart
Borehole Number GI_DZ2_WS2009	Hole Type WS	Level 11.04m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.10 - 1.30 1.10 1.20 - 2.00	ES PID L	PID = 0 ppm				Light brown gravelly slight clayey varying to clayey SAND. Sand fine to coarse. Gravel angular to rounded brick concrete and flint. [MADE GROUND]	1
					1.72	11.04		<i>high cobble content from 1.45 to 1.72 m. Cobbles are angular concrete.</i>	
		1.80 - 2.00 1.80	ES PID	PID = 3 ppm				Firm grey to dark brown slightly gravelly slightly organic CLAY with extremely closely spaced orangish brown silt partings and closely spaced gravelly sand <20mm pockets. Sand fine to coarse. Gravel angular to rounded fine to medium flint brick and glass. [MADE GROUND]	2
		2.00 - 3.00	L						
		2.20 - 2.40 2.20	ES PID	PID = 24 ppm	2.11	9.32		Firm dark grey organic CLAY with extremely closely spaced black silt partings and root traces. [ALLUVIUM]	
								<i>fissured grey slightly organic with brown partings from 2.62 to 2.82 m. Fissures 0-90 degrees, extremely closely spaced planar smooth very tight clean.</i>	
					3.00	8.93		End of Borehole at 3.00m	3
									4

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



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Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ2_WS2009

Project ID: GTS-19-250



WS2009 1 - 3



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 04/08/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535495.90 N191826.95
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Dando Terrier
Borehole Number GI_DZ2_WS2008A	Hole Type WS	Level 10.00m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10	G		0.12	10.00		Asphalt / Hard standing. [MADE GROUND]	
								Greyish brown, very gravelly, fine to coarse sand. Gravel is angular to rounded, fine to coarse, coal ash, brick, concrete, flint, quartzite, tile and glass. [MADE GROUND]	
		1.00 - 2.00	L		0.90	9.88		Stiff fissured grey organic CLAY with extremely closely spaced silt and black organic partings. Fissures 0-90 degrees very closely to closely spaced planar smooth tight with orangish brown silt infill. [ALLUVIUM]	1
		1.30 - 1.50 1.30	ES PID	PID = 0 ppm				<i>light brown mottled grey slightly organic orangish brown silt parings from 1.45 to 2.10 m.</i>	
		2.00 - 3.00	L					<i>firm brownish grey with white shell <2mm fragments from 2.10 to 2.38 m. Not fissured. rootlets from 2.10 m.</i>	2
	2.50 - 2.70 2.50	ES PID	PID = 0 ppm	2.38	9.10		Firm dark brown clayey amorphous PEAT with occasional decayed roots and white shell <2mm fragments. [ALLUVIUM]		
							<i>black from 2.80 to 2.88 m. greyish brown slightly sandy clayey from 2.88 to 3.00 m.</i>	3	
				3.00	7.62		End of Borehole at 3.00m	4	

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques to provide gas monitoring pipe not installed in WS2008 3. Single install with 50 mm pipe. Response zone from 0.50 m to 1.20 m.



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Project: Meridian Water HIF and
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GI_DZ2_WS2008A

Project ID: GTS-19-250



WS2008A 1.2 - 3.0



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 29/07/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535495.90 N191826.95	
Project No. : GTS-19-250		Crew Name:		Drilling Equipment: Hand Tools Archway Dart	
Borehole Number GI_DZ2_WS2008	Hole Type WS	Level 10.00m AOD	Logged By	Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
█		1.20 - 1.40 1.20 - 2.00 1.20	ES L PID	PID = 0 ppm	0.12	10.00	[MADE GROUND]	Asphalt / Hard standing.	1
					0.80	9.88		Greyish brown, very gravelly, fine to coarse sand. Gravel is angular to rounded, fine to coarse, coal ash, brick, concrete, flint, quartzite, tile and glass.	
					1.13	9.20	[MADE GROUND]	Stiff dark greyish brown slightly sandy gravelly CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse flint and brick.	2
					2.00 - 3.00	L	Very stiff fissured dark grey slightly organic CLAY with extremely closely spaced black organic partings and orangish brown silt partings rootlets and root traces and infill. Fissures 0-90 degrees extremely closely spaced planar to undulating smooth tight with infill.		
					2.40 - 2.60 2.40	ES PID	PID = 0 ppm	2.36	8.87
2.40 - 2.60 2.40	ES PID	PID = 0 ppm	2.36	8.87	stiff clayey very organic silt from 2.65 to 2.92 m.				
				3.00	7.64		End of Borehole at 3.00m	4	

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques 3. Hole backfilled on completion with bentonite pellets.



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Project: Meridian Water HIF and
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GI_DZ2_WS2008

Project ID: GTS-19-250






WS2008 1 - 3



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535348.98 N191599.69
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ2_TP2014	Location Type TP	Level 10.50m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.07 - 0.10 0.07	ES PID	PID=0.10	0.05	10.50 10.45	 Tarmac [MADE GROUND] Subgrade recovered as sandy partially cemented gravel subrounded medium to coarse flint and brick. [MADE GROUND] Subgrade from hardstanding between 0.05 and 0.55 m.	
		0.25 - 0.35 0.25 - 0.35	B D					
		0.70 - 0.80 0.70 - 0.80 0.70 - 0.80 0.70	B D ES PID	PID=0.20	0.55	9.95	 Slag/clinker recovered as black brown yellow cobbles and gravel. Suspected Asbestos cement tile. [MADE GROUND]	1
		1.00	B					
		1.70 - 1.80 1.70 - 1.80 1.70 - 1.80 1.70	B D ES PID	PID=4.60	1.55	8.95	 Firm dark blackish grey slightly sandy silty CLAY. [ALLUVIUM] Strong hydrocarbon odour between 1.55 and 2.00 m.	
					2.00			
End of Trial Pit at 2.00m								4

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.90		Stable	Not required	No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Position floor sawed and concrete lifted out by JCB in sections 3. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ2_TP2014

Project: Meridian Water HIF and
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1. Floor saw



2. Broken out



3. Complete excavation



4. Spoil



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Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ2_TP2014

Project ID: GTS-19-250



5. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation Client: London Borough of Enfield Date: 29/07/2021
 Location: Meridian Water, Enfield Engineer: Ground Technology Services Limited Co-ords: E535211.04 N191673.99
 Project No. : GTS-19-250 Crew Name: Equipment: JCB 3CX

Location Number: GI_DZ2_TP2006 Location Type: TP Level: 10.56m AOD Logged By: AM Scale: 1:20 Page Number: Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05 0.05	ES PID		0.10	10.56 10.46	Asphalt / Hard standing (See ES1). [MADE GROUND]	
		0.50 0.50 0.50	B ES PID	PID=2.20	0.70	9.86	Greyish brown fine to coarse sand and gravel. Gravel is angular to rounded, flint, quartzite, brick, concrete, glass, tile and coal ash. Low cobble content of subrounded concrete and brick. Low boulder content of subrounded concrete. Slight hydrocarbon odour. [MADE GROUND]	
		1.00 1.00 1.00	B ES PID	PID=3.00	1.70	8.86	Firm brown slightly sandy slightly gravelly clay. Gravel is angular to subrounded, fine to coarse, flint, quartzite, brick, concrete, glass and coal ash. Sand is fine to coarse. Frequent buried rootlets. Several lenses / bands of red / brown sandy clayey material (<0.1m thick) (See ES4). Rare pockets of white / blue material (<100mm) (See ES4). Small pockets of greenish material (<10mm) (See ES4). Low cobble content of subrounded concrete and low boulder content of subangular concrete. [MADE GROUND] <u>Red / brown band at 1.00 m.</u> <u>concrete slab at edge of pit at 1.10 m.</u> <u>red / brown band at 1.50 m.</u>	
		1.50	D		2.60	7.96	Firm to stiff brown mottled grey sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint and quartzite. Frequent iron oxide staining. [ALLUVIUM]	
		2.00 2.00 2.00	B ES PID	PID=0.00	3.00		Brown mottled grey, stained bluish green, slightly clayey fine to coarse SAND and GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite. [KEMPTON PARK GRAVEL FORMATION]	
		3.00 3.00 3.00	B ES PID	PID=0.30			End of Trial Pit at 3.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.60		Stable		Groundwater struck at 2.60 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface tarmac broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ2_TP2006

Project: Meridian Water HIF and
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1. Prior to excavation



1. Prior to excavation



2. Complete excavation



3. Base and sides



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GI_DZ2_TP2006

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4. Side backwall and groundwater



5. Spoil



6. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 15/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535192.68 N191721.65
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ2_TP2005	Location Type TP	Level 10.33m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.33		Reinforced concrete with rebar. [MADE GROUND]		
		0.25 0.25 0.25	B ES PID	PID=0.30	0.20	10.13	Greyish brown very sandy gravel. Gravel is angular to rounded fine to coarse flint, quartzite, coal ash, concrete and brick. Medium cobble content of subrounded brick and concrete. Sand is fine to coarse. [MADE GROUND]		
		0.55 0.55 0.55	D ES PID	PID=0.20	0.50	9.83	Soft to firm, brownish grey sandy slightly gravelly clay. Sand is fine to coarse. Slight hydrocarbon odour. Frequent buried roots and rootlets. [MADE GROUND]		
		0.90 0.90 0.90	B ES PID	PID=9.50	1.00	9.33	Blackish grey fine to coarse very sandy gravel. Gravel is angular to subrounded fine to coarse coal, ash, brick and flint. Low cobble content of subrounded coal ash. Sand is fine to coarse. [MADE GROUND]	1	
		1.20 1.20 1.20	B ES PID	PID=0.20	1.50	8.83	Firm grey mottled dark grey slightly gravelly clay. Gravel is angular to subrounded, flint, brick and tile. Land drain at 1.60m. Slight organic odour. [MADE GROUND]		
		2.00 2.00 2.00	D ES PID	PID=0.00	1.70	8.63	Firm grey mottled dark grey slightly sandy slightly gravelly CLAY. Gravel is angular to subangular, flint and quartzite. [ALLUVIUM]	2	
		2.30	D						
		2.60	B						
	▼	3.00 3.00 3.00	B ES PID	PIC=86.50	2.80	7.53	Greyish brown gravelly fine to coarse SAND. Gravel is angular to rounded, fine to medium, flint and quartzite. Heavy hydrocarbon odour and oily. [ALLUVIUM]	3	
							End of Trial Pit at 3.00m		

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.50		Stable	Not required	Groundwater struck at 2.80 m . Very oily.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Position floor sawed and broken out by JCB. 3. Oily sheen and hydrocarbon odour in groundwater. 4. Trial pit back filled with arising and compacted in 300 mm layers. 34. Trial pit excavated under archaeological supervision.



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Project: Meridian Water HIF and
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GI_DZ2_TP2005

Project ID: GTS-19-250



1. Complete excavation



2. Base and sides



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 27/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535185.79 N191780.23
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ2_TP2004	Location Type TP	Level 10.53m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.53		Reinforced concrete with rebar. [MADE GROUND]		
		0.30			10.23		Blackish grey fine to coarse very sandy gravel. Gravel is angular to rounded, fine to coarse, flint quartzite, brick, coal ash, slag and concrete. [MADE GROUND]		
		0.50 0.50 0.50	B ES PID	PID=2.60					
		0.70			9.83		Greyish brown very clayey gravelly fine to coarse sand. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick and concrete. High cobble and boulder content of subrounded brick and concrete. Frequent lenses of sandy gravelly clay (<0.2m thick). Black tarry paint like substance toward base. [MADE GROUND]	1	
		1.00 1.00 1.00	B ES PID	PID=1.10					
		1.30			9.23		Soft greenish grey mottled grey slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded, fine to coarse, flint and quartzite. Sand is fine to coarse. Slight organic odour. [ALLUVIUM]		
		1.50 1.50 1.50	B ES PID	PID=2.30					
		2.00	D				<i>Very sandy and gravelly from 1.90 to 2.50 m.</i>	2	
		2.50			8.03		Greyish brown fine to coarse very sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite. Sand is fine to coarse. Strong hydrocarbon odour and black staining throughout. [KEMPTON PARK GRAVEL FORMATION]		
		3.00 3.00 3.00	B ES PID	PID=647.20	3.00		End of Trial Pit at 3.00m	3	
								4	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Stable		Groundwater struck at 3.00 m. Hydrocarbon odour.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Hydrocarbon odour in groundwater. 4. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ2_TP2004

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Broken out prior to excavation



2. Excavation



3. Complete excavation



4. Base and groundwater



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Project: Meridian Water HIF and
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GI_DZ2_TP2004

Project ID: GTS-19-250



5. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 27/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535183.56 N191816.54
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ2_TP2003	Location Type TP	Level 10.72m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.72		Reinforced concrete with rebar. [MADE GROUND]		
		0.30			10.42		Blackish grey fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, flint, quartzite, concrete, brick, coal ash, slag, tile, glass and possible ASBESTOS. [MADE GROUND]	1	
		0.50 0.50 0.50	B ES PID	PID=1.30					
		0.90 0.90 0.90	D ES PID	PID=1.20					
		1.50			9.22		Stiff brown mottled grey, slightly sandy slightly gravelly CLAY. Gravel is angular to subrounded, fine to coarse, flint and quartzite. Sand is fine to coarse. Frequent buried and decaying rootlets. [ALLUVIUM]	2	
		1.70 1.70 1.70	B ES PID	PID=1.00					
		2.20			8.52		Brown mottled grey fine to coarse very sandy GRAVEL. Gravel is angular to rounded fine to coarse flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]		
		2.30 2.30 2.30	D ES PID	PID=0.00					
	▼	2.70 2.70 2.70	B ES PID	PID=0.00	2.70		End of Trial Pit at 2.70m	3	
								4	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Stable		Groundwater struck at 2.60 m.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision.



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GI_DZ2_TP2003

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Spoil



2. Complete excavation



3. Side and groundwater



4. Base and groundwater



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 1 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description		
		Depth (m)	Type	Results	TCR	SCR	RQD					
		0.20	ES	PID = 0 ppm						Greyish brown slightly clayey, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, coal ash, concrete, flint, quartzite, brick. High cobble content of sub-angular to sub-rounded brick and concrete. [MADE GROUND] geotextile membrane and mesh at 0.15 m.		
		0.20 - 1.00	B									
		0.20	PID									
		0.50	ES	PID = 0 ppm							concrete slab (0.20m thickness) at 1.00 m. concrete slab (0.20m thickness) at 1.20 m. concrete slab with rebar (0.20m thickness) at 1.40 m. concrete slab (0.20m thickness) at 1.60 m.	
		0.50	PID									
		1.00	ES	PID = 1 ppm								
		1.00	PID									
		1.05	D									
		2.30	B	PID = 1 ppm								Soft greyish brown slightly sandy gravelly clay. Gravel is angular to sub-rounded, fine to medium, flint, quartzite, coal ash and brick. Sand is fine to coarse. [MADE GROUND]
		2.30	ES									
2.30 - 2.50	D											
2.30	PID											
2.50 - 3.00	B											
2.50	SPT	N=10 (2,2/3,2,2,3)										
3.20	ES	PID = 1 ppm	Soft to firm, fissured greenish grey mottled dark grey CLAY. Fissures are randomly orientated, extremely close to very closely spaced, undulating and smooth. [ALLUVIUM]									
3.20	PID											
3.30 - 3.50	D											
3.50 - 3.95	UT	Soft dark grey sandy CLAY. Hydrocarbon odour. [ALLUVIUM]										
3.95 - 4.15	D											
4.20	ES	PID = 75 ppm		Medium dense multicoloured slightly sandy silty GRAVEL. Gravel is angular to subrounded, fine to coarse, quartzite and flint. Sand is fine to coarse. Strong hydrocarbon odour and oily sheen. [KEMPTON PARK GRAVEL FORMATION]								
4.20	PID											
4.40	B											
4.40	D											
4.50 - 5.00	B											
4.50	cSPT	N=21 (3,4/4,4,6,7)										

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
3.50	250	3.50	250										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 12/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535463.95 N191543.03	
Project No. : GTS-19-250		Crew Name: RF+CB		Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405	
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND	Scale 1:25	Page Number Sheet 2 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		5.30	D							Medium dense multicoloured slightly sandy silty GRAVEL. Gravel is angular to subrounded, fine to coarse, quartzite and flint. Sand is fine to coarse. Strong hydrocarbon odour and oily sheen. [KEMPTON PARK GRAVEL FORMATION]
		5.50 - 6.00 5.50	B cSPT	N=21 (3,4/4,4,6,7)						
		6.30	D							
		6.50 - 7.00 6.50	B cSPT	N=28 (2,3/4,7,9,8)						
		7.30	D							
		7.50	cSPT	N=30 (2,3/3,8,8,11)						
		7.95 - 8.00	B							
		8.30	D							
		8.50 - 9.00 8.50	B cSPT	N=13 (2,3/3,4,3,3)						
		9.20 - 9.50	D							
		9.50 9.50 - 11.00 9.50 - 9.95 9.50	ES C UT PID	PID = 1 ppm						Stiff dark grey slightly sandy CLAY. Sand is fine to medium. Occasional light grey sand partings (<2 mm). [LONDON CLAY FORMATION]
		9.95 - 10.15 10.00	D ES							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
		9.50	200										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 6.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 3 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
[Well ID]		10.00	PID	PID = 0 ppm						Stiff dark grey slightly sandy CLAY. Sand is fine to med um. Occasional light grey sand partings (<2 mm). [LONDON CLAY FORMATION]
		10.34 - 10.50	CS		73					
		11.00 - 12.20	C						Firm to stiff dark grey thinly laminated CLAY. Laminations are extremely closely spaced with thin silt partings. Rare pyritised nodules up to 30mm. Rare glauconitic sandy pockets. [LONDON CLAY FORMATION]	
		11.00	SPT	N=20 (2,2/5,5,4,6)	92					
		12.20	SPT	N=27 (4,4/5,6,8,8)						
		12.60 - 13.70	C							
		13.17 - 13.42	CS		118					
		13.90	SPT	N=33 (3,7/5,8,9,11)						
	14.30 - 15.80	C								

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
10.20	200												

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 12/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535463.95 N191543.03	
Project No. : GTS-19-250		Crew Name: RF+CB		Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405	
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND	Scale 1:25	Page Number Sheet 4 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		15.03 - 15.24	CS						15.50 (0.31)	Firm to stiff dark grey thinly laminated CLAY. Laminations are extremely closely spaced with thin silt partings. Rare pyritised nodules up to 30mm. Rare glauconitic sandy pockets. [LONDON CLAY FORMATION] silty from 15.10 to 15.50 m. elongated pyritised nodule, 30mm x 10mm at 15.11 m. glauconitic sand pockets between 15.30 and 15.50 m.
		15.80 - 17.30 15.80	C SPT	N=50 (5,11/50 for 100mm)					16.60 (-4.19)	Very dense dark brownish grey clayey silty SAND with thin clay beds glauconitic sand beds and shelly beds. Sand is fine. Clay is firm brown. Shell fragments are up to 10mm long. [HARWICH FORMATION - SWANSCOMBE MEMBER] brownish grey clay bed with black organic sandy pockets from 15.65 to 15.70 m. AZCL between 16.00 and 16.50 m. pebble bed from 16.55 to 16.60 m. Pebbles are medium and coarse gravel sized rounded flints.
		16.80 - 17.00 16.80	ES PID	PID = 2 ppm						Very stiff fissured blueish grey mottled reddish and occasionally orangish brown CLAY. Fissures 0-90 degrees extremely to closely spaced planar to undulating polished tight and clean. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		17.30 - 18.50 17.30	C SPT	N=34 (3,5/3,8,9,11)						grey occasionally mottled reddish and orangish brown between 17.80 and 19.04 m.
		18.80 - 20.30 18.80	C SPT	N=42 (3,5/9,9,11,13)						
		19.00 - 21.20	C							slightly sandy from 19.70 to 20.05 m. Sand fine and medium.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
19.00	176	19.00	176										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 5 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		20.30 - 21.50 20.30	C SPT	N=70 (6, 15/70 for 145mm)					20.30 (-5.29)	Very stiff fissured blueish grey mottled reddish and occasionally orangish brown CLAY. Fissures 0-90 degrees extremely to closely spaced planar to undulating polished tight and clean. [LAMBETH GROUP - UPPER MOTTLED CLAY] <i>sandy from 20.05 to 20.30 m.</i>
		21.20 - 22.70	C		108				21.40 (-8.99)	Very dense blueish grey mottled yellowish brown and yellowish brown mottled blueish grey clayey SAND. Sand is fine and medium. [LAMBETH GROUP - UPPER MOTTLED CLAY] <i>closely spaced dark brown iron concretions (<50 mm) between 20.60 and 21.45 m.</i> <i>yellowish brown mottled reddish brown and blueish grey from 21.15 to 20.30 m.</i>
		21.50	SPT	N=53 (25 for 140mm/50 for 100mm)					22.00 (-10.09)	Very stiff greenish grey mottled yellowish brown sandy CLAY. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]
		22.70 - 25.80	C		90				23.00 (-10.69)	Greenish grey silty glauconitic SAND with very closely to closely spaced burrows (<50 mm) infilled with firm brown sandy clay. Sand is fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]
					0				24.47 (-11.69)	[LAMBETH GROUP - LOWER MOTTLED CLAY] <i>AZCL between 23.00 and 24.47 m.</i>
		24.95 - 25.15 24.95	ES PID	PID = 0 ppm					24.75 (-13.16)	Recovered as grey and brown sandy clayey GRAVEL. Gravel is angular to rounded fine to coarse flint. Probable Lower Mottled Clay to Upnor Formation transition. [LAMBETH GROUP - LOWER MOTTLED CLAY] Very stiff thinly to thickly laminated dark brownish grey CLAY with dark to light grey silty sand laminae and infilled burrows (<10 mm). Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 12/07/2021 - 30/07/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535463.95 N191543.03	
Project No. : GTS-19-250		Crew Name: RF+CB		Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405	
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND	Scale 1:25	Page Number Sheet 6 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		25.80 - 26.70 25.80	C SPT	N=50 (4,6/50 for 270mm)	80				25.25 (-13.44)	Very stiff thinly to thickly laminated dark brownish grey CLAY with dark to light grey silty sand laminae and infilled burrows (<10 mm). Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]	
		26.70 - 28.20	C		93					Very dense dark brownish grey silty SAND with extremely to very closely spaced burrows infilled (<10 mm) with very stiff dark grey clay and light grey sand. Sand is fine and medium. [LAMBETH GROUP - UPNOR FORMATION]	26
		28.00	EW		97					closely spaced laminae with occasional white shell fragments (<20 mm). with some white shell fragments (<20 mm) between 27.37 and 27.81 m.	27
		28.20 - 30.20 28.20	C SPT	N=50 (3,8/50 for 256mm)	75				28.42 (-13.94)	DINI with clay laminae between 27.95 and 28.20 m. Very stiff thinly to thickly laminated dark brownish grey CLAY with dark to light grey silty sand laminae and infilled borrows (<10 mm). Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION] interlaminated between 28.68 and 28.86 m. interlaminated between 28.94 and 29.63 m.	28 29
		29.79	EW						29.73 (-17.11)	[LAMBETH GROUP - UPNOR FORMATION] AZCL between 29.73 and 30.20 m. Possible over drill.	30
		30.00	EW								

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 7 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		30.20 - 31.70	C						30.20 (-18.42)	[LAMBETH GROUP - UPNOR FORMATION] Very stiff thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand is fine and medium.
									30.60 (-18.89)	[LAMBETH GROUP - UPNOR FORMATION] <i>interlaminated between 30.41 and 30.47 m. sandy gravel bed from 30.47 to 30.60 m. Gravel rounded fine to coarse flint.</i>
					64				31.16 (-19.29)	Dark brownish grey gravelly very clayey SAND. Sand is fine and medium. Gravel is rounded fine and medium flint. [LAMBETH GROUP - UPNOR FORMATION] <i>clayey sandy fine to coarse gravel band from 31.01 to 31.07 m.</i>
		31.70 - 33.20 31.70	C SPT	N=50 (6,12/50 for 235mm)					31.70 (-19.85)	[LAMBETH GROUP - UPNOR FORMATION] AZCL between 31.16 and 31.70 m. Recovered as greyish brown silty SAND (Thanet) intermixed with dark brownish grey gravelly clayey SAND (Upnor). Probable core recovered following from AZCL above. Transition from Lambeth Group to Thanet Sand Formation.
		32.50 - 32.70 32.50	ES PID	PID = 1 ppm	100				32.24 (-20.39)	[LAMBETH GROUP - UPNOR FORMATION] Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
		33.20 - 34.70	C							<i>black sandy silt lamina (3 mm) at 33.13 m.</i>
		33.80	SPT	N=50 (7,17/50 for 110mm)	100					
		34.70 - 36.20	C							<i>SPT drilling disturbed between 34.70 and 34.94 m. Greyish brown.</i>

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 8 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		36.20 - 37.70	C					100		Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION]
										SPT drilling disturbed between 36.20 and 36.35 m. Greyish brown.
		37.70 - 39.20 37.70	C SPT	N=50 (8,14/50 for 120mm)				100		SPT drilling disturbed between 37.70 and 37.90 m. Greyish brown.
		39.20 - 40.70	C					63		Drilling disturbed between 39.76 and 40.22 m. Greyish brown.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 9 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		40.45 - 40.65 40.45	ES PID	PID = 1 ppm						Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and <10mm pockets. Sand fine and medium. [THANET SAND FORMATION] AZCL between 40.20 and 40.70 m.
		40.70 - 42.20 40.70	C SPT	N=50 (5,6/50 for 25mm)					40.85 (-20.93)	Drilling disturbed between 40.70 and 40.85 m. Greyish brown.
		41.10 - 42.60	C		63					Weak, medium density very pale greyish white CHALK. Fractures are closely to medium spaced, clean and infilled with fine sand and very pale greyish white silt, tight, horizontal to inclined, planar, rough and smooth. Occasional black angular to subangular flint. CIRIA Grade B3. [WHITE CHALK SUBGROUP]
		41.66 - 41.92	CS		100					AZCL between 41.60 and 42.20 m. Core dropped and recovered in next core. Next core overlaps. Core loss picked up from 41.1m in next core run from 41.10m. Drilling disturbed fracture, some wash out and localised putty chalk between at 41.80 m.
		42.20	SPT	N=50 (6,11/50 for 150mm)						
		42.60 - 44.20 42.60	C SPT	N=50 (3,6/50 for 250mm)						NI - SPT disturbed between 42.60 and 43.01 m.
					94					NI between 43.10 and 43.25 m. Flint at 43.10 m.
										Planar fracture DI at 43.40 m. Planar fracture open 5mm no infill possibly DI at 43.50 m.
		44.20 - 45.70 44.20	C SPT	N=50 (5,7/50 for 250mm)						NI between 44.10 and 44.20 m. Recovered as angular medium to coarse chalk gravel. NI between 44.20 and 44.73 m. SPT disturbed. SPT test channel filled with greyish brown fine sand.
		45.00	EW		100					Sub horizontal fracture set 100 mm apart infilled with fine to coarse angular chalk gravel between 44.85 and 44.95 m.

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
								9.50	42.20	Water Polymer			

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 12/07/2021 - 30/07/2021
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited	Co-ords: E535463.95 N191543.03
Project No. : GTS-19-250		Crew Name: RF+CB	Drilling Equipment: Dando 2000 Hand Tools JCB 3CX Commachio 405
Borehole Number GI_DZ2_BH2087	Hole Type CP+RC	Level 11.31m AOD	Logged By AM / DW / ND
		Scale 1:25	Page Number Sheet 10 of 10

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		45.70 - 47.10 45.70	C SPT	N=50 (5,10/50 for 270mm)					46	Weak, medium density very pale greyish white CHALK. Fractures are closely to medium spaced, clean and infilled with fine sand and very pale greyish white silt, tight, horizontal to inclined, planar, rough and smooth. Occasional black angular to subangular flint. CIRIA Grade B3. [WHITE CHALK SUBGROUP] <u>Planar fracture open 3mm infilled with chalk silt at 45.05 m.</u> <u>NI at 45.15m. Core indented, probable loss due to flint strip/core wash.</u> <u>Sub horizontal clean fractures at 44.35, 45.45 and 45.55, open 3mm. Coarse flint below fracture at 45.35 m</u> <u>AZCL between 45.70 and 46.12 m. SPT disturbed.</u> <u>NI between 46.12 and 46.30 m. SPT disturbed below test, putty chalk.</u> <u>Planar fracture, drilling disturbed at 46.40 m.</u> <u>Open 6mm infilled with fine to coarse fling gravel with some silt.</u> <u>Planar fracture, open 2-3mm clean at 46.73 m.</u> <u>Planar fracture at 46.94 m. Drilling disturbed, open 5mm core wash around margins. Softened.</u>
									47.10 (-29.54)	End of Borehole at 47.10m

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
47.10	146							41.10	47.10	Water Polymer			

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Concrete obstruction found - obstructions removed to 2.00 using JCB. Hole backfilled with arisings. 3. Hole commenced using cable percussive techniques into the top of the London Clay Formation. 3. Environmental seals installed from 2.00 m to 3.50 m, from 8.00 m to 10.20 m and from 17.00 to 19.00 m. 5. Rotary follow on from 10.20 m. 6. Single install with 50 mm pipe. Response zone from 42.00 m to 47.00 m. 7. Hole grouted above response zone to 0.30 m and grout left to cure before installing headworks.



GROUND TECHNOLOGY
Victory Park, Attleborough
Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

GI_DZ2_BH2087

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2087 9.5 - 11



2087 11 - 12.2



2087 12.2 - 13.9



2087 14.3 - 15.8



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2087 15.8 - 17.3



2087 17.3 - 18.5



2087 18.8 - 20.3



2087 20.3 - 21.5



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Photographic Report

GI_DZ2_BH2087

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2087 21.5 - 23



2087 23 - 24.5



2087 24.3 - 25.8



2087 26.7 - 28.2



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Photographic Report

GI_DZ2_BH2087

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2087 28.2 - 30.2



2087 30.2 - 31.7



2087 31.7 - 33.2



2087 33.2 - 34.7



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Photographic Report

GI_DZ2_BH2087

Project: Meridian Water HIF and
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2087 34.7 - 36.2



2087 36.2 - 37.7



2087 37.7 - 39.2



2087 39.2 - 40.7



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 Victory Park, Attleborough
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Photographic Report

GI_DZ2_BH2087

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2087 40.7 - 42.2



2087 41.1 - 42.6



2087 42.6 - 44.2



2087 44.2 - 45.7



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ2_BH2087

Project ID: GTS-19-250



2087 45.7 - 47.1



Deep Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 14/06/2021 - 30/06/2021	
Location: Meridian Water, Enfield		Contractor: Ground Technology Services Limited		Co-ords: E535443.82 N191626.86	
Project No. : GTS-19-250		Crew Name: RF / MH+RF+MH		Drilling Equipment: Hand Tools Dando 2000 Commachio 405	
Borehole Number GI_DZ2_BH2009	Hole Type CP+RC	Level 11.01m AOD	Logged By AB / ND	Scale 1:25	Page Number Sheet 1 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description	
		Depth (m)	Type	Results	TCR	SCR	RQD				
		0.50 - 0.60 0.50 - 0.90	ES B							Brown very gravelly SAND. Sand is fine to coarse Gravel is subangular to subrounded fine to coarse brick, concrete, and flint. [MADE GROUND]	
		0.95 1.00 - 1.10	D ES								
		1.30	D								
		1.50 - 1.95 1.50 - 2.00 1.50	D B SPT	N=10 (6,9/5,1,2,2)							
		2.00	D								
		2.10 - 2.20 2.10 - 2.28	ES B						2.10 (11.01)		Firm dark grey slightly silty CLAY. Hydrocarbon odour. [ALLUVIUM]
		2.35	D								
		2.50 - 2.95 2.50	UT	HVP (kPA) =9							
		2.95 - 3.15 2.95	UT PID	PID = 1 ppm							
		3.20 - 3.30	ES								
		3.50 - 3.95 3.50 - 4.00 3.50	D B SPT	N=13 (1,1/2,3,3,5)					3.50 (8.91)	Medium dense dark grey to black SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded medium and coarse flint. Hydrocarbon odour. [KEMPTON PARK GRAVEL FORMATION]	
		4.20 - 4.30 4.20	ES PID	PID = 29 ppm							
		4.40	D								
		4.50 - 5.00 4.50	B cSPT	N=20 (2,3/4,3,5,8)							

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
3.50	300	3.50	300										

Remarks
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		Scale 1:25	Page Number Sheet 2 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description			
		Depth (m)	Type	Results	TCR	SCR	RQD						
█		5.20 - 5.30 5.20	ES PID	PID = 41 ppm					6 7 8 9 10	Medium dense dark grey to black SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded medium and coarse flint. Hydrocarbon odour. [KEMPTON PARK GRAVEL FORMATION]			
		5.40 5.50 - 6.00 5.50	D B cSPT	N=15 (1,2/3,3,4,5)									
		6.20 - 6.30 6.40 6.50 - 7.00 6.50	ES D B cSPT	N=13 (2,3/3,3,3,4)									
		6.80	PID	PID = 0 ppm									
		7.20 - 7.30 7.20 7.40 7.50 - 8.00 7.50	ES PID D B cSPT	N=15 (2,3/3,4,3,5)									
		8.20 - 8.30 8.20 8.30	ES PID D	PID = 3 ppm									
		8.50 - 8.95 8.50	UT	HVP (kPA) =31									
		8.95 - 9.15	B										
		9.15 - 9.30 9.20	B PID	PID = 0 ppm									
		9.70 - 10.95	C										
											8.23 (7.51)		Firm to stiff dark grey laminated CLAY. Laminations are extremely closely spaced and thin silt. Frequent pyritic nodules throughout (up to 22 mm). [LONDON CLAY FORMATION]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
9.30	250	9.30 9.70	250 150										

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Borehole Number GI_DZ2_BH2009	Hole Type CP+RC	Level 11.01m AOD	Logged By AB / ND
		Scale 1:25	Page Number Sheet 3 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
1		10.95 - 11.40 10.95 - 12.45 10.95	D C SPT	N=31 (2,4/5,8,9,9)	80				11	Firm to stiff dark grey laminated CLAY. Laminations are extremely closely spaced and thin silt. Frequent pyritic nodules throughout (up to 22 mm). [LONDON CLAY FORMATION]
		11.28 - 11.45	CS		100				12	
		12.45 - 12.90 12.45 - 13.95 12.45	D C SPT	N=33 (3,4/7,8,9,9)	93				13	
		13.70 - 13.95	CS						14	
		13.95 - 14.28 13.95 - 15.40 13.95	D C SPT	N=50 (5,9/50 for 180mm)	69				14.25 (2.78)	

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
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Borehole Number GI_DZ2_BH2009	Hole Type CP+RC	Level 11.01m AOD	Logged By AB / ND
		Scale 1:25	Page Number Sheet 4 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		15.40 - 15.85 15.40 - 17.00 15.40	D C SPT	N=35 (2,4/6,9,10,10)					15.35 (-3.24)	Dark grey slightly clayey laminated SILT. Laminations are extremely closely spaced and thin. [HARWICH FORMATION - SWANSCOMBE MEMBER] from 15.24 to 15.31 m with frequent white bivalve fossils
		15.60 - 15.70 15.60	ES PID	PID = 0 ppm						Firm light greenish grey slightly sandy silty CLAY, quickly becoming stiff greenish grey mottled reddish brown CLAY. Thin band (50 mm) of black rounded flint gravel at the top. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		16.60 - 16.90	CS		109					
		17.00 - 17.45 17.00 - 17.75 17.00	D C SPT	N=43 (4,7/7,10,13,13)					17.00 (-4.34)	Very stiff fissured grey mottled reddish and orangish brown CLAY. Fissures 0-90 degrees, extremely to very closely spaced planar to undulating polished to smooth tight and clean. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		17.75 - 18.45	C							blueish grey mottled orangish occasionally reddish brown at 17.75 m.
		18.15 - 18.36	CS		100				18.10 (-5.99)	Very stiff fissured grey mottled reddish and orangish brown calcareous CLAY with frequent white concretions. Fissures 0-90 degrees, extremely to very closely spaced planar to undulating polished to smooth tight and clean. Possible mid Lambeth hiatus transition. [LAMBETH GROUP - UPPER MOTTLED CLAY]
		18.45 - 18.63 18.45 - 19.95 18.45	D C SPT	N=53 (25 for 105mm/50 for 75mm)						
		19.20 - 19.35	CS		93				19.02 (-7.09)	Extremely weak to very weak, medium strong between 19.06 and 19.11 m, white occasionally brown and blueish grey CALCRETE. Mid Lambeth hiatus. [LAMBETH GROUP - MID LAMBETH HIATUS]
		19.95 - 20.27 19.95 - 21.40	D C						19.90 (-8.01)	Stiff brown mottled blueish grey occasionally orange sandy CLAY. Sand fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

Remarks
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		Scale 1:25	Page Number Sheet 5 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		19.95	SPT	N=50 (4,9/50 for 175mm)						Stiff brown mottled blueish grey occasionally orange sandy CLAY. Sand fine and medium. [LAMBETH GROUP - LOWER MOTTLED CLAY]
		20.65	CS		79					with dark greenish grey sand burrow infill (<20 mm) from 20.55 m.
		20.65	CS							
		20.65	CS							
		20.65	CS							
		20.65	CS							
		20.65	CS							
		20.65 - 20.85	CS						20.85 (-8.69)	Dark greenish grey silty glauconitic SAND with very closely spaced firm brown sandy clay burrow infill (<20 mm). Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION]
		21.05 - 21.20	ES							
		21.05	PID							mottled burrow infill absent from 21.30 m.
		21.40 - 21.63	D							
		21.40 - 21.80	C							
		21.40	SPT	N=50 (5,18/50 for 80mm)	12					light yellowish brown slightly clayey very gravelly bed (200 mm) from 21.60 m. Gravel angular to rounded fine to coarse flint.
		21.80 - 23.40	C							thickly laminated to thinly bedded brown to dark greenish grey with gravel beds and stiff dark grey clay laminae from 21.80 to 22.40 m. Gravel angular to rounded fine to coarse flint.
					81					
		22.90 - 23.10	ES							
		22.90	PID	PID = 0 ppm						
		23.40 - 23.80	D							
		23.40 - 24.90	C							
		23.40	SPT	N=50 (4,6/50 for 230mm)						sand burrow infill light grey from 23.50 m.
		24.90 - 25.32	D							
		24.90 - 26.35	C							
					100					

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

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		Scale 1:25	Page Number Sheet 6 of 9

Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		24.90	SPT	N=50 (3,5/50 for 270mm)						Dark brownish grey silty SAND with extremely to very closely spaced stiff dark grey clay burrow infill (<10 mm). Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION] with occasional white shell fragments from 25.10 to 25.70 m. with rare shell fragments from 25.70 m.
		25.00	EW							
		25.00	EW							
		25.00	EW							
		25.95 (-11.74)			100					
		26.35 - 26.74	D							Very stiff thinly to thickly laminated dark brownish grey CLAY with silty sand laminae. Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION]
		26.35 - 27.80	C							
		26.35	SPT	N=50 (4,8/50 for 240mm)						
		26.45 (-14.94)								
		26.88 - 26.96			72					Very dense dark brownish grey silty SAND with extremely to very closely spaced stiff dark grey clay and grey sand burrow infill (<10 mm). Sand fine and medium. [LAMBETH GROUP - UPNOR FORMATION] thinly interlaminated with very stiff clay from 26.88 to 26.96 m.
		27.15 - 27.33								very stiff thinly laminated clay with sand laminae from 27.15 to 27.33 m.
		27.33 - 27.35								gravelly from 27.33 to 27.35 m. Gravel is rounded medium flint.
		27.35 - 28.00								AZCL from 27.35 to 28.00 m
		27.80 - 28.17	D							
		27.80 - 29.30	C							
		27.80	SPT	N=50 (3,6/50 for 225mm)						
		28.13	EW							
		28.00 - 28.20			83					recovered as rounded medium to coarse flint gravel between 28.00 and 28.20 m.
		28.77 - 29.10								gravelly from 28.77 to 29.10 m. Gravel rounded fine to coarse flint.
		29.10 - 29.17								sandy gravel bed between 29.10 and 29.17 m. Gravel is rounded medium and coarse flint.
		29.45 - 29.50								gravelly from 29.45 to 29.50 m. Gravel rounded fine and medium flint.
		29.50 (-15.44)								
		29.70 - 29.90	ES							
		29.70	PID	PID = 0 ppm						
		29.70 - 29.90								Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and pockets (<10 mm). Sand fine and medium. [THANET SAND FORMATION]

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

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Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		30.80 - 30.97 30.80 - 32.40 30.80	D C SPT	N=50 (25 for 95mm/50 for 80mm)	90				Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and pockets (<10 mm). Sand fine and medium. [THANET SAND FORMATION] <i>pocket (20 mm) of grey fine to coarse sand at 31.10 m.</i>	31
		32.40 - 32.60 32.40 - 34.00 32.40	D C SPT	N=50 (25 for 110mm/50 for 90mm)	94					32
		34.00 - 34.24 34.00 - 35.40 34.00	D C SPT	N=50 (25 for 130mm/50 for 110mm)	104					34
										35

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
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Well	Water Strikes	Sample and In Situ Testing			Coring			Legend	Depth (Level)	Stratum Description
		Depth (m)	Type	Results	TCR	SCR	RQD			
		35.40 - 35.65 35.40 - 37.00 35.40	D C SPT	N=50 (8,17/50 for 75mm)						Very dense dark grey silty SAND with extremely to closely spaced black sandy silt partings and pockets (<10 mm). Sand fine and medium. [THANET SAND FORMATION]
					100				36	
		37.00 - 37.28 37.00 - 38.40 37.00	D C SPT	N=50 (7,11/50 for 130mm)						37
		38.05 - 38.40	CS						37.95 (-18.49)	sandy gravel bed between 37.85 and 37.95 m. Gravel angular to sub rounded medium to coarse flint. Bullhead Beds.
		38.40 - 38.55 38.40 - 39.90 38.40	D C SPT	N=50 (25 for 120mm/50 for 35mm)						Very weak medium density white with light grey burrowing mottling CHALK, fractures medium spaced and clean unstained. CIRIA Grade B2/3. [WHITE CHALK SUBGROUP] AZCL from 38.40 to 39.00
		39.00 - 39.20 39.00	ES PID	PID = 0 ppm						60
		39.56 - 39.90	CS							39
		39.90 - 40.35 39.90 - 41.50	D C							40

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)

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		Scale 1:25	Page Number Sheet 9 of 9

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		Depth (m)	Type	Results	TCR	SCR	RQD			
		39.90	SPT	N=84 (6,8/9 15,25,35)						Very weak medium density white with light grey burrowing mottling CHALK, fractures medium spaced and clean unstained. CIRIA Grade B2/3. [WHITE CHALK SUBGROUP]
					91					<i>black sub angular coarse flint from 40.55 to 40.62 m.</i>
		41.00 41.00 41.00	EW EW EW							
		41.10 - 41.40	CS							<i>black sponge bed between 41.18 and 41.20 m.</i>
		41.50 - 41.94 41.50 - 43.00 41.50	D C SPT	N=100 (4,6/100 for 290mm)						
		42.10 - 42.30	CS		100					<i>heavy burrowing mottling between 42.10 and 42.20 m.</i>
		43.00 - 43.43 43.00 - 44.00 43.00	D C SPT	N=110 (6,9/110 for 285mm)						<i>shell fragment at 42.91 m.</i>
		43.67 - 43.77	CS		110					<i>gravelly between 43.44 and 43.50 m. Gravel is rounded fine and medium flint.</i>
		44.00 - 44.44 44.00	D SPT	N=52 (25 for 145mm/52 for 250mm)						
									44.44 (-26.94)	End of Borehole at 44.44m

Hole Diameter		Casing Diameter		Chiselling			Drilling Flush						
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top (m)	Depth Base (m)	Flush Type	Flush Colour	Min (%)	Max (%)
44.44	150							9.70	44.00	Water Polymer		70	100

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GROUND TECHNOLOGY
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Photographic Report

GI_DZ2_BH2009

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Infrastructure Ground Investigation

Project ID: GTS-19-250



2009 9.4 - 10.95



2009 12.45 - 13.95



2009 13.95 - 15.40



2009 15.40 - 17.00



GROUND TECHNOLOGY
Victory Park, Attleborough
Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

GI_DZ2_BH2009

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2009 17.00 - 18.45



2009 18.45 - 19.95



2009 19.95 - 21.40



2009 21.40 - 23.40



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Photographic Report

GI_DZ2_BH2009

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2009 23.40 - 24.90



2009 24.90 - 26.35



2009 26.35 - 27.80



2009 27.80 - 29.30



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GI_DZ2_BH2009

Project: Meridian Water HIF and
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Project ID: GTS-19-250



2009 29.30 - 30.80



2009 30.80 - 32.40



2009 32.40 - 34.00



2009 34.00 - 35.40



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GI_DZ2_BH2009

Project: Meridian Water HIF and
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2009 35.40 - 37.00



2009 37 - 38.4



2009 38.4 - 39.9



2009 39.9 - 41.5



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GI_DZ2_BH2009

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



2009 41.5 - 43



2009 43 - 44



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 25/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535495.85 N191830.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ2_BH2008	Hole Type CP	Level 10.06m AOD	Logged By AM / DW
		Scale 1:25	Page Number Sheet 1 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.12			10.06		Asphalt / Hard standing. [MADE GROUND]	
		0.30	ES				Greyish brown, very gravelly, fine to coarse sand. Gravel is angular to rounded, fine to coarse, coal ash, brick, concrete, flint, quartzite, tile and glass. [MADE GROUND]	
		0.30 - 0.80	B					
		0.30	PID	PID = 0 ppm				
		0.50	ES					
		0.50	PID	PID = 0 ppm				
		0.80			9.94		Soft to firm, greenish grey, slightly sandy, slightly gravelly clay. Gravel is angular to subrounded, flint and brick. Slight organic odour. [MADE GROUND]	
		1.00	ES				Firm fissured, brown mottled grey CLAY. Fissures are randomly oriented, undulating and smooth. Frequent decaying rootlets. Frequent iron oxide staining. [ALLUVIUM]	
		1.00 - 1.50	B					
		1.00	PID	PID = 0 ppm				
		1.50 - 1.95	UT		1.50	9.26		
		1.95 - 2.15	D					
		2.20	ES				Firm, dark greyish brown, peaty silty CLAY. Frequent buried / decaying rootlets. Slight organic odour. Occasional shell fragments. [ALLUVIUM]	
		2.20	PID	PID = 0 ppm				
		2.50	D					
		2.50 - 3.00	B					
		2.50	SPT	N=9 (1,2/2,2,2,3)	2.70	8.56		
		3.10	ES				Medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		3.10	PID	PID = 0 ppm				
		3.25	D					
		3.50	EW		3.50	7.36		
		3.50	EW				Firm, dark greyish brown, peaty silty CLAY. Frequent buried / decaying rootlets. Slight organic odour. Occasional shell fragments. [ALLUVIUM]	
		3.50 - 4.00	B					
		3.50	cSPT	N=12 (3,2/2,3,4,3)				
		4.00	EW					
		4.10	ES					
		4.10	PID	PID = 0 ppm				
		4.25	D					
		4.42	EW					
		4.50	EW					
		4.50	EW					
		4.50 - 5.00	B				Medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		4.50	cSPT	N=21 (3,3/4,4,7,6)				
		5.00	EW					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
2.50	300	2.50	300								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the Lambeth Group. 3. Environmental seals installed from 1.50 m to 2.50 m and from 6.50 to 7.50 m. 4. Dual install with 50 mm pipe. Response zones from 3.50 m to 6.25 m and from 18.50 m to 20.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 25/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535495.85 N191830.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ2_BH2008	Hole Type CP	Level 10.06m AOD	Logged By AM / DW
		Scale 1:25	Page Number Sheet 2 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.00	EW				Medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		5.25	D					
		5.50 - 6.00	B	N=18 (3,3/4,5,4,5)	6.35	6.56	Stiff, fissured, slightly sandy, micaceous CLAY. Fissures are 5-10 degrees planar and smooth. Rare pyritized nodules (<50mm). Rare light grey fine sand / silt partings (<1mm). [LONDON CLAY FORMATION]	
		5.50	cSPT					
		6.35	D				Stiff, fissured, slightly sandy, micaceous CLAY. Fissures are 5-10 degrees planar and smooth. Rare pyritized nodules (<50mm). Rare light grey fine sand / silt partings (<1mm). [LONDON CLAY FORMATION]	
		6.35 - 6.50	D					
		6.50 - 6.95	UT					
		6.95 - 7.25	D					
		7.20	ES	PID = 0 ppm				
		7.20	PID					
		7.25	D					
		7.50	D	N=21 (2,2/3,4,7,7)				
		7.50 - 8.00	B					
		7.50	SPT					
		8.25	D					
		8.50 - 8.95	UT					
		8.95 - 9.15	D					
		9.25	D					
		9.50	D	N=30 (3,5/6,7,7,10)				
		9.50 - 10.00	B					
		9.50	SPT					
		10.00	EW					

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
7.50	250	7.50	250								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the Lambeth Group. 3. Environmental seals installed from 1.50 m to 2.50 m and from 6.50 to 7.50 m. 4. Dual install with 50 mm pipe. Response zones from 3.50 m to 6.25 m and from 18.50 m to 20.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 25/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535495.85 N191830.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ2_BH2008	Hole Type CP	Level 10.06m AOD	Logged By AM / DW
		Scale 1:25	Page Number Sheet 4 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		15.25	D				Stiff fissured blueish grey mottled reddish brown and brown CLAY. Fissures randomly oriented extremely closely spaced planar and undulating polished to smooth tight and clean. Rare fine sand veins. [LAMBETH GROUP - UPPER MOTTLED CLAY]	
		15.50 - 15.95	UT				<i>mottled reddish and orangish brown slightly sandy from 15.50 m. Sand is fine.</i>	
		15.95 - 16.15	D					
		16.25	D					
		16.50 - 16.85 16.50 - 17.00 16.50	D B SPT	N=50 (8,12/50 for 200mm)				
		17.25	D				<i>calcareous from 17.25 m.</i>	
		17.50 - 17.75 17.50 - 18.00 17.50	D B SPT	N=50 (25 for 125mm/50 for 125mm)				
		18.00 18.00	EW EW					
		18.25	D		18.35	-2.44		
		18.50 - 18.70 18.50 - 19.00 18.50	D B SPT	N=50 (25 for 100mm/50 for 100mm)			Very stiff grey mottled yellowish brown sandy slightly gravelly CLAY. Sand fine and medium. Gravel angular and subangular fine and medium white flint. [LAMBETH GROUP - LOWER MOTTLED CLAY]	
		19.25 - 19.35	D					
		19.50 - 19.70 19.50 - 20.00 19.50	D B SPT	N=50 (25 for 10mm/50 for 100mm)			<i>slightly sandy. Gravel absent between 19.70 and 20.35 m.</i>	

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
20.00	200	20.00	200								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the Lambeth Group. 3. Environmental seals installed from 1.50 m to 2.50 m and from 6.50 to 7.50 m. 4. Dual install with 50 mm pipe. Response zones from 3.50 m to 6.25 m and from 18.50 m to 20.50 m.



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 16/07/2021 - 25/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535495.85 N191830.41
Project No. : GTS-19-250		Crew Name: RF	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZ2_BH2008	Hole Type CP	Level 10.06m AOD	Logged By AM / DW
		Scale 1:25	Page Number Sheet 5 of 6

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.25	D		20.45	-8.29		Very stiff grey mottled yellowish brown sandy slightly gravelly CLAY. Sand fine and medium. Gravel angular and subangular fine and medium white flint. [LAMBETH GROUP - LOWER MOTTLED CLAY]
		20.35 - 20.45	ES					
		20.35	PID	PID = 0 ppm				
		20.50 - 21.00	B					
		20.50	SPT	N=47 (2,2/3 10,14,20)				
		21.25	D					
		21.50 - 21.95	D					
		21.50 - 22.00	B					
		21.50	SPT	N=50 (7,14/10,9,14,17)				
		22.25	D					
		22.50 - 22.95	UT					
		22.95 - 23.15	D					
	23.25	D						
	23.50 - 23.95	D						
	23.50 - 24.00	B						
	23.50	SPT	N=44 (7,10/9,11,11,13)					
	24.25	D						
	24.30 - 25.00	B						
	24.50 - 24.75	D						
	24.50 - 25.00	B						
	24.50	SPT	N=53 (25 for 125mm/50 for 125mm)					
								very dense from 24.50 m. Between 24.50 and 24.75 m, interlaminated with very stiff dark brownish grey clay.

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		23.50	150								

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using cable percussive techniques into the Lambeth Group. 3. Environmental seals installed from 1.50 m to 2.50 m and from 6.50 to 7.50 m. 4. Dual install with 50 mm pipe. Response zones from 3.50 m to 6.25 m and from 18.50 m to 20.50 m.



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 23/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536145.19 N191869.20
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2059	Location Type TP	Level 9.93m AOD	Logged By ND	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					9.93		Reinforced CONCRETE. [MADE GROUND]	
		0.60 - 0.70 0.60 - 0.70 0.70 0.70	B D ES PID	PID=0.60	0.35 0.40	9.58 9.53	Light orangish brown sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [MADE GROUND]	
		1.90 - 2.00 1.90 - 2.00 2.00 2.00	B D ES PID	PID=0.20			Firm greyish brown sandy slightly organic CLAY with brown silt partings and white root traces and shell fragments. Frequent <100mm lenses of black amorphous peat and greyish brown sandy gravel. Sand fine to medium. Gravel subrounded to well rounded fine to coarse flint. [ALLUVIUM]	1
		3.00 - 3.10 3.00 - 3.10 3.10 3.10	B D ES PID	PID=0.40	3.10		interbedded clay and gravel with peat lenses between 2.70 and 3.10 m.	2
							End of Trial Pit at 3.10m	3
								4

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Stable	Not required	Groundwater struck at 2.70 m. Inflow very slight.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2059

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Saw cut and pit



2. Excavation side and base



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535846.72 N191982.66
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ7_TP2060	Location Type TP	Level 10.78m AOD	Logged By ND
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.78		Mass CONCRETE. [MADE GROUND]	
		0.50 - 0.60 0.50 - 0.60 0.60 0.60	B D ES PID	PID=0.30	0.23 0.90	10.55 9.88	Dark brown to black sandy clayey GRAVEL with low cobble content. Sand fine to coarse. Gravel angular to rounded fine to coarse clinker brick flint. Cobble angular concrete and brick. [MADE GROUND] <i>black from 0.70 to 0.90 m.</i>	
		1.00 - 1.10 1.00 - 1.10 1.10 1.10	B D ES PID	PID=0.10	0.90	9.68	Firm varying to very stiff white to black mottled orange and red silty CLAY. [MADE GROUND]	
		1.20 - 1.30 1.20 - 1.30 1.30 1.30	B D ES PID	PID=0.30	1.30	9.48	Reddish brown silty SAND. Sand fine and medium. Saturated. [MADE GROUND]	
		1.50 - 1.60 1.50 - 1.60 1.60 1.60	B D ES PID	PID=0.40			Firm dark brownish grey slightly organic CLAY with silt partings. Black root traces and rare white shell fragments. [ALLUVIUM]	
		2.50 - 2.60 2.50 - 2.60 2.60 2.60	B D ES PID	PID=0.10			<i>light brownish grey from 1.90 to 2.60 m.</i> <i>organic between 2.60 and 3.00 m.</i>	
		3.20 - 3.30 3.20 - 3.30 3.30 3.30	B D ES PID	PID=0.40	3.00	7.78	Dark brown clayey amorphous PEAT. [ALLUVIUM]	
							End of Trial Pit at 3.30m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Stable	Not required	No groundwater encountered.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2060

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Complete excavation



2. Side and base



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation Client: London Borough of Enfield Date: 23/06/2021
 Location: Meridian Water, Enfield Engineer: Ground Technology Services Limited Co-ords: E535893.07 N192019.26
 Project No. : GTS-19-250 Crew Name: Equipment: JCB 3CX

Location Number: GI_DZ7_TP2061 Location Type: TP Level: 11.52m AOD Logged By: ND Scale: 1:20 Page Number: Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					11.52		Reinforced CONCRETE. [MADE GROUND]	
		0.40 - 0.50	B	PID=0.10	0.35		Light orangish brown sandy gravel. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [MADE GROUND]	
		0.40 - 0.50	D		0.40			
		0.50	ES		0.50			
		0.50	PID					
					0.70		Soft dark grey sandy slightly gravelly clay. Gravel is angular to subrounded fine to medium flint, brick, quartzite. [MADE GROUND]	
		0.90 - 1.00	B	PID=0.40			Dark greyish brown clayey gravelly fine to coarse sand. Gravel is angular to subrounded flint and quartz. [MADE GROUND]	
		0.90 - 1.00	D					
		1.00	ES					
		1.00	PID					
							Firm dark brown mottled grey gravelly slightly sandy clay. Sand is fine to coarse. Gravel is fine to coarse of subangular to rounded flint brick. Occasional pockets of shell fragments. Occasional wood and plant debris. [MADE GROUND]	
		2.00 - 2.10	B	PID=0.10				
		2.00 - 2.10	D					
		2.10	ES					
		2.10	PID					
					2.70			
		3.00 - 3.10	B	PID=0.10			Soft brownish grey and pale grey slightly sandy CLAY with rare gravel. Sand is fine to coarse. Gravel is fine to coarse angular to rounded of flint. Frequent shell fragments. Frequent pockets of brown pseudo fibrous plastic peat. [ALLUVIUM]	
		3.00 - 3.10	D					
		3.10	ES					
		3.10	PID					
					3.10		End of Trial Pit at 3.10m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.00	2.50		Stable	Not required	No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2061

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Complete excavation



2. Sides and base



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 22/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535816.50 N191967.81
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2062	Location Type TP	Level 10.74m AOD	Logged By ND	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.06 - 0.12			10.74 10.68 10.62		MACADAM [MADE GROUND]	
		0.30 - 0.40 0.30 - 0.40 0.40 0.40	B D ES PID	PID=0.30	0.50	10.24	 Light reddish grey sandy GRAVEL. Sand fine to coarse. Gravel angular and subangular fine to coarse microgranite? [MADE GROUND] Dark greyish brown sandy slightly clayey GRAVEL with low cobble content. Sand fine to coarse. Gravel angular to subrounded fine to coarse clinker brick flint. Cobble angular brick. [MADE GROUND]	
		0.70 - 0.80 0.70 - 0.80 0.80 0.80	B D ES PID	PID=1.40			 Firm varying to very stiff white to black mottled orange and red silty CLAY with sandy gravel <200mm lenses. Sand and gravel as above. [MADE GROUND]	
	▼	1.70 - 1.80 1.70 - 1.80 1.80 1.80	B D ES PID	PIC=27.40	1.50	9.24	 Firm dark brownish grey slightly organic CLAY with silt partings. Black root traces and rare white shell fragments. [ALLUVIUM]	
		2.30 - 2.40 2.30 - 2.40 2.40 2.40	B D ES PID	PID=2.00			 <i>brownish grey mottled brown with black and white root traces between 2.30 and 3.00 m.</i>	
		3.20 - 3.30 3.20 - 3.30 3.30 3.30	B D ES PID	PID=1.40	3.00	7.74	 Dark brown clayey pseudo fibrous PEAT. [ALLUVIUM]	
					3.30		End of Trial Pit at 3.30m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
2.50	0.60		Stable	Not required	Groundwater seepage. from 1.50 m.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface tarmac broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers.



GROUND TECHNOLOGY
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Photographic Report

GI_DZ7_TP2062

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Base and side




4. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 26/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535819.58 N191855.64
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2067A	Location Type TP	Level 10.53m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		1.00 1.00 1.00	B ES PID	PID=0.50		10.53		Greyish brown, fine to coarse sand and gravel. Gravel is angular to rounded, flint, quartzite, ASBESTOS, brick, tile, concrete, wood, metal, rebar, plastic, coal ash and glass. High cobble content of angular to subrounded, brick concrete, ASBESTOS, wood and metal. [MADE GROUND]
		1.50	B					
	▼				1.80			End of Trial Pit at 1.80m

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	1.20		Stable		Groundwater seepage from 1.80 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated at 1.80 m due to presence of asbestos 3. Trial pit back filled with arising and compacted in 300 mm layers.



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GI_DZ7_TP2067A

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 26/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535825.17 N191858.14
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2067B	Location Type TP	Level 10.40m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.40		Reinforced concrete with rebar. [MADE GROUND]		
		0.15			10.25		Blackish grey very sandy gravel. Gravel is angular to rounded fine to coarse flint, coal ash, brick, metal and concrete. Sand is fine to coarse. Occasional pockets of white putty material, possible ash deposit. [MADE GROUND]		
		0.40 0.40 0.40	D ES PID	PID=0.70					
		0.80 0.80 0.80	B ES PID	PID=0.80	1.00	9.40	Firm, brown mottled dark grey and brown, slightly sandy, slightly gravelly clay. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick, concrete and metal. Sand is fine to coarse. [MADE GROUND] <i>frequent roots and rootlets (<20 mm) at 1.00 m.</i>	1	
		1.20 1.20 1.20	B ES PID	PID=1.00					
		1.50			1.50	8.90	Soft to firm, fissured, greenish grey CLAY. Fissures are randomly oriented, planar, smooth and polished. Occasional light grey fine sand / silt partings (<2mm). Slight organic odour. [ALLUVIUM] <i>frequent brown iron oxide staining from 2.30 m.</i> <i>frequent lenses of dark brown fibrous peat and peaty clay (<200 mm) between 2.70 and 3.10 m.</i>	2	
		1.80 1.80 1.80	B ES PID	PID=1.60					
		2.80	D						
		3.10			3.10	7.30	Multicoloured, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	3	
		3.50 3.50 3.50	B ES PID	PID=1.00	3.50		End of Trial Pit at 3.50m	4	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.80		Stable		Groundwater seepage from 1.00 m. Groundwater struck at 3.20 m.				
Weather:									

Remarks
 1. Position relocated from TP2067A. 2. Position scanned using a CAT prior to digging. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ7_TP2067B

Project ID: GTS-19-250



1. Complete Excavation



2. Excavation side



3. Base and groundwater



4. Excavation and soil



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ7_TP2067B

Project ID: GTS-19-250



5. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 26/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535833.95 N191855.40
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ7_TP2068	Location Type TP	Level 10.36m AOD	Logged By AM
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.36		Reinforced concrete with rebar. [MADE GROUND]	
		0.80	B		0.70	9.66	Blackish grey, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, coal ash, slag, brick, concrete and flint. [MADE GROUND]	
		0.80	ES					
		0.80	PID	PID=0.10				
		1.00	D		1.20	9.16	Soft, fissured, greenish grey mottled brown CLAY. Frequent iron oxide staining. Frequent light grey fine sand / silt partings (<2mm). Fissures are randomly oriented, undulating and smooth. [ALLUVIUM]	
		1.00	ES					
		1.00	PID	PID=0.20				
		1.20	B		1.20	9.16	Soft, fissured, greenish grey mottled brown CLAY. Frequent iron oxide staining. Frequent light grey fine sand / silt partings (<2mm). Fissures are randomly oriented, undulating and smooth. [ALLUVIUM]	
		1.20	ES					
		1.20	PID	PID=295.00				
		1.50	B		2.50	7.56	thin layer of oily sandy material and strong hydrocarbon odour at 1.20 m (ES5).	
		1.50	ES					
		1.50	PID	PIC=12.50				
			D		2.80	7.56	Multicoloured, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, flint and quartzite. [KEMPTON PARK GRAVEL FORMATION]	
		3.00	B					
		3.00	ES					
		3.00	PID	PID=0.00	3.30	3.30	End of Trial Pit at 3.30m	
		3.30	B					
		3.30	ES					
		3.30	PID	PID=0.00				

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.80		Stable		Groundwater seepage from 1.20 m. Groundwater struck at 3.30 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Trial pit terminated on encountering groundwater. 4. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2068

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Base and sides



4. Excavation and spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 23/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535867.72 N191921.33
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ7_TP2070	Location Type TP	Level 10.54m AOD	Logged By AM
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.54		Concrete slab. [MADE GROUND]	
		0.15			10.39		Blackish grey very sandy gravel. Gravel is angular to rounded fine to coarse coal ash, slag, concrete, brick, flint and quartzite. Sand is fine to coarse. [MADE GROUND]	
		0.50 0.50 0.50	B ES PID	PID=1.00				
		0.95 0.95	ES PID	PID=0.40	1.00	9.54	<i>pocket of reddish brown soft clay 0.15m thick on side of pit between 0.90 and 1.00 m (ES2).</i>	
		1.10 1.10 1.10	D ES PID	PID=0.70			Stiff fissured blueish grey slightly silty CLAY. Fissures are randomly oriented, extremely closely to very closely spaced, undulating and smooth. Frequent light grey silty partings / veins (<3mm). [ALLUVIUM]	
		2.00 2.00 2.00	B ES PID	PID=1.20	2.00		End of Trial Pit at 2.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.70		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Surface concrete broken out by JCB. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2070

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Excavation side



4. Base and backwall



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Photographic Report

GI_DZ7_TP2070

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Excavation side



4. Base and backwall



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Photographic Report

GI_DZ7_TP2070

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250






5. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 23/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535860.39 N191938.91
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2071	Location Type TP	Level 10.33m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30 0.30	B ES PID	PID=1.10	0.20	10.33 10.13	 Light grey, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, flint, brick and quartzite. [MADE GROUND]	
		0.30 0.30 0.30	B ES PID	PID=1.10	0.50	9.83	 Blackish grey, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, flint quartzite, brick, concrete, coal ash, metal and tile. [MADE GROUND]	
		0.90 0.90 0.90	D ES PID	PID=1.00			 Soft to firm, brown mottled grey, slightly sandy slightly silty CLAY. Frequent iron oxide staining. Sand is fine to medium. [ALLUVIUM]	
		2.00 2.00 2.00	B ES PID	PID=1.30	2.00		End of Trial Pit at 2.00m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
2.50	0.70		Stable.		No groundwater encountered.				
Weather:									

Remarks
1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2071

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2 Excavation base and side



3. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 23/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535872.14 N191951.08
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ7_TP2072	Location Type TP	Level 10.51m AOD	Logged By AM
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30 0.30	B ES PID	PID=0.70		10.51	[MADE GROUND]	Greyish brown very sandy gravel. Gravel is angular to rounded fine to coarse flint, quartzite, concrete and brick. Sand is fine to coarse. Low cobble content of subrounded brick and concrete. <i>Unknown service encountered at edge of pit at 0.60 m. Not struck.</i>
		0.60 0.60	ES PID	PID=0.90				
		0.90 0.90 0.90	D ES PID	PID=0.70	0.80 1.00	9.71 9.51	[MADE GROUND]	Soft, greenish brown mottled brown, slightly sandy, slightly gravelly clay. Gravel is angular to rounded, fine to coarse, flint and brick. Frequent white putty material, possible ash deposit (<20 mm) and small green fragments of unidentified material.
		1.50 1.50 1.50	B ES PID	PID=1.20	1.20	9.31		
		2.40 2.40 2.40	D ES PID	PID=0.50	2.40			Firm, brown, slightly sandy, slightly gravelly clay. Gravel is angular to subrounded, flint, quartzite and brick. Sand is fine to coarse. Greyish brown, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, slag, coal ash, flint, quartzite, brick, concrete, tile, pipe and glass. Frequent pockets of white putty ash material, possible ash deposits (<400 mm). Medium cobble content of subrounded brick, concrete and slag. End of Trial Pit at 2.40m

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.80		Unstable.		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2072

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



2. Exposed service



4. Spoil



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 30/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E535881.74 N191941.45
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZ7_TP2073	Location Type TP	Level 10.20m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40 0.40 0.40	B ES PID	PID=0.20		10.20		Vegetation over dark brown mottled grey, gravelly, fine to coarse sand. Gravel is angular to subrounded, fine to coarse, flint, quartzite, cloth material, brick, concrete, wood and ASBESTOS(See B5). Frequent large lenses of compacted fibrous compost (<1.0m). Low cobble and boulder content of subrounded brick and concrete. [MADE GROUND]	
		0.80 0.80 0.80 1.00	B ES PID B	PID=0.00				<u>unidentified bluish white material (<50 mm) at 0.80 m (ES3).</u>	1
		1.80 1.80 1.80	B ES PID	PID=0.40	1.60	8.60		Soft grey mottled white slightly sandy silty clay. Abundant white putty ash material within strata (<0.50m). Occasional pieces of metal pipe. [MADE GROUND]	2
		2.50	D						
	▼				2.80	7.40		Grey sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Strong hydrocarbon odour and oily. [KEMPTON PARK GRAVEL FORMATION]	3
		3.10 3.10 3.10	B ES PID	PID=12.50	3.10			End of Trial Pit at 3.10m	4

Dimensions		Orientation		Trench Support and Comment				Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks			Date	Rate	Remarks
2.50	0.80		Stable		Groundwater struck at 2.80 m. Oily.					
Weather:										

Remarks
 1. Position scanned using a CAT prior to digging. 2. Oily sheen on groundwater. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2073

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Base and sides



4. Base



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ7_TP2073

Project ID: GTS-19-250



5. Sides



6. Suspect material



7. Spoil



8. Backfilled 2073 RE



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 28/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535809.72 N191857.65
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZ7_TP2074	Location Type TP	Level 10.41m AOD	Logged By AM
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.41		Reinforced concrete with rebar. [MADE GROUND]	
		0.20			10.21		Blackish grey, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, flint, quartzite, coal ash, slag brick, concrete, tile, glass, metal and plastic. [MADE GROUND]	
		0.50 0.50 0.50	B ES PID	PID=1.40			<i>lens of yellowish white putty material (<0.5 m) at 0.50 m (ES1).</i>	
		1.00 1.00 1.00	D ES PID	PID=1.50				
		1.40			9.01		Soft to firm, fissured, greenish grey mottled brown CLAY. Fissures are randomly oriented planar and polished. Frequent black staining. Frequent light grey silt partings (<2mm). Slight organic odour. [ALLUVIUM]	
		1.60 1.60 1.60	B ES PID	PID=1.80				
		2.00			8.41		Soft greenish grey, silty CLAY. [ALLUVIUM]	
		2.50			7.91		Soft dark brown, fibrous clayey PEAT. Frequent pockets of peaty clay (<0.2m). Slight organic odour. Abundant wood fragments (<100mm). [ALLUVIUM]	
		2.70 2.70 2.70	B ES PID	PID=1.10				
	▼	3.20			7.21		Greyish brown, sandy GRAVELS. Gravel is angular to rounded, fine to coarse flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		3.50 3.50 3.50	B ES PID	PID=0.80	3.50		End of Trial Pit at 3.50m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.60		Stable		Groundwater struck at 2.60 m. Pit collapsed due to water ingress.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZ7_TP2074

Project: Meridian Water HIF and
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Project ID: GTS-19-250



1. Prior to excavation



2. Complete excavation



3. Excavation and spoil



4. Excavation side



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Photographic Report

GI_DZ7_TP2074

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



5. Base and groundwater



6. Spoil



7. Suspect material



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 28/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E535915.55 N192033.92
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hans Tools Dando Terrier
Borehole Number GI_DZ7_WS2084	Hole Type WS	Level 11.48m AOD	Logged By AB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
[Redacted]					0.35	11.48		Reinforced CONCRETE. [MADE GROUND]	
		0.40	ES		0.40 - 0.60	0.90		Firm brown sandy gravelly CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse brick concrete and flint. [MADE GROUND]	
		0.40	B						
		0.60	PID						
		0.60	ES		0.60 - 0.80	11.13		Firm dark brownish grey slightly sandy slightly gravelly CLAY. Sand fine to coarse. Gravel subangular to rounded fine to coarse flint. [ALLUVIUM]	1
		0.60	B						
		0.80	PID						
		0.80	ES		0.80 - 1.10	10.58		Soft varying to firm dark brownish grey occasionally brownish grey organic CLAY with extremely closely spaced brown silt partings closely spaced black clayey amorphous peat <30mm pockets occasional white shell fragments and rare gravel. Gravel angular to rounded fine to coarse flint. [ALLUVIUM]	
		0.80	B						
		1.10	PID						
	1.10	ES		1.10 - 1.20	10.18		silty between 1.95 and 2.00 m.	2	
	1.10	B							
	1.20	L		1.20 - 2.20	10.18		peat lens between 2.40 and 2.50 m. gravelly between 2.50 and 2.70 m.		
	1.30	B							
	1.50 - 1.60	D							
	2.20 - 3.20	L							
	2.50 - 2.60	D							
					3.20	10.18		thickly laminated between 3.15 and 3.20 m. End of Borehole at 3.20m	3
									4

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ7_WS2084

Project ID: GTS-19-250



WS2084 1.20 - 3.20



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield		Date: 25/06/2021	
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited		Co-ords: E535895.96 N191982.76	
Project No. : GTS-19-250		Crew Name: NC		Drilling Equipment: Hand Tools Dando Terrier	
Borehole Number GI_DZ7_WS2085	Hole Type WS	Level 11.46m AOD	Logged By AB	Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.35	ES	PID = 0 ppm	0.35	11.46		Reinforced CONCRETE. [MADE GROUND]
		0.35 - 0.50	B					
		0.35	PID	PID = 0 ppm	0.35	11.46		Stiff brown sandy gravelly CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse brick concrete and flint. [MADE GROUND]
		0.50	ES					
		0.50 - 0.80	B	PID = 0 ppm	0.50	11.46		dark greyish brown between 0.50 and 0.80 m.
		0.50	PID					
		0.80	ES	PID = 0 ppm	0.90	11.12		Firm dark brownish grey slightly sandy slightly gravelly CLAY. Sand fine to coarse. Gravel subangular to rounded fine to coarse flint. [ALLUVIUM]
		0.80 - 0.90	B					
		0.80	PID	PID = 0 ppm	0.90	11.12		Firm dark brownish grey slightly sandy slightly gravelly CLAY. Sand fine to coarse. Gravel subangular to rounded fine to coarse flint. [ALLUVIUM]
		0.90	ES					
		0.90 - 1.20	B	PID = 0 ppm	1.20	10.56		Soft varying to firm dark brownish grey organic CLAY with extremely closely spaced brown silt partings closely spaced black clayey amorphous peat <20mm pockets and occasional white shell fragments. [ALLUVIUM]
		0.90	PID					
1.20	L	PID = 32 ppm	1.40	10.26		85 degree planar polished shear between 1.20 and 1.60 m. Very tight clean. with closely spaced peat lenses (<140 mm) between 1.60 and 2.20 m. thinly laminated with shell fragment and calcareous nodules (2 mm) at 1.65 m. slightly gravelly between 1.70 and 1.95 m. Gravel is subangular to rounded medium and coarse flint.		
1.20 - 3.00	B							
1.40 - 1.50	D	PID = 137 ppm	2.20	10.26		greyish brown to dark greyish brown slightly organic to organic between 2.20 and 3.20 m.		
1.40	PID							
2.10 - 2.20	D	PID = 7 ppm	3.10	10.26		frequent shell fragments and calcareous nodules between 2.69 and 2.70 m. silty band between 2.70 and 2.80 m.		
2.10	PID							
2.20	L	PID = 7 ppm	3.10	10.26		thinly laminated to very thinly bedded from 3.00 to 3.20 m. subrounded coarse gravel inclusion at 3.02 m. frequent shell fragments from 3.10 m.		
3.10 - 3.20	D							
3.10	PID	End of Borehole at 3.20m						

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned, cored and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZ7_WS2085

Project ID: GTS-19-250



WS2085 1.20 - 3.20



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 19/07/2021 - 20/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536114.53 N192099.77
Project No. : GTS-19-250	Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000

Borehole Number GI_DZLV1_BH2075	Hole Type CP	Level 10.87m AOD	Logged By AM	Scale 1:25	Page Number Sheet 1 of 2
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
		0.20	ES	PID = 1 ppm				Firm, greyish brown, sandy, gravelly clay. Gravel is angular to rounded, fine to coarse, brick, flint, quartzite, tile, glass, coal ash and concrete. Sand is fine to coarse. Low cobble content of subrounded brick. [MADE GROUND]				
		0.20	PID									
		0.30	D									
		0.30	ES	PID = 0 ppm								
		0.30	PID									
		0.60 - 0.80	B									
		0.80	ES	PID = 0 ppm								
		0.80	PID									
		1.00	D									
		1.50 - 1.95	B	N=12 (1,2/2,3,3,4)								
		1.50	cSPT									
		1.80	ES									
		1.80	PID	PID = 1 ppm					1.80	10.87		Firm, grey mottled brown clay. Gravel is angular to subangular, fine to medium, flint, quartzite and brick. [MADE GROUND]
		2.00 - 2.30	B	PID = 2 ppm					2.00	9.07		Firm fissured, bluish grey mottled brown CLAY. Fissures are randomly orientated, undulating, smooth and polished. Occasional buried rootlets. Slight organic odour. [ALLUVIUM]
		2.30	ES									
	2.30	PID										
	2.50 - 2.95	UT	PID = 0 ppm									
	3.00	D										
	3.47	EW										
	3.50 - 3.95	B	N=20 (2,3/4,5,5,6)	3.50	8.87		Medium dense multicoloured, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]					
	3.50	cSPT										
	3.60	ES										
	3.60	PID	PID = 0 ppm									
	4.00	EW	N=25 (2,4/5,6,7,7)									
	4.15	EW										
	4.20	EW										
	4.30	EW										
	4.50	EW	N=25 (2,4/5,6,7,7)									
	4.50	EW										
	4.50 - 4.95	B										
	4.50	cSPT										

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
3.00	200	1.70	200								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 19/07/2021 - 20/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536114.53 N192099.77
Project No. : GTS-19-250		Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZLV1_BH2075	Hole Type CP	Level 10.87m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		5.50	D	PID = 0 ppm	5.50	7.37		Medium dense multicoloured, sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
		5.70 5.70	ES PID						Stiff, fissured, dark grey, slightly sandy micaceous CLAY. Fissures are randomly orientated, planar and smooth. Rare light grey fine sand / silt partings. Sand is fine. [LONDON CLAY FORMATION]
		6.50 6.50	D UT			6.50	5.37		End of Borehole at 6.50m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
6.50	150	6.50	150								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 20/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536155.55 N191959.35
Project No. : GTS-19-250	Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000

Borehole Number GI_DZLV1_BH2078	Hole Type CP	Level 9.87m AOD	Logged By AM	Scale 1:25	Page Number Sheet 1 of 2
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
		Depth (m)	Type	Results							
		0.20	ES	PID = 1 ppm				Soft to firm, dark grey, very sandy, gravelly clay. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick, concrete, tile, coal ash and glass. Sand is fine to coarse. [MADE GROUND]			
		0.20	PID								
		0.30	ES	PID = 0 ppm							
		0.30	PID								
		0.50	D								
		0.60	B								
		0.80	ES	PID = 2 ppm							
		0.80	PID								
		1.00	D	1.00					9.87	Firm greyish brown, slightly sandy, gravelly clay. Gravel is angular to rounded, fine to coarse, brick, concrete, flint, quartzite and tile. Slight organic odour. Sand is fine to coarse. [MADE GROUND]	
		1.20	ES	PID = 1 ppm					1.20	8.87	Firm, dark grey mottled brown CLAY. Frequent iron oxide staining. Frequent decaying rootlets. [ALLUVIUM]
		1.20	PID								
		1.50	D	N=6 (1.0/1.1,2.2)					1.80	8.67	Soft, greyish brown, very sandy CLAY. Sand is fine to coarse. [ALLUVIUM]
		1.50	SPT								
		2.00	ES	PID = 1 ppm					2.30	8.07	Loose multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]
		2.00	EW								
		2.00	PID								
		2.50	B	N=9 (1.1/2.2,2.3)							
		2.50	cSPT								
	2.53	EW									
	2.60	ES	PID = 0 ppm								
	2.60	PID									
	2.90	EW									
	2.90	EW									
	3.00	EW									
	3.30	EW	N=10 (1.1/2.2,3.3)								
	3.30	EW									
	3.50	B									
	3.50	cSPT									
	4.20	D		4.20	7.57	Stiff, fissured, dark grey, slightly sandy, micaceous CLAY. Fissures are randomly oriented, planar and smooth. Occasional light grey fine sand / silt partings (<1mm). Sand is fine. [LONDON CLAY FORMATION]					
	4.50	ES	PID = 3 ppm								
	4.50 - 4.95	UT									
	4.50	PID									
	5.00	D									


Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.50	200	1.50	200								
		4.50	150								

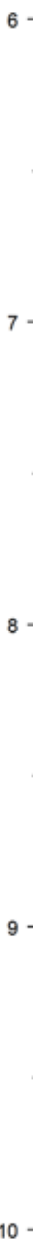
Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 20/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536155.55 N191959.35
Project No. : GTS-19-250		Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZLV1_BH2078	Hole Type CP	Level 9.87m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.20	5.67	 Stiff, fissured, dark grey, slightly sandy, micaceous CLAY. Fissures are randomly oriented, planar and smooth. Occasional light grey fine sand / silt partings (<1mm). Sand is fine. [LONDON CLAY FORMATION] End of Borehole at 5.20m	



Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
5.20	150										

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 21/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536185.86 N191915.37
Project No. : GTS-19-250		Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000

Borehole Number GI_DZLV1_BH2079	Hole Type CP	Level 10.40m AOD	Logged By AM	Scale 1:25	Page Number Sheet 1 of 2
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES	PID = 0 ppm	0.60	10.40		Greyish brown, fine to coarse, sand and gravel. Gravel is angular to rounded, fine to coarse, concrete, brick, flint, quartzite and coal ash. [MADE GROUND]
		0.20	PID					
		0.30	ES					
		0.30	PID					
		0.50	D					
		0.60	B					
		0.80	ES	PID = 1 ppm	1.60	9.80		Firm brown mottled grey, sandy, slightly gravelly clay. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick and concrete. Sand is fine to coarse. [MADE GROUND]
		0.80	PID					
		1.00	D					
		1.50	B	N=6 (1,1/1,1,2,2)	2.40	8.80		Firm, fissured, brown mottled grey CLAY. Fissures are randomly oriented, undulating, smooth and polished. Occasional buried rootlets. Frequent iron oxide staining. [ALLUVIUM]
		1.50	cSPT					
		1.90	ES	PID = 2 ppm	4.50	8.80		Loose quickly becoming medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]
		1.90	PID					
		2.00	D					
		2.50	B					
	2.50	cSPT						
	2.70	ES						
	2.70	PID						
	3.06	EW	N=9 (1,2/2,2,2,3)	4.50	8.80		Loose quickly becoming medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
	3.50	B						
	3.50	cSPT						
	3.90	EW						
	3.90	EW						
	3.90	EW						
	3.90	EW						
	4.00	EW	N=15 (1,2/3,3,4,5)	4.50	8.80		Loose quickly becoming medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
	4.00	EW						
	4.50	B	N=21 (2,3/3,6,6,6)	4.50	8.80		Loose quickly becoming medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
	4.50	cSPT						

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.70	200	1.70	200								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 21/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536185.86 N191915.37
Project No. : GTS-19-250		Crew Name: GB	Drilling Equipment: Hand Tools Dando 2000
Borehole Number GI_DZLV1_BH2079	Hole Type CP	Level 10.40m AOD	Logged By AM
		Scale 1:25	Page Number Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.50	8.00		Loose quickly becoming medium dense multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]
		5.80 5.80	ES PID	PID = 2 ppm				Stiff, fissured, dark grey, slightly sandy CLAY. Fissures are randomly oriented, undulating and rough. Occasional light grey fine sand / silt partings (<1mm). [LONDON CLAY FORMATION]
		6.00 - 6.40	UT					
		6.50	D		6.50	4.90		End of Borehole at 6.50m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
6.50	150	5.70	150								

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 15/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536084.67 N192261.61
Project No. : GTS-19-250		Crew Name:	Equipment: Hand tools
Location Number GI_DZLV1_TP2031	Location Type TP	Level 10.10m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.07 - 0.22 0.10 - 0.50	B B	PID=0.50		10.10	Stiff light orange brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded fine to coarse flint. Rare inclusions within gravel fraction of brick, glass, ash, concrete and asphalt. [MADE GROUND]	
		0.20 0.20	ES PID					
		0.40 0.40	B D					
		0.90	D					
		1.10 1.10	ES PID	PID=0.10				
					1.40		End of Trial Pit at 1.40m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.50	0.50		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated to locate Thames Water asset and under ecological watching brief. 4. Trial pit located above concrete road. Pit extended beyond the edge of the road. Assumed Thames Water Main located by EML techniques.



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 15/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536064.57 N192270.58
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZLV1_TP2032	Location Type TP	Level 10.29m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 0.40 0.40 0.40	B D ES PID	PID=0.10	10.29		Stiff, light orange brown, very sandy, very gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to rounded, fine to coarse of flint. Rare inclusions within gravel fraction of brick, concrete and asphalt. [MADE GROUND]	
		1.40 1.40 1.40 1.40	B D ES PID	PID=0.40	1.10	9.19	Stiff, dark grey, silty CLAY. Possible slight hydrocarbon odour. [ALLUVIUM]	
		2.20 2.20 2.20 2.20	B D ES PID	PID=0.00	1.90	8.39	Very stiff, dark grey mottled orange brown, slightly sandy CLAY. Sand is fine. [ALLUVIUM]	
					3.00		End of Trial Pit at 3.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
1.00	2.50		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Large concrete obstruction (approx. 12m*4m*0.3m thick) in original location of pit. Pit re-located approx. 1.5m to the west. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2032

Project ID: GTS-19-250



1. Location and shallow excavation



2. Complete excavation

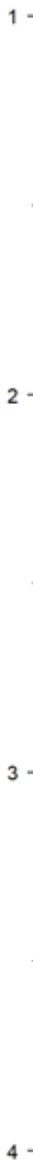


Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 15/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536078.99 N192263.18
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2033	Location Type TP	Level 10.06m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.07 0.07 0.07 0.07	B D ES PID	PID=0.20	0.15		Firm, dark brown slightly sandy CLAY. Sand is fine. Abundant rootlets. [MADE GROUND] End of Trial Pit at 0.15m	



Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
12.00	4.00		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Position terminated early at 0.15 m- concrete obstruction found at the base of pit. Approximately 12.00 m x 6.00 m area exposed. Did not break out due to potential proximity of Thames Water Main service. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2033

Project ID: GTS-19-250



1. Before excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 08/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536079.61 N192138.43
Project No. : GTS-19-250	Crew Name:	Equipment: Vacuum Extraction Unit

Location Number GI_DZLV1_TP2042-2 043-2044	Location Type TP	Level 11.18m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05	ES	PID=0.10	0.10	11.18 11.08 11.08	<p>Firm dark brown slightly gravelly sandy CLAY. Sand is fine to coarse, Angular to sub-rounded, brick, concrete and flint. Abundant rootlets. (UNIT A - ES at 0.05 m) [MADE GROUND]</p> <p>Stiff, light orange brown slightly gravelly slightly sandy CLAY. Gravel is fine to coarse, sub-rounded, flint and occasionally sub-angular brick, concrete. Scatterings or glass, ceramics, plastic, rebar and wire. (UNIT B - ES at 1.00 m) [MADE GROUND]</p> <p>Stiff to very stiff light brown slightly sandy gravelly CLAY. Gravel is fine to coarse flint, brick and concrete. Medium cobble/boulder content of concrete. Rare inclusions of Asphalt and plastic. (UNIT C - ES at 1.20 m) [MADE GROUND]</p>	
		0.05	PID					
		1.00	B	PID=0.20 PID=0.40	1.10	9.88	<p>Dense black gravel of Asphalt. High cobble and boulder content of angular Asphalt. Occasional complete kerbstones (up to 1.5m long). (UNIT D - ES at 1.00 m) [MADE GROUND]</p>	
		1.00	D					
		1.00	ES					
		1.00	ES					
		1.00	PID					
		1.00	PID					
		1.20	B	PID=0.10	1.50	<p>Very Stiff, dark orange brown, locally slightly sandy, silty CLAY. potentially re-worked in the vicinity of services where it becomes blackish brown. (UNIT E) [ALLUVIUM]</p>		
		1.20	D					
		1.20	ES					
		1.20	PID					
		2.50	B	PID=0.20	2.70	<p>End of Trial Pit at 2.70m</p>		
		2.50	D					
		2.50	ES					
		2.50	PID					

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
20.00	3.00			Stable		No groundwater encountered.			
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. 20 m long trench excavated through locations 2042, 2043 and 2044. Levels and locations of soil units vary along the length. Maximum and minimum depths given on the log. Refer to sketch for approximation of unit level change. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
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Tel: 01953 459462

Photographic Report

GI_DZLV1_TP2042-2043-2044

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. North face eastern half



3. North face western half



4. South face eastern half



GROUND TECHNOLOGY
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Norfolk, NR17 1ZA
Tel: 01953 459462

Photographic Report

GI_DZLV1_TP2042-2043-2044

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



5. South face western half



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/06/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536100.05 N192151.16
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZLV1_TP2045	Location Type TP	Level 10.59m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.40 0.30 - 0.40 0.30 - 0.40 0.30	B D ES PID	PID=0.20		10.59	Firm dark brown very silty very sandy GRAVEL. Sand is fine. Grave is subangular to subrounded fine to coarse flint, brick, concrete, ceramics. [MADE GROUND] <u>low cobble content of concrete and brick between 0.00 and 0.30 m.</u>	
		0.75 - 0.85 0.75	ES PID	PID=0.10			<u>becomes black between 0.70 and 0.80 m. Possible layer of clinker/ ash.</u>	
		1.60 - 1.70 1.60 - 1.70 1.60 - 1.70 1.60	B D ES PID	PID=0.10	1.45	9.14	Firm light grey mottled orange slightly sandy silty CLAY. Sand is fine. [ALLUVIUM]	
		2.60 - 2.70 2.60 - 2.70	B D				<u>medium cobble/boulder content of concrete and brick at 1.20 m.</u>	
		3.00 - 3.10 3.00 - 3.10 3.00 - 3.10 3.00	B D ES PID	PID=0.00	2.90	7.69	Stiff light grey mottled yellow brown very sandy CLAY to clayey SAND. Sand is fine. [ALLUVIUM]	
					3.25		End of Trial Pit at 3.25m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data			
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
2.50	0.90			Stable	Not required	No groundwater encountered.				
Weather:										

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers. 3. Trial pit excavated under archaeological supervision. 4. Trial pit excavated under ecological watching brief.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

GI_DZLV1_TP2045

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Complete excavation




3. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 09/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536092.25 N192074.39
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2049	Location Type TP	Level 10.13m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30 0.30 0.30	B D ES PID	PID=0.30		10.13	 Stiff, light brown, slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is sub-rounded to sub-angular, brick, concrete, flint, asphalt. Occasional inclusions of plastic, metal, ceramics, glass. Low to medium cobble content of concrete. Abundant rootlets. [MADE GROUND]	
		1.10 1.10 1.10 1.10	B D ES PID	PID=0.10	1.00 1.20	9.13		Stiff to very stiff, dark brown mottled reddish brown, slightly gravelly silty CLAY. Gravel is sub-rounded, fine to coarse flint. [MADE GROUND]
End of Trial Pit at 1.20m								

Dimensions		Orientation		Trench Support and Comment			Pumping Data			
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
2.00	1.00			Stable		No groundwater encountered.				
Weather:										

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated at 1.20 m on suspected Thames Water Mains service. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2049

Project ID: GTS-19-250



2. Before excavation



2. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 09/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536092.25 N192074.39
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2050	Location Type TP	Level 10.13m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30 0.30 0.30 0.30	B B D ES PID	PID=0.20		10.13	Stiff, light brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-rounded to sub-angular, brick, concrete, flint, asphalt. Occasional inclusions of plastic, metal, ceramics, glass. Low to medium cobble content of concrete. Abundant rootlets. [MADE GROUND]	
		0.85 0.85 0.85 0.85	B D ES PID	PID=0.40	0.80 0.90	9.33	Stiff to very stiff, dark brown mottled reddish brown, slightly gravelly silty CLAY. Gravel is sub-rounded, fine to coarse flint. [MADE GROUND] End of Trial Pit at 0.90m	

Dimensions		Orientation		Trench Support and Comment			Pumping Data			
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks		Date	Rate	Remarks
2.00	1.00			Stable		No groundwater encountered.				
Weather:										

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated at 0.90 m on suspected Thames Water Mains service. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated to located Thames Water asset.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2050

Project ID: GTS-19-250



1. Before excavation



2. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 29/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536162.19 N192025.75
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2052	Location Type TP	Level 10.22m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.20	B	PID=0.10	0.25	9.97	[MADE GROUND]	1	
		0.10 - 0.20	D						
		0.10 - 0.20	ES						
		0.10	PID						
		0.35 - 0.45	B	PID=0.20	0.80	9.42	[MADE GROUND]	2	
		0.35 - 0.45	D						
		0.35 - 0.45	ES						
		0.35	PID						
		0.90 - 1.00	B	PID=0.10	1.95	8.27	[ALLUVIUM]	3	
		0.90 - 1.00	D						
		0.90 - 1.00	ES						
		0.90	PID						
		2.05 - 2.15	B	PID=0.00	2.20	8.02	[ALLUVIUM]	4	
		2.05 - 2.15	D						
		2.05 - 2.15	ES						
		2.05	PID						
		2.30 - 2.40	B	PID=0.00	2.70	End of Trial Pit at 2.70m			
		2.30 - 2.40	D						
		2.30 - 2.40	ES						
		2.30	PID						

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	0.90		Unstable	Not required	Groundwater struck at 2.60 m. Pit collapsed due to water ingress.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit collapsed to 2.60 m bgl when base at 2.70 m due to water strike 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under ecological watching brief.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

GI_DZLV1_TP2052

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Spoil



4. Backfill



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 28/06/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536158.95 N192000.52
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2053	Location Type TP	Level 10.06m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 0.20 0.20 0.20	B D ES PID	PID=0.70		10.06			
		0.70 0.70 0.70 0.70	B D ES PID	PID=0.50	0.60	9.46		1	
		1.20 1.20 1.20 1.20	B D ES PID	PID=0.30	1.10	8.96			
		1.85 1.85 1.85 1.85	B D ES PID	PID=0.30	1.60	8.46		2	
		2.70 2.70 2.70 2.85	B D PID ES	PID=0.20	2.60	7.46			
					2.90		End of Trial Pit at 2.90m	3	
								4	

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks	
2.50	0.90		Unstable	Not required	Groundwater struck at 2.80 m. Pit abandoned due to collapse.				
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit abandoned at 2.90 m due to collapse. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated under ecological watching brief.



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Photographic Report

GI_DZLV1_TP2053

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Spoil



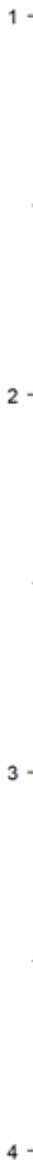
4. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 09/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536118.53 N191967.52
Project No. : GTS-19-250		Crew Name:	Equipment: Vacuum Extraction Unit
Location Number GI_DZLV1_TP2054	Location Type TP	Level 8.85m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.25 0.25 0.25 0.25	B D ES PID	PID=0.20	0.50	8.85	Stiff, light brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-rounded to sub-angular, brick, concrete, flint, asphalt. Occasional inclusions of plastic, metal, ceramics, glass. Low to medium cobble content of concrete. Abundant rootlets. [MADE GROUND]	
		0.70 0.70 0.70 0.70	B D ES PID	PID=0.40	0.80	8.35	Stiff to very stiff, dark brown mottled reddish brown, slightly gravelly silty CLAY. Gravel is sub-rounded, fine to coarse flint. [MADE GROUND]	
							End of Trial Pit at 0.80m	



Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.00		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated at 0.80 m on suspected Thames Water Mains service. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit: excavated to locate Thames Water asset and under ecological watching brief.



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2054

Project ID: GTS-19-250



1. Before excavation



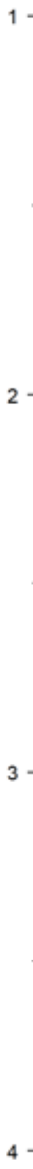
2. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 09/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536118.53 N191967.52
Project No. : GTS-19-250		Crew Name:	Equipment: Vacuum Extraction Unit
Location Number GI_DZLV1_TP2055	Location Type TP	Level 8.85m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	B	PID=0.40	0.30	8.85	Stiff, light brown, slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is sub-rounded to sub-angular, brick, concrete, flint, asphalt. Occasional inclusions of plastic, metal, ceramics, glass. Low to medium cobble content of concrete. Abundant rootlets. [MADE GROUND]	
		0.15	D					
		0.15	ES					
		0.15	PID					
		0.45	B	PID=0.10	0.60	8.55	Stiff to very stiff, dark brown mottled reddish brown, slightly gravelly silty CLAY. Gravel is sub-rounded, fine to coarse flint. [MADE GROUND]	
		0.45	D					
		0.45	ES					
		0.45	PID					
End of Trial Pit at 0.60m								



Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.00		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated at 0.60 m on suspected Thames Water Mains service. 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit: excavated to locate Thames Water asset and under ecological watching brief.



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2055

Project ID: GTS-19-250



1. Before excavation



2. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 12/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536168.46 N191873.85
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2056	Location Type TP	Level 10.12m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.15	B			10.12	<p>Stiff, Dark brown slightly sandy, very gravelly CLAY. Sand is fine. Gravel is angular to sub-angular, fine to coarse, brick, flint, concrete. Occasional plastic, ceramics, shell, textiles. Abundant rootlets.</p> <p>[MADE GROUND]</p> <p>Tarmac covering base of entire pit. Suspected buried road surface.</p> <p>[MADE GROUND]</p> <p>Concrete beneath road surface. Not broken out due to potential Thames Water Main service.</p> <p>[MADE GROUND]</p> <p>End of Trial Pit at 0.31m</p>	
		0.15	D					
		0.15	ES		0.25	9.87		
		0.15	PID	PID=0.20	0.31	9.81		
		0.28	ES					
		0.28	PID	PID=0.40				

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
3.00	2.00			Stable		No groundwater encountered.			
Weather:									

Remarks


1. Position scanned using a CAT prior to digging. 2. Trial pit terminated on concrete filling entire base area of pit at 0.31m. Not broken out due to potential Thames Water Mains, which was not positively identified 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 12/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536168.46 N191873.85
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2057	Location Type TP	Level 10.12m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	B			10.12	 <p>Stiff, Dark brown slightly sandy, very gravelly CLAY. Sand is fine. Gravel is angular to sub-angular, fine to coarse, brick, flint, concrete. Occasional plastic, ceramics, shel, textiles. Abundant rootlets. [MADE GROUND]</p> <p>Tarmac covering base of entire pit. Suspected buried road surface. [MADE GROUND]</p> <p>Concrete beneath road surface. Not broken out due to potential Thames Water Main service. [MADE GROUND]</p> <p>End of Trial Pit at 0.26m</p>	
		0.10	D					
		0.10	ES					
		0.10	PID	PID=2.00	0.20	9.92		
		0.23	ES		0.26	9.86		
		0.23	PID	PID=1.50	0.26			

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
12.90	2.00			Stable		No groundwater encountered.			
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated on concrete filling entire base area of pit at 0.31m. Not broken out due to potential Thames Water Mains, which was not positively identified 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
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Photographic Report

GI_DZLV1_TP2057

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Concrete obstruction in excavation




3. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 12/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536168.46 N191873.85
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2058	Location Type TP	Level 10.12m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 0.20 0.20 0.20	B D ES PID	PID=0.30	0.40 0.40	10.12 9.72	 Stiff, light brown, very sandy, gravelly, CLAY. Gravel is sub-angular to sub-rounded, fine to coarse, brick, concrete, flint. Sand is fine to coarse. Occasional glass and plastic. Abundant rootlets. [MADE GROUND]	
							Concrete surface across entire base of pit. Not broken out due to potential Thames Water Main service. [MADE GROUND] End of Trial Pit at 0.40m	



Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.20		Stable.		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit terminated on concrete filling entire base area of pit at 0.31m. Not broken out due to potential Thames Water Mains, which was not positively identified 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2058

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 12/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536187.01 N191965.91
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2063	Location Type TP	Level 10.38m AOD	Logged By TB	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40 0.40 0.40 0.40	B D ES PID	PID=0.60	10.38		Firm, dark brown, slightly sandy, gravelly CLAY. Sand is fine. Gravel is sub-angular to sub-rounded, fine to medium of flint, concrete, brick. [MADE GROUND] <i>plastic pipe and wire inclusions between 0.30 and 0.40 m.</i>		
		1.35 1.35 1.35 1.35	B D ES PID	PID=0.20	0.95 9.43		Firm becoming stiff, dark brown, mottled reddish brown, slightly sandy, silty CLAY. [ALLUVIUM]	1	
		2.70 2.70 2.70 2.70	B D ES PID	PID=0.10	2.40 7.98		Yellow brown slightly gravelly SAND. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse of flint. [KEMPTON PARK GRAVEL FORMATION]	2	
					3.00		End of Trial Pit at 3.00m	3	
								4	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.20		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



GROUND TECHNOLOGY
Victory Park, Attleborough
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Tel: 01953 459462

Photographic Report

GI_DZLV1_TP2063

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation
 Client: London Borough of Enfield
 Date: 14/07/2021
 Location: Meridian Water, Enfield
 Engineer: Ground Technology Services Limited
 Co-ords: E536080.45 N192060.78
 Project No. : GTS-19-250
 Crew Name:
 Equipment: JCB 3CX

Location Number: GI_DZLV1_TP2064
 Location Type: TP
 Level: 9.63m AOD
 Logged By: TB
 Scale: 1:20
 Page Number: Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 0.30 0.30 0.30	B D ES PID	PID=1.10	9.63	[MADE GROUND]	Stiff, dark brown, slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to sub-rounded, concrete, flint, brick. Occasional metal, wire, wood, ceramics. [MADE GROUND]	
		1.10 1.10 1.10 1.10	B D ES PID	PID=0.30	0.80 8.83		Stiff, orange brown, sandy CLAY. Sand is fine. Occasional sub-rounded, medium, flints. [MADE GROUND]	
					1.50		End of Trial Pit at 1.50m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	2.00		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Service located at base of pit at 1.50 m. Potential cast iron sewer. 3. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

Project: Meridian Water HIF and
Infrastructure Ground Investigation

GI_DZLV1_TP2064

Project ID: GTS-19-250



1. Before excavation



2. Excavation



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 14/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536125.51 N192102.38
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZLV1_TP2065	Location Type TP	Level 10.74m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 0.40 0.40 0.40	B D ES PID	PID=0.40	10.74		Stiff, light brown, slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse of concrete, flint, brick. Occasional wood, rope, metal, wire. [MADE GROUND]	
		1.60 1.60 1.60 1.60	B D ES PID	PID=0.20	1.50 9.24		Stiff, dark grey mottled orange brown, silty CLAY with frequent organics of fragmented wood. [ALLUVIUM]	
		2.75 2.75 2.75 2.75	B D ES PID	PID=0.10	2.70 8.04		Stiff, light brown, slightly sandy CLAY. Sand is fine. Infrequent shell fragments. [ALLUVIUM]	
					3.00		End of Trial Pit at 3.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.00	1.50		Stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZLV1_TP2065

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Spoil



4. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 13/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536073.38 N192113.82
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZLV1_TP2066	Location Type TP	Level 11.07m AOD	Logged By TB
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.40 0.40 0.40 0.40	B D ES PID	PID=0.70	11.07		Stiff, light brown, slightly sandy, gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse, brick, concrete, flint. Occasional plastic, ceramic, glass. [MADE GROUND] 2 no. concrete boulders approx. 1.00 x 0.80 x 0.30 m between 0.20 and 1.00 m.	
		1.40 1.40 1.40 1.40	B D ES PID	PID=0.90	1.10 9.97		Stiff, dark blackish brown, very sandy, very gravelly CLAY. Sand is fine to coarse. Gravel is sub-angular to sub-rounded, fine to coarse, brick, Asphalt, concrete and flint. Medium cobble content of concrete. [MADE GROUND] 1 no. concrete boulder approx. 0.80 to 1.10 m wide at 1.40 m.	
		2.10 2.10 2.10 2.10	B D ES PID	PID=0.10	1.80 9.27		Stiff becoming very stiff, dark blackish grey, silty CLAY. Weak organic odour. [ALLUVIUM]	
					3.00		End of Trial Pit at 3.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
3.00	1.50		stable		No groundwater encountered.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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Photographic Report

GI_DZLV1_TP2066

Project: Meridian Water HIF and
Infrastructure Ground Investigation

Project ID: GTS-19-250



1. Before excavation



2. Excavation



3. Spoil



4. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 30/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536180.90 N191878.58
Project No. : GTS-19-250	Crew Name:	Equipment: JCB 3CX

Location Number GI_DZLV1_TP2075	Location Type TP	Level 10.30m AOD	Logged By AM	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	B	PID=0.10	0.30	10.00	Greyish brown, fine to coarse, very sandy gravel. Gravel is angular to rounded, fine to coarse, flint, quartzite, brick, concrete, glass and coal ash. Sand is fine to coarse. Low cobble content of subrounded concrete. [MADE GROUND]	
		0.20	ES					
		0.20	PID					
		0.40	B	PID=0.20	0.50	9.80	Blackish grey, fine to coarse, sand and gravel. Gravel is angular to subrounded, coal ash, brick and flint. [MADE GROUND]	
		0.40	ES					
		0.40	PID					
		0.70	B	PID=0.20	1.50	8.80	Firm, greyish brown, slightly sandy, slightly gravelly clay. Gravel is angular to subrounded, fine to coarse, flint, quartzite, brick, coal ash and concrete. Low cobble and boulder content of subrounded concrete. [MADE GROUND]	
		0.70	ES					
		0.70	PID					
		1.70	B	PID=0.60	1.50	8.80	Firm, fissured, greenish grey mottled brown CLAY. Fissures are randomly oriented, planar and smooth. [ALLUVIUM]	
		1.70	ES					
		1.70	PID					
		2.20	B				<i>frequent pockets of peat (<0.30 m thick) between 2.10 and 2.80 m. Slightly gravelly, angular to subangular, fine, flint and quartzite.</i>	
		2.50	D					
		2.80			2.80	7.50		
		3.00	B	PID=0.50	3.00	3.00	Brown, slightly silty very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL]	
		3.00	ES					
		3.00	PID					
							End of Trial Pit at 3.00m	

Dimensions		Orientation	Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	0.60		Stable		Groundwater struck at 3.00 m.			
Weather:								

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit back filled with arising and compacted in 300 mm layers.



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1. Prior to excavation



2. Complete excavation



3. Base and side



4. Spoil



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Project: Meridian Water HIF and
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Project ID: GTS-19-250



5. Backfilled



Trial Pit Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 28/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536107.23 N191968.00
Project No. : GTS-19-250		Crew Name:	Equipment: JCB 3CX
Location Number GI_DZLV1_TT2008	Location Type TP	Level 9.70m AOD	Logged By
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES		9.70		Greyish brown, fine to coarse sand and gravel. Gravel is angular to rounded, fine to coarse, flint quartzite, brick, concrete, asphalt, tile, coal ash, glass and metal. High cobble content of subangular to subrounded, concrete and brick. [MADE GROUND] <i>tarmac / concrete hardstanding (ES1) between 0.20 and 0.60 m.</i>	
		0.50	B					
		0.50	D					
		0.50	ES					
		0.50	ES	PID=0.90				
		0.50	PID	PID=1.00				
		1.10	B		0.90		Firm, fissured brown mottled grey, slightly silty CLAY. Frequent iron oxide staining. Fissures are randomly oriented, planar and smooth. [ALLUVIUM]	
		1.10	ES		8.80			
		1.10	PID	PID=0.80				
		1.70	D				<i>frequent light grey silt partings (<2 mm thick) between 1.60 and 2.20 m. Slightly gravelly, angular to subangular, fine to medium, flint and quartzite.</i>	
		2.30	B		2.20		Brown mottled grey, fine to coarse SAND and GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. [KEMPTON PARK GRAVEL FORMATION] End of Trial Pit at 2.30m	
		2.30	ES		2.30			
		2.30	PID	PID=0.50				

Dimensions		Orientation		Trench Support and Comment			Pumping Data		
Pit Length (m)	Pit Width (m)	Orientation (deg)		Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.50	10.00			Stable					
Weather:									

Remarks
 1. Position scanned using a CAT prior to digging. 2. Trial pit is T- shaped which extends across a 5.0m buried road and progresses down the side of the hardstanding to 2.3m. ES2 and B3 are taken from the west side of the road (others from the east where the pit was progressed). 3. Trial pit back filled with arising and compacted in 300 mm layers. 4. Trial pit excavated under archaeological supervision. 5. Trial pit excavated to locate Thames Water asset and under ecological watching brief.



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1. Prior to excavation



2. Excavation part 1



3. Shallow trench part 1



4. Shallow trench part 2



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5. Complete excavation deep section



6. Base and groundwater



7. Side and base with groundwater



8. Spoil 1



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9. Spoil 2



10. Backfilled part 1



11. Backfilled part 2



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536114.17 N192100.55
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Archway Dart
Borehole Number GI_DZLV1_WS2075	Hole Type WS	Level 10.75m AOD	Logged By ND
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
[REDACTED]		1.00 - 1.20 1.00	ES PID	PID = 0 ppm	1.24	10.75	[Pattern]	Firm brown sandy gravelly CLAY. Sand fine to coarse. Gravel angular to subrounded fine to coarse flint brick and clinker. [MADE GROUND] <i>gravelly between 0.38 and 1.54 m.</i> <i>rootlets between 1.00 and 2.15 m.</i>	1
		1.30 - 1.50 1.30	ES PID	PID = 0 ppm	1.90	9.51	[Pattern]	Very stiff fissured greyish brown slightly sandy slightly gravelly slightly organic CLAY. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. Fissures 0-90 degrees very closely spaced planar smooth tight with orangish brown silty sand infill. [ALLUVIUM]	2
		2.00 - 2.20 2.00	ES PID	PID = 0 ppm	2.78	8.85	[Pattern]	Stiff grey mottled brown slightly organic CLAY with extremely closely spaced orangish brown silt partings and white root traces and occasional shell <5mm fragments. [ALLUVIUM] <i>infill from strata above between 2.00 and 2.22 m.</i> <i>firm greyish brown silty with black organic partings between 2.54 and 2.78 m. No root traces.</i>	3
								End of Borehole at 2.78m	4

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation		Client: London Borough of Enfield	Date: 29/07/2021
Location: Meridian Water, Enfield		Engineer: Ground Technology Services Limited	Co-ords: E536155.83 N191959.89
Project No. : GTS-19-250		Crew Name:	Drilling Equipment: Hand Tools Archway Dart
Borehole Number GI_DZLV1_WS2078	Hole Type WS	Level 9.81m AOD	Logged By ND
		Scale 1:20	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	9.81		Soft to firm dark grey very sandy gravelly clay. Gravel is angular to rounded fine to coarse flint, brick, concrete, ash and glass. Sand is fine to coarse. [MADE GROUND]	
		1.10 - 1.30	ES					Stiff grey organic CLAY with extremely closely spaced silt partings and rootlets. [ALLUVIUM]	1
		1.20 - 2.00	L					<i>mottled brown with orangish brown partings between 1.20 and 1.58 m.</i>	
		1.70 - 1.90	ES		1.62	8.81		<i>firm from 1.45 to 1.62 m.</i> <i>slightly gravelly band between 1.52 and 1.62 m.</i> Gravel angular to subrounded fine and medium flint. <i>black from 1.58 to 1.62 m.</i>	
		2.00 - 3.00	L		2.00	8.19		Firm light brownish grey very sandy CLAY. Sand fine to coarse. [ALLUVIUM]	2
								<i>sand laminations (2 mm thick) at 1.81 m.</i> Multicoloured, very sandy GRAVEL. Gravel is angular to rounded, fine to coarse, flint and quartzite. Sand is fine to coarse. [KEMPTON PARK GRAVEL FORMATION]	
					3.00	7.81		End of Borehole at 3.00m	3
									4

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



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GI_DZLV1_WS2078

Project ID: GTS-19-250



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Shallow Borehole Log

Project Name: Meridian Water HIF and Infrastructure Ground Investigation	Client: London Borough of Enfield	Date: 28/07/2021
Location: Meridian Water, Enfield	Engineer: Ground Technology Services Limited	Co-ords: E536185.65 N191914.37
Project No. : GTS-19-250	Crew Name:	Drilling Equipment: Hand Tools Archway Dart

Borehole Number GI_DZLV1_WS2079	Hole Type WS	Level 10.35m AOD	Logged By ND	Scale 1:20	Page Number Sheet 1 of 1
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Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Pattern]					0.60	10.35	[Pattern]	Greyish brown fine to coarse sand and gravel. Gravel is angular to rounded fine to coarse concrete, brick and flint. [MADE GROUND]
		1.00 - 1.20 1.00	ES PID	PID = 0 ppm			[Pattern]	Very stiff brown sandy very gravelly CLAY. Sand fine to coarse. Gravel angular to subrounded fine to coarse flint brick and clinker. [MADE GROUND]
		1.20 - 2.00 1.25 - 1.45 1.25	L ES PID	PID = 0 ppm	1.24	9.75	[Pattern]	Firm greyish brown sandy CLAY with reddish brown silty sand partngs and root traces. Sand fine and medium. [ALLUVIUM]
		1.50 - 1.70 1.50	ES PID	PID = 0 ppm	1.46	9.11	[Pattern]	<i>very sandy slightly gravelly between 1.36 and 1.46 m. Sand is fine to coarse. Gravel is angular to rounded fine and medium flint.</i>
		1.80 - 2.00 1.80	ES PID	PID = 0 ppm	1.80	8.89	[Pattern]	Brown sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint and occasional quartz. [ALLUVIUM]
		2.00 - 3.00	L				[Pattern]	<i>greyish brown clayey from 1.60 to 1.75 m. dark greyish brown sandy very gravelly organic clay band from 1.75 to 1.80 m.</i>
		2.50 - 2.70 2.50	ES PID	PID = 0 ppm	2.50	8.55	[Pattern]	Stiff fissured grey mottled brown slightly organic CLAY with extremely closely spaced orangish brown silt partings and black root traces. Fissures 0-90 degrees very closely spaced planar smooth tight clean. [ALLUVIUM]
					3.00	7.85	[Pattern]	<i>light brown mottled grey from 1.92 to 2.00 m. probable infill from gravel strata above between 2.00 and 2.25 m. fissures absent between 2.00 and 2.75 m. pocket of black organic clay with greyish brown sandy gravel between 2.15 and 2.26 m. band of brownish grey sandy gravelly clay between 2.26 and 2.50 m. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. Sand and gravel fractions increase with depth.</i>
							[Pattern]	Light brown slightly sandy GRAVEL. Sand fine to coarse. Gravel angular to rounded fine to coarse flint. [KEMPTON PARK GRAVEL FORMATION]
End of Borehole at 3.00m								

Hole Diameter		Casing Diameter		Chiselling			Inclination and Orientation				
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks
 1. Position CAT scanned and inspection pit dug to 1.20 m using hand tools - position clear of services. 2. Hole completed using dynamic sampling techniques



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Project: Meridian Water HIF and
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GI_DZLV1_WS2079

Project ID: GTS-19-250



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BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID BH3001	Project Name: Meridian Works	Ground Level (m AOD): 10.98		
	Project Number: NTE2569	Eastings: 535862.44		
	Client: London Borough of Enfield	Northings: 191876.90		
Hole Type: CP	Rig: Dando 2000	Start & End Date: 27/01/2020 - 28/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & [Thickness (m)]	Description	Legend	Depth (m bgl)	Type (PIV/Well)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		01.11 10.87 01.24	Asphalt. (Made Ground)	[Pattern]	0.11							
		01.24 10.66 01.58 10.48 01.96	Concrete. (Made Ground)	[Pattern]	0.32							
			Brown slightly clayey gravelly fine and medium SAND. Gravel is angular to rounded fine to coarse brick, concrete, ash, coal, flint and clinker. (Made Ground)	[Pattern]	0.50							
			Medium dense black slightly gravelly fine SAND. Gravel is angular to subrounded fine and coarse brick, ash, flint and quartzite. Hydrocarbon odour between 0.50m bgl and 1.80m bgl. (Made Ground)	[Pattern]								
			<i>Between 1.80m bgl and 2.00m bgl: Concrete cobbles.</i> <i>Below 2.00m bgl: Dense.</i>									
		6.50 01.00	Very soft grey slightly sandy gravelly CLAY with partially decomposed greenish brown rootlets. Gravel is angular to subrounded fine flint. Sand is fine. (Alluvium)	[Pattern]	2.40							
			Firm grey sandy gravelly CLAY with partially decomposed brown organic material. Gravel is angular fine flint. Sand is fine and medium. (Alluvium)	[Pattern]	3.40							
		6.66 01.00	Loose grey gravelly coarse SAND. Gravel is subangular to rounded fine and medium flint and quartzite. (River Terrace Deposits)	[Pattern]	4.30							
		3.00 01.00	Medium dense grey subangular to rounded fine and medium sandy GRAVEL. Sand is coarse. (River Terrace Deposits)	[Pattern]	5.00							
		4.80 01.00	Stiff fissured grey gravelly CLAY. Gravel is subangular to rounded fine flint and quartzite. (London Clay Formation)	[Pattern]	6.10							
		4.45	Hole Terminated at 6.45m bgl.		6.50							

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minutes)	
			Reason for Termination: Target strata reached
Groundwater Remarks:			Groundwater strike at 3.40m bgl rising to 2.90m bgl after 20 min.
Water Added			
From (m bgl)	To (m bgl)	Volume (l)	
			Other Remarks: 1) Slight hydrocarbon odour noted between 0.50m bgl and 1.80m bgl. 2) Inspection pit: Hand dug. 3) Borehole installed with double 50mm pipe, rubber bung, gas tap and stopcock cover.

BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID BH3002	Project Name: Meridian Works	Ground Level (m AOD): 10.91		
	Project Number: NTE2569	Eastings: 535879.11		
	Client: London Borough of Enfield	Northings: 191798.75		
Hole Type: CP	Rig: Dando 2000	Start & End Date: 30/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (PI/SP)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		01.11 (0.11)	Asphalt. (Made Ground)	[Pattern]	0.11							
		01.11 (0.11)	Concrete. (Made Ground)	[Pattern]	0.30	B1	0.40	0.70	PID	0.50	1.9ppm	
		01.11 (0.11)	Brown sandy gravelly CLAY with low cobble content. Sand is fine and medium. Gravel is angular and subangular fine to coarse brick and concrete. Cobbles are angular brick. (Made Ground)	[Pattern]	0.90	B2	0.90	1.20	PID	0.90	2.3ppm	
		01.11 (0.11)	Soft brown sandy gravelly CLAY. Sand is fine and medium. Gravel is angular to subrounded fine to coarse brick, ash, concrete and chalk. (Made Ground)	[Pattern]	1.20	D1	1.20	1.65	SPT	1.20	N=4 (1,1/0,1,1,2)	1.20m (NR)
		01.11 (0.11)	Below 0.70m bgl: Concrete cobbles.	[Pattern]								
		01.11 (0.11)	Very soft brown slightly gravelly CLAY. Gravel is angular medium flint, bricks and occasional concrete. (Made Ground)	[Pattern]	2.10	D3	2.00	2.45	SPT	2.00	N=5 (1,1/1,1,1,2)	2.00m (NR)
		01.11 (0.11)	Soft grey CLAY with black well decomposed organic material. (Alluvium)	[Pattern]	2.70	B4	2.70	3.00	SPT	3.00	N=5 (1,1/1,2,1,1)	3.00m (NR)
		01.11 (0.11)	Loose brown clayey fine and medium SAND. (Alluvium)	[Pattern]	3.20	E54	3.20	3.40	PID	3.20	12.3ppm	
		01.11 (0.11)	Below 3.80m bgl: Medium and coarse gravel.	[Pattern]								
		01.11 (0.11)	Medium dense brown grey gravelly SAND. Gravel is subrounded and rounded medium flint and quartzite. (River Terrace Deposits)	[Pattern]	4.10	D4	3.80	3.45	SPT	4.00	N=13 (1,2/2,3,4,4)	3.00m (3.90m bgl)
		01.11 (0.11)	Medium dense grey subrounded and rounded fine and medium sandy GRAVEL of flint and quartzite. Sand is coarse. (River Terrace Deposits)	[Pattern]	5.00	B5	4.50	5.00	PID	4.70	10.1ppm	
		01.11 (0.11)	Medium dense grey gravelly coarse SAND. Gravel is angular to subrounded fine and coarse flint and quartzite. (River Terrace Deposits)	[Pattern]	6.00	B7	6.00	6.45	SPT	6.00	N=16 (2,2/3,4,5,4)	6.00m (4.40m bgl)
		01.11 (0.11)	Stiff fissured grey CLAY. (River Terrace Deposits)	[Pattern]	6.70	B8	6.70	7.20	PID	7.00	1.1ppm	
		01.11 (0.11)	Hole Terminated at 7.20m bgl.		7.20							

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minutes)	
			Reason for Termination: Target strata reached
Water Added			Groundwater Remarks: Groundwater strike at 4.10m bgl rising to 3.80m bgl after 20 min.
From (m bgl)	To (m bgl)	Volume (l)	Other Remarks: 1) No visual or olfactory evidence of contamination was recorded during the drilling period. 2) Inspection pit: Hand dug. 3) Borehole installed with double 50mm pipe, rubber bung, gas tap and stopcock cover.

BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID BH3002a	Project Name: Meridian Works	Ground Level (m AOD): 10.88		
	Project Number: NTE2569	Eastings: 535879.21		
	Client: London Borough of Enfield	Northings: 191797.66		
Hole Type: CP	Rig:	Start & End Date: 07/01/2020	Engineer:	Checker: CR

Boring		Strata				Samples			In-Situ Tests			
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (R/W)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		10.88	Concrete. (Made Ground)		0.80							
		10.08	Hole Terminated at 0.80m bgl.									

<table border="1"> <tr> <th colspan="3">Chiseling</th> </tr> <tr> <th>From (m bgl)</th> <th>To (m bgl)</th> <th>Time (Minutes)</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>			Chiseling			From (m bgl)	To (m bgl)	Time (Minutes)				Remarks Reason for Termination: Unable to penetrate concrete. Groundwater Remarks: No groundwater encountered. Other Remarks: 1) Borehole backfilled with arisings.
Chiseling												
From (m bgl)	To (m bgl)	Time (Minutes)										
<table border="1"> <tr> <th colspan="3">Water Added</th> </tr> <tr> <th>From (m bgl)</th> <th>To (m bgl)</th> <th>Volume (l)</th> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>			Water Added			From (m bgl)	To (m bgl)	Volume (l)				
Water Added												
From (m bgl)	To (m bgl)	Volume (l)										

BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID BH3003	Project Name: Meridian Works	Ground Level (m AOD): 10.89		
	Project Number: NTE2569	Eastings: 535777.46		
	Client: London Borough of Enfield	Northings: 191808.49		
Hole Type: CP	Rig: Dando 2000	Start & End Date: 28/01/2020 - 29/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (SI/Hand)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		01.12 01.17 (01.05)	Asphalt. (Made Ground)		0.12							
		01.49 01.40 (01.09)	Concrete. (Made Ground)		0.40	B1	0.40	0.70				
		01.09 01.20 (01.11)	Brown clayey gravelly fine SAND. Gravel is angular to subrounded fine and coarse brick, concrete and flint. (Made Ground)		0.80	ES1 B2	0.70 0.80	0.90 1.20	PID	0.70	2.6ppm	
			Dark brown black gravelly fine and medium SAND. Gravel is angular and subangular ash, coal, brick, concrete and clinker. (Made Ground)			D1	1.30	1.65	SPT	1.30	N=5 (2,2/1,2,1,1)	1.20m (NR)
		01.00 01.00 (01.00)	Soft grey CLAY with black well decomposed organics. (Alluvium)		2.00	B3 ES2 D2	1.70 1.80 2.00	2.00 2.45	PID SPT	1.80 2.00	6.5ppm N=5 (1,1/1,1,1,2)	2.00m (NR)
		01.00 01.00 (01.00)	Soft black peaty CLAY. Pea: well decomposed. (Alluvium)		3.00	U1	3.00	3.45				
		01.00 01.00 (01.00)	Below 4.00m bgl: Firm with angular fine flint gravel. Medium dense grey subangular to rounded fine to coarse sandy GRAVEL of flint and quartzite. Sand is coarse. (River Terrace Deposits)		4.10	B5 D3 ES4 D4 B6	3.50 3.50 3.70 4.00 4.25	3.50 4.00 3.80 4.45 4.75	PID SPT	3.70 4.00	20.4ppm N=10 (3,2/2,2,3,3)	3.00m (3.90m bgl)
			Below 6.00m bgl: Dense.			D5	6.00	6.45	SPT	6.00	N=26 (2,2/4,5,8,9)	6.00m (5.30m bgl)
		01.00 01.00 (01.00)	Stiff fissured grey gravelly CLAY. Gravel is subangular to rounded fine flint and quartzite. (London Clay Formation)		7.00	B9 ES6	7.00 7.20	7.50 7.30	PID	7.20	23.6ppm	
		01.00	Hole Terminated at 7.50m bgl.		7.50							

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
			Reason for Termination: Target strata reached
Water Added			Groundwater Remarks: Groundwater strike at 1.00m bgl rising to 1.70m bgl after 20min, second strike at 4.10m bgl rising to 3.60m bgl after 20 min.
From (m bgl)	To (m bgl)	Volume (l)	Other Remarks: 1) No visual or olfactory evidence of contamination was recorded during the drilling period. 2) Inspection pit: Hand dug. 3) Borehole installed with double 50mm pipe, rubber bung, gas tap and stopcock cover.

BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID DS3001	Project Name: Meridian Works	Ground Level (m AOD): 10.28		
	Project Number: NTE2569	Eastings: 535914.57		
	Client: London Borough of Enfield	Northings: 191825.77		
Hole Type: WS	Rig: Premier 110	Start & End Date: 28/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (Flow)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		0.00 0.23 0.46	Concrete. (Made Ground)		0.05	ES1	0.20	0.30	PID	0.20	6.2ppm	
		0.46 0.51 0.26 0.51 0.52 0.54	Dark brown black gravelly coarse SAND. Gravel is angular and subangular fine and medium brick, concrete, clinker and flint. (Made Ground)		0.85	D1 ES2	0.60 0.70	0.80 0.80	PID	0.70	5.1ppm	
		0.54 0.51 0.52 0.54	Dark brown black gravelly medium SAND. Gravel is angular and subangular fine coal, ash, clinker and flint. (Made Ground)		1.00	D2	0.90	1.00	SPT	1.00	N=0 (0,0/0,0,0,0)	
		0.54 0.51 0.52 0.54	Very soft grey CLAY with well decomposed black organic material. (Alluvium)		1.15	ES3	1.50	1.60	PID	1.50	0.8ppm	
		0.54 0.51 0.52 0.54	Very soft grey brown slightly gravelly CLAY. Gravel is angular fine quartzite and flint. (Alluvium)		2.00	D3	1.70	1.80	SPT	2.00	N=8 (1,0/1,1,1,5)	
		0.54 0.51 0.52 0.54	Loose to medium dense light brown gravelly SAND. Gravel is angular to subrounded fine and medium quartzite and flint. (River Terrace Deposits)		2.00	D4 ES4	2.50 2.70	2.60 2.80	PID	2.70	5.6ppm	
		0.54 0.51 0.52 0.54			3.45				SPT	3.00	N=12 (3,3/3,3,3,3)	
		0.54 0.51 0.52 0.54	Hole Terminated at 3.45m bgl.			3.45						

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
Reason for Termination:			
Target strata reached			
Groundwater Remarks:			
Groundwater strike at 2.20m bgl.			
Water Added			
From (m bgl)	To (m bgl)	Volume (l)	
			Other Remarks:
1) No visual or olfactory evidence of contamination was recorded during the drilling period, 2) Borehole installed with 50mm pipe, rubber bung, gas tap and stopcock cover.			

BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID DS3002	Project Name: Meridian Works	Ground Level (m AOD): 11.03		
	Project Number: NTE2569	Eastings: 535867.49		
	Client: London Borough of Enfield	Northings: 191805.52		
Hole Type: WS	Rig: Premier 110	Start & End Date: 27/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (Meters)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		01.12 01.31 (01.19)	Asphalt. (Made Ground)	[Pattern]	0.12							
		01.63 01.71 (01.08)	Concrete. (Made Ground)	[Pattern]	0.40							
		01.08 01.28 (01.20)	Orangish brown gravelly medium SAND. Gravel is angular medium and coarse brick. (Made Ground)	[Pattern]	0.55							
		01.28 01.41 (01.13)	Dark brown black slightly gravelly fine and medium SAND. Gravel is subangular to subrounded fine and medium ash, clinker and brick. (Made Ground)	[Pattern]	0.75	ES1	0.65	0.75	PID	0.65	1.9ppm	
		01.41 01.54 (01.13)	Very loose brown grey clayey gravelly fine SAND. Gravel is angular to subrounded fine and medium concrete, flint, quartzite and occasional brick. (Made Ground)	[Pattern]	1.60	ES2	0.80	0.95	PID	0.80	0.4ppm	
		01.54 01.67 (01.13)	Soft mottled brownish grey slightly gravelly CLAY. Gravel is angular to subrounded fine and medium brick, concrete, chalk and quartzite. (Made Ground)	[Pattern]	2.00	D1	1.00	1.20	SPT	1.00	N=2 (1,0/1,0,1,0)	
		01.67 01.80 (01.13)	Soft mottled grey brown CLAY with well decomposed black organic material. (Alluvium)	[Pattern]	2.40	ES3	1.70	1.80	PID	1.70	1.8ppm	
		01.80 01.93 (01.13)	Medium dense greyish brown slightly gravelly medium SAND. Gravel is subangular and subrounded fine and medium quartzite and flint. (River Terrace Deposits)	[Pattern]	2.60	ES4	2.40	2.60	PID	2.40	3.2ppm	
		01.93 02.06 (01.13)		[Pattern]	3.00	D2	2.60	2.80		2.00	N=6 (1,0/1,2,1,2)	
		02.06 02.19 (01.13)		[Pattern]	3.60	D3	3.60	3.80		3.00	N=12 (2,2/3,3,3,3)	
		02.19 02.32 (01.13)		[Pattern]	4.45					4.00	N=17 (2,3/3,4,5,5)	
		02.32 02.45 (01.13)		[Pattern]								
		02.45 02.58 (01.13)		[Pattern]								
		02.58 03.11 (01.13)		[Pattern]								
		03.11 03.24 (01.13)		[Pattern]								
		03.24 03.37 (01.13)		[Pattern]								
		03.37 03.50 (01.13)		[Pattern]								
		03.50 04.03 (01.13)		[Pattern]								
		04.03 04.16 (01.13)		[Pattern]								
		04.16 04.29 (01.13)		[Pattern]								
		04.29 04.42 (01.13)		[Pattern]								
		04.42 04.55 (01.13)		[Pattern]								
		04.55 05.08 (01.13)		[Pattern]								
		05.08 05.21 (01.13)		[Pattern]								
		05.21 05.34 (01.13)		[Pattern]								
		05.34 05.47 (01.13)		[Pattern]								
		05.47 05.60 (01.13)		[Pattern]								
		05.60 05.73 (01.13)		[Pattern]								
		05.73 05.86 (01.13)		[Pattern]								
		05.86 06.00 (01.13)		[Pattern]								
		06.00 06.13 (01.13)		[Pattern]								
		06.13 06.26 (01.13)		[Pattern]								
		06.26 06.39 (01.13)		[Pattern]								
		06.39 06.52 (01.13)		[Pattern]								
		06.52 07.05 (01.13)		[Pattern]								
		07.05 07.18 (01.13)		[Pattern]								
		07.18 07.31 (01.13)		[Pattern]								
		07.31 07.44 (01.13)		[Pattern]								
		07.44 07.57 (01.13)		[Pattern]								
		07.57 08.10 (01.13)		[Pattern]								
		08.10 08.23 (01.13)		[Pattern]								
		08.23 08.36 (01.13)		[Pattern]								
		08.36 08.49 (01.13)		[Pattern]								
		08.49 08.62 (01.13)		[Pattern]								
		08.62 08.75 (01.13)		[Pattern]								
		08.75 08.88 (01.13)		[Pattern]								
		08.88 09.01 (01.13)		[Pattern]								
		09.01 09.14 (01.13)		[Pattern]								
		09.14 09.27 (01.13)		[Pattern]								
		09.27 09.40 (01.13)		[Pattern]								
		09.40 09.53 (01.13)		[Pattern]								
		09.53 10.06 (01.13)		[Pattern]								
		10.06 10.19 (01.13)		[Pattern]								
		10.19 10.32 (01.13)		[Pattern]								
		10.32 10.45 (01.13)		[Pattern]								
		10.45 10.58 (01.13)		[Pattern]								
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		11.11 11.24 (01.13)		[Pattern]								
		11.24 11.37 (01.13)		[Pattern]								
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		12.03 12.16 (01.13)		[Pattern]								
		12.16 12.29 (01.13)		[Pattern]								
		12.29 12.42 (01.13)		[Pattern]								
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		12.55 13.08 (01.13)		[Pattern]								
		13.08 13.21 (01.13)		[Pattern]								
		13.21 13.34 (01.13)		[Pattern]								
		13.34 13.47 (01.13)		[Pattern]								
		13.47 13.60 (01.13)		[Pattern]								
		13.60 13.73 (01.13)		[Pattern]								
		13.73 13.86 (01.13)		[Pattern]								
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		15.95 16.08 (01.13)		[Pattern]								
		16.08 16.21 (01.13)		[Pattern]								
		16.21 16.34 (01.13)		[Pattern]								
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		16.60 16.73 (01.13)		[Pattern]								
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		19.21 19.34 (01.13)		[Pattern]								
		19.34 19.47 (01.13)		[Pattern]								
		19.47 19.60 (01.13)		[Pattern]								
		19.60 19.73 (01.13)		[Pattern]								
		19.73 19.86 (01.13)		[Pattern]								
		19.86 20.00 (0										

BOREHOLE LOG

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Sheet 1 of 1

LOCATION ID DS3003	Project Name: Meridian Works	Ground Level (m AOD): 10.93		
	Project Number: NTE2569	Eastings: 535793.57		
	Client: London Borough of Enfield	Northings: 191874.73		
Hole Type: WS	Rig: Premier 110	Start & End Date: 29/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & Thickness (m)	Description	Legend	Depth (m bgl)	Type (Where)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		0.23 (0.23)	Concrete. (Made Ground)	[Pattern]	0.23							
		0.40 (0.17)	Brown angular to rounded coarse GRAVEL of brick, flint and concrete. (Made Ground)	[Pattern]	0.40							
		0.90 (0.50)	Very loose dark brown black slightly gravelly fine and medium SAND. Gravel is angular to subrounded fine and medium ash, coal, clinker, flint, quartzite and occasional brick. (Made Ground)	[Pattern]		ES1	0.90	1.20	PID SPT	0.90 1.00	2.2ppm N=2 (1,0/0,1,0,1)	
		1.30 (0.40)				D1	1.30	1.70				
		2.00 (0.70)	Very soft grey CLAY with partially decomposed brown rootlets. (Alluvium)	[Pattern]	2.00				SPT	2.00	N=4 (1,1/1,1,1,1)	
		2.50 (0.50)				ES2	2.50	2.60	PID	2.50	23ppm	
		2.70 (0.20)				D2	2.70	2.90				
		3.00 (0.30)							SPT	3.00	N=5 (1,0/1,1,2,1)	
		3.20 (0.20)	Below 3.00m bgl: Soft.									
		3.20 (0.00)	Medium dense grey gravelly medium and coarse SAND. Gravel is angular to subrounded fine and medium flint and quartzite. (River Terrace Deposits)	[Pattern]	3.20							
		3.50 (0.30)				D3	3.50	3.60				
		3.70 (0.50)				ES3	3.70	3.80	PID	3.70	8.7ppm	
		4.00 (0.30)							SPT	4.00	N=18 (3,3/4,5,4,5)	
		4.45 (0.45)	Hole Terminated at 4.45m bgl.		4.45							

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
			Reason for Termination: Target strata reached
Water Added			Groundwater Remarks: Groundwater strike at 3.20m bgl.
From (m bgl)	To (m bgl)	Volume (l)	Other Remarks: 1) No visual or olfactory evidence of contamination was recorded during the drilling period. 2) Borehole installed with 50mm pipe, rubber bung, gas tap and stopcock cover. 3) ground level estimated from topo survey.

BOREHOLE LOG

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Sheet 1 of 1

LOCATION ID DS3004	Project Name: Meridian Works	Ground Level (m AOD): 10.93		
	Project Number: NTE2569	Eastings: 535797.82		
	Client: London Borough of Enfield	Northings: 191845.25		
Hole Type: WS	Rig: Premier 110	Start & End Date: 29/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (Flow)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		0.00	Concrete. (Made Ground)	[Pattern]	0.40							
		0.10 0.10	Loose brown slightly gravelly clayey fine SAND. Gravel is angular and subangular concrete, flint, clinker and brick. (Made Ground)	[Pattern]		ES1	0.60	0.70	PID	0.60	2.5ppm	
			<i>Between 1.10m bgl and 1.40m bgl: Slightly clayey.</i>			D1	1.00	1.20	SPT	1.00	N=5 (1,1/1,2,1,1)	
			<i>Between 1.90m bgl and 2.50m bgl: Slightly clayey.</i>			ES2	2.10	2.20	SPT	2.00	N=7 (1,1/1,3,1,2)	
						D2	2.30	2.50	PID	2.10	0.6ppm	
		2.45 0.00	Soft grey sandy gravelly CLAY. Sand is fine. Gravel is angular fine flint. (Alluvium)	[Pattern]	2.50	ES3	2.70	2.90	PID	2.70	1.9ppm	
			<i>Below 3.00m bgl: Peaty.</i>						SPT	3.00	N=5 (1,0/1,2,1,1)	
		3.45 0.00	Medium dense grey subangular to rounded fine SAND and GRAVEL of flint and quartzite. Sand is medium and coarse. (River Terrace Deposits)	[Pattern]	3.50	ES4	3.80	3.90	PID	3.80	3.1ppm	
						D3	3.90	4.00	SPT	4.00	N=21 (5,5/5,6,5,5)	
		4.45	Hole Terminated at 4.45m bgl.		4.45							

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
			Reason for Termination: Target strata reached
			Groundwater Remarks: Groundwater strike at 3.50m bgl.
Water Added			
From (m bgl)	To (m bgl)	Volume (l)	
			Other Remarks: 1) No visual or olfactory evidence of contamination was recorded during the drilling period. 2) Borehole installed with 50mm pipe, rubber bung, gas tap and stopcock cover. 3) ground level estimated from topo survey.

BOREHOLE LOG

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Sheet 1 of 1

LOCATION ID DS3005	Project Name: Meridian Works	Ground Level (m AOD): 10.58		
	Project Number: NTE2569	Eastings: 535745.88		
	Client: London Borough of Enfield	Northings: 191870.26		
Hole Type: WS	Rig: Premier 110	Start & End Date: 28/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (How)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		10.11 10.47 (0.36)	Asphalt. (Made Ground)	[Pattern]	0.11							
		10.23 10.43 (0.20)	Concrete. (Made Ground)	[Pattern]	0.35							
		9.79 10.34 (0.55)	Orangish brown gravelly fine and medium SAND. Gravel is angular and subangular fine and medium brick and concrete. (Made Ground)	[Pattern]	0.80	ES1	0.50	0.70	PID	0.50	45.5ppm	
		9.38 10.34 (0.96)	Dark brown black gravelly sandy SILT. Sand is fine. Gravel is angular and subangular fine and medium brick, clinker, concrete and flint. (Made Ground)	[Pattern]	1.10	D1	1.10	1.30	PID	0.90 1.00	54.8ppm N=5 (1,1/1,2,1,1)	
		8.98 10.04 (1.06)	Soft mottled brown grey sandy gravelly CLAY. Gravel is angular to rounded flint, quartzite with occasional brick and concrete. (Made Ground)	[Pattern]	1.60	D2	1.70	1.80	PID	1.30	41.9ppm	
		8.58 10.04 (1.46)	Soft grey CLAY with black well decomposed organic material. (Alluvium)	[Pattern]	2.60	ES4	1.90	2.00	PID SPT	1.90 2.00	29.7ppm N=7 (1,1/1,3,1,2)	
		8.18 10.04 (1.86)	Soft black slightly clayey partially decomposed PEAT with occasional angular fine flint. (Alluvium)	[Pattern]	2.60	D3	2.30	2.50				
		7.78 10.04 (2.26)		[Pattern]	2.60	D4	2.60	2.80	PID	2.70	45ppm	
		7.38 10.04 (2.66)		[Pattern]	2.60	ES5	2.70	2.80				
		6.98 10.04 (3.06)		[Pattern]	3.45				SPT	3.00	N=5 (1,0/1,2,1,1)	
		6.58 10.04 (3.46)	Hole Terminated at 3.45m bgl.			3.45						

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
Reason for Termination:			
Target strata reached			
Groundwater Remarks:			
No groundwater encountered.			
Water Added			
From (m bgl)	To (m bgl)	Volume (l)	
			Other Remarks:
1) No visual or olfactory evidence of contamination was recorded during the drilling period, 2) Borehole installed with 50mm pipe, rubber bung, gas tap and stopcock cover.			



BOREHOLE LOG

Scale 1:50

Sheet 1 of 1

LOCATION ID DS3006	Project Name: Meridian Works	Ground Level (m AOD): 10.80		
	Project Number: NTE2569	Eastings: 535839.11		
	Client: London Borough of Enfield	Northings: 191787.86		
Hole Type: WS	Rig: Premier 110	Start & End Date: 27/01/2020	Engineer: DZ	Checker: CR

Boring		Strata			Samples			In-Situ Tests				
Strike	Well	Level (m AOD) & (Thickness (m))	Description	Legend	Depth (m bgl)	Type (PIVOT)	From (m)	To (m)	Type	Depth (m)	Result	Casing Depth & (Water Level)
		01.11 01.07 01.04 00.53 00.28	Asphalt. (Made Ground) Concrete. (Made Ground)		0.11 0.27							
		00.25 00.00	Multicolored (orange, brown, yellow and grey) gravelly fine and medium SAND with low cobble content. Gravel is angular and subangular fine and medium brick, ash, flint and concrete. Cobbles are angular brick. (Made Ground)		0.55	ES1	0.35	0.45	PIV	0.35	8.1ppm	
		1.00 01.00	Loose brown slightly clayey angular to rounded fine and medium GRAVEL of flint, brick, concrete and occasional chalk. (Made Ground)		1.50	D1	0.80	0.90	PIV	0.80	3.5ppm	
		1.80 01.00	Soft brown gravelly CLAY with occasional wood fragments. Gravel is angular to subrounded fine and medium brick, coal, concrete and chalk. (Made Ground)		2.00	D2	1.00	1.20	SPT	1.00	N=5 (1,0/2,1,1,1)	
		2.00 01.00	Very soft grey CLAY with black well decomposed organic. (Alluvium)		3.00	D3	1.60	1.70	PIV	1.80	1.1ppm	
		2.00 01.00	Medium dense brownish grey sandy subrounded and rounded medium GRAVEL. Sand is fine and medium. (River Terrace Deposits)		3.45	D4	1.80	1.90	PIV	1.80	1.1ppm	
		2.00 01.00			2.00				SPT	2.00	N=3 (1,0/1,0,1,1)	
		2.00 01.00			2.50	D5	2.30	2.40	PIV	2.50	0.2ppm	
		2.00 01.00			3.00				SPT	3.00	N=20 (3,4/5,5,5,5)	
		2.00 01.00			3.45							
Hole Terminated at 3.45m bgl.												

Chiseling			Remarks
From (m bgl)	To (m bgl)	Time (Minimum)	
			Reason for Termination: Target strata reached
Water Added			Groundwater Remarks: No groundwater encountered.
From (m bgl)	To (m bgl)	Volume (l)	Other Remarks: 1) No visual or olfactory evidence of contamination was recorded during the drilling period, 2) Borehole installed with 50mm pipe, rubber bung, gas tap and stopcock cover.

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1001	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 25/07/2018	Ground Level: 11.32m	Co-ordinates: E535523 N191640	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	
0.20	ES	HS	22 ppm					Grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse brick, concrete and flint. (MADE GROUND)	
		HS	9 ppm				0.90	0.80 Becomes clayey.	
1								Borehole Complete at 0.90m	
2									
3									
4									
5									
6									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 0.9m. 2. Terminated due to concrete obstruction. 3. Backfilled with arisings.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 300mm		Logged By: G. Pursey	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1001A
Client: London Borough of Enfield				 SLR
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 11.32m	Co-ordinates: E535523 N191637	
Project: IKEA Clear GI				Sheet 1 of 2

SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	
0.50	D	HS	2 ppm				0.40	Concrete hardstanding. (MADE GROUND)	
0.80	ES	HS	11 ppm				(0.80)	Brown slightly sandy gravelly CLAY. Gravel is subangular rounded fine to coarse flint, timber, brick, concrete and glass. Sand is fine to coarse. (MADE GROUND)	
1.00	D						1.20		
2.00	D	SPT HS	N=14 2 ppm	14			(0.80)	Dark brown mottled black slightly sandy clayey angular to rounded fine to coarse GRAVEL of flint brick, concrete, timber, ceramic and metal with occasional black staining and low cobble content. Cobbles are subangular brick and concrete. Sand is fine to coarse. (MADE GROUND)	
2.10	ES	HS	34 ppm				(0.60)	1.20 Slight hydrocarbon odour. Dark brown mottled grey slightly clayey silty gravelly fine to coarse SAND with occasional pockets of ash and black staining. Gravel is angular to subrounded fine to coarse clinker, flint, brick and concrete. (MADE GROUND)	
3.00	B	SPT HS	N=10 3 ppm	10			(0.90)	2.00 Slight hydrocarbon odour. Firm locally soft dark grey mottled black and brown slightly sandy slightly gravelly silty CLAY with rare relict rootlets. Gravel is subrounded fine to medium brick. Sand is fine to medium. (MADE GROUND)	
3.40	ES	HS SPT	2 ppm N=5	5			7.82	3.50 Soft dark brown mottled greenish grey slightly sandy silty CLAY with rare lenses of sand and relict rootlets. Sand is fine to medium. (ENFIELD SILT)	
4.00	D	HS	0 ppm				(0.70)	3.90 - 4.20 Frequent shell fragments present.	
4.50 - 4.95	B	SPT	12 ppm N=23	23			(0.80)	Medium dense brownish grey clayey sandy subrounded to rounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
5.00	B	SPT	N=20	20			6.32	4.20 Slight hydrocarbon odour. 4.35 No longer clayey. 4.90 Becomes very sandy.	
5.50 - 5.95	EW	HS	50 ppm					Medium dense brownish grey very gravelly fine to coarse SAND. Gravel is subrounded to rounded fine to medium flint. (KEMPTON PARK GRAVEL)	
								5.00 Slight hydrocarbon odour.	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
									4.00	5.00	1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.0m to 4.0m. 3. Completed to 10.0m 4. Installed with 50mm standpipe for groundwater and gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Hand Excavated/Dando 2000	Method: Cable percussion (shell and auger) Hole Size: 150mm	Logged By: G. Pursey	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1002
Client: London Borough of Enfield				
Project No: 409.05569.00004	Date: 02/08/2018	Ground Level: 10.01m	Co-ordinates: E535650 N191673	
Project: IKEA Clear GI				Sheet 1 of 2

SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	
0.40	ES	HS	1 ppm				(0.50)	Light brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete, plastic, metal and flint. (MADE GROUND)	
1.00	1- ES	HS	1 ppm				(1.00)	Very soft slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse flint, brick and concrete. Sand is fine to coarse. (MADE GROUND)	
		HS SPT	1 ppm N=9	● 9			1.50		
2.00	2- D ES	HS	0 ppm				(0.50)	Soft dark grey mottled dark brown slightly sandy silty CLAY with occasional lenses of peat. Sand is fine to medium. (ENFIELD SILT)	
		SPT HS	N=13 0 ppm	● 13			2.00		
3.00	3- D ES	HS	0 ppm				(1.30)	Soft to firm light grey mottled orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to medium. (ENFIELD SILT)	
		SPT HS	N=17 0 ppm	● 17			3.30		
3.30	D EW	HS	9 ppm				6.71		
3.30		SPT	N=17	● 17			3.50	Medium dense light grey slightly gravelly clayey fine to coarse SAND with occasional shell fragments. Gravel is angular to subangular fine and medium flint. (KEMPTON PARK GRAVEL)	
4.00	4- B	HS	8 ppm				(3.30)	Medium dense grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subangular fine and medium flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
		SPT	N=21	● 21					
5.00	5- D								
		SPT	N=28	● 28					
6.00	6- D	HS	0 ppm						

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 1.2m. 2. Environmental seal placed from 2.0m to 3.0m. 3. Completed to 8.0m 4. Installed 50mm standpipe for groundwater and gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated	Method: Cable percussion (shell and auger) Hole Size: 200mm	Logged By: J. Blyth	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1002	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 02/08/2018	Ground Level: 10.01m	Co-ordinates: E535650 N191673	
Project: IKEA Clear GI					Sheet 2 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
6.80	D						6.80	Medium dense grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subangular fine and medium flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
7.00 - 7.45	UT	HS U	0 ppm 75						
7.50	D	SPT	N=22	● 22			(1.20)		
7.50 - 7.95	D								
8							8.00	Borehole Complete at 8.00m	
9									
10									
11									
12									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 1.2m. 2. Environmental seal placed from 2.0m to 3.0m. 3. Completed to 8.0m 4. Installed 50mm standpipe for groundwater and gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 200mm		Logged By: J. Blyth	Approved By: FC
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BOREHOLE LOG

BOREHOLE No
GI_DZ4_BH1003

Client:
London Borough of Enfield



Project No: 409.05569.00004 Date: 23/07/2018 Ground Level: 10.09m Co-ordinates: E535674 N191671

Project:
IKEA Clear GI

Sheet
1 of 3

SAMPLES & TESTS					Water	STRATA			Instrument Backfill	
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
								9.89	0.20	Concrete hardstanding. (MADE GROUND)
0.50	D	HS	0 ppm					9.54	0.55	Dark grey slightly sandy silty angular to subangular fine to coarse GRAVEL of concrete with occasional pockets of ash. Sand is fine to coarse. (MADE GROUND)
0.50	ES	HS	0 ppm							0.20 Rootlets present. Rebar present in concrete.
1.00	1	D								Soft dark grey mottled orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to rounded fine to coarse brick, flint, concrete, glass and rare clinker sand wood fragments. (MADE GROUND)
1.50 - 1.95	D	SPT	N=5	● 5					(1.75)	1.20 Becomes slightly gravelly.
1.90	2	ES	HS	0 ppm						1.70 - 1.75 Band of clinker.
2.30	D	HS	0 ppm					7.79	2.30	
2.40	ES	HS	0 ppm					7.59	2.50	Plastic to firm slightly gravelly clayey amorphous PEAT with frequent relict rootlets. Gravel is subrounded fine to medium flint. (ENFIELD SILT)
2.50 - 2.95	D	SPT	N=17	● 17				7.29	2.80	Firm locally soft dark greyish brown silty gravelly CLAY. Gravel is subrounded to rounded fine to medium flint. (ENFIELD SILT)
		HS	2 ppm							Medium dense to dense dark brownish grey mottled white slightly silty slightly sandy subrounded to rounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)
3.50 - 3.95	B	SPT	N=25	● 25						
4.00	4	EW								
4.50 - 4.95	B	SPT HS	N=28 1 ppm	● 28					(4.30)	
5.50 - 5.95	B	SPT	N=31	● 31						
		HS	1 ppm							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
									3.00	4.00	1. Inspection pit to 1.2m. 2. Environmental seal placed between 2.8m to 1.8m. 3. Completed to 16.5m 4. Installed 50mm standpipe for groundwater and gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated	Method: Cable percussion (shell and auger) Hole Size: 150mm	Logged By: G. Pursey Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1003	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 23/07/2018	Ground Level: 10.09m	Co-ordinates: E535674 N191671	
Project: IKEA Clear GI					Sheet 2 of 3



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
7		SPT	N=16	● 16	2.99		7.10	Medium dense to dense dark brownish grey mottled white slightly silty slightly sandy subrounded to rounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
7.50	D	HS	2 ppm					Firm dark grey slightly sandy slightly gravelly silty CLAY with rare fine selenite. Gravel is subrounded to rounded fine to medium flint. Sand is fine to medium. (LONDON CLAY)	
8		HS	1 ppm					7.40 Becomes fissured with occasional shell fragments and no further gravel of flint present.	
8.50 - 8.95	B	U	60					8.00 Occasional lenses of fine white selenite and no further sand present.	
8.50 - 8.95	UT							8.50 Becomes stiff with frequent partings of fine sand and silt and frequent shell fragments present.	
9.00 - 9.45	9	D	SPT	N=21	● 21				
		HS	0 ppm				(8.90)		
10.50 - 10.95	UT	HS	0 ppm						
	U		100						
11.00	11	D							
12.00 - 12.45	12	D	SPT	N=26	● 26				
		HS	0 ppm						

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
									3.00	4.00	1. Inspection pit to 1.2m. 2. Environmental seal placed between 2.8m to 1.8m. 3. Completed to 16.5m 4. Installed 50mm standpipe for groundwater and gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: G. Pursey	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1004	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 02/08/2018	Ground Level: 12.02m	Co-ordinates: E535542 N191573	
Project: IKEA Clear GI					Sheet 1 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
0.50	B	HS	2 ppm					Light grey gravelly fine to coarse SAND with high cobble content. Gravel is angular to subangular fine to coarse concrete, brick, flint and plastic with occasional metal. Cobbles are subangular concrete. (MADE GROUND)	
0.50 - 1.00	D	ES	2 ppm						
0.70	ES	HS	2 ppm						
1.00	1	D					1.80		
1.50 - 2.00	B	SPT HS	N=8 5 ppm	8	10.22		1.80	Soft dark grey mottled black slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse brick, concrete, clinker and flint. (MADE GROUND) <i>1.80 Strong hydrocarbon odour.</i>	
2.00	2	ES	HS	44 ppm			(0.70)		
2.50 - 3.00	B	SPT HS	N=9 22 ppm	9	9.52		2.50	Black slightly gravelly clayey fine to coarse SAND with occasional pockets of light brown mottled grey sandy clay and silt. Gravel is angular to subangular fine to coarse brick, concrete, clinker and flint. (MADE GROUND) <i>2.50 Slight hydrocarbon odour.</i>	
3.00	3	ES	HS	17 ppm			(1.20)		
3.50 - 4.00	B	SPT HS	N=12 9 ppm	12	8.32		3.70	Medium dense grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (RIVER TERRACE DEPOSIT) <i>3.70 Strong hydrocarbon odour and sheen in water.</i>	
3.70 - 4.10	B	HS	HS	65 ppm			8.02		
4.50 - 4.95	D	SPT HS	N=48 5 ppm	48			4.00	Soft to firm dark grey mottled brown slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine to medium. (ENFIELD SILT)	
		HS	HS	7 ppm			(1.80)		
5.50 - 5.95	D	SPT	N=6	6	6.22		5.80	Medium dense grey slightly clayey slightly silty	
6.00	EW	HS	HS	61 ppm					

Borehole Continued on Next Page

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.80	2.00	01:15			1. Inspection pit to 1.2m. 2. Environmental seal placed from 2.7m to 3.7m. 3. Completed to 9.8m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Hand Excavated/Dando 2000		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: J. Blyth	Approved By: FC
SLR CONSULTING LTD, 3RD FLOOR, BREWHOUSE, JACOB ST, BRISTOL, BS2 0EQ LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015							

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1004	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 02/08/2018	Ground Level: 12.02m	Co-ordinates: E535542 N191573	
Project: IKEA Clear GI					Sheet 2 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
7.00 - 7.50	B	SPT HS	N=16 9 ppm	● 16			(2.90)	SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL) <i>5.80 Strong hydrocarbon odour and sheen in water.</i>	
8.50 - 9.00	B	SPT	N=18	● 18			3.32		
8.70	B	HS	1 ppm				8.70	Stiff grey slightly sandy silty CLAY with occasional fine selenite and partings of silt. Sand is fine. (LONDON CLAY)	
9.50	B	HS	1 ppm				2.22		
							9.80	Borehole Complete at 9.80m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.80	2.00	01:15			1. Inspection pit to 1.2m. 2. Environmental seal placed from 2.7m to 3.7m. 3. Completed to 9.8m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Hand Excavated/Dando 2000		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: J. Blyth	Approved By: FC
SLR CONSULTING LTD, 3RD FLOOR, BREWHOUSE, JACOB ST, BRISTOL, BS2 0EQ LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015							

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1005	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 12.32m	Co-ordinates: E535595 N191573	
Project: IKEA Clear GI					Sheet 1 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
0.50	D	HS	35 ppm				(0.80)	Light grey gravelly fine to coarse SAND with high cobble content. Gravel is angular to subangular fine to coarse concrete, brick, plastic and flint. Cobbles are subangular concrete. (MADE GROUND)	
1.00	1	D	HS	188 ppm			(1.20)	Black slightly clayey gravelly fine to coarse SAND with occasional pockets of soft yellowish brown clay and ash. Gravel is angular to subrounded fine to coarse concrete, brick and clinker. (MADE GROUND)	
1.50	ES	SPT HS	N=13 43 ppm	● 13					
2.00	2	D	HS	67 ppm			2.00	Concrete hardstanding. (MADE GROUND)	
		SPT	N=21	● 21			2.40		
3.00	3	D	HS	42 ppm			(1.60)	Gray mottled brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse brick, concrete, flint and clinker. (MADE GROUND) 2.40 Slight hydrocarbon odour.	
		SPT	N=15	● 15					
4.00	4	D	HS				4.00	Concrete hardstanding. (MADE GROUND)	
		SPT	N=12	● 12			4.40		
5.00	5	D	HS	14 ppm			(1.10)	Dark grey mottled light grey slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse flint and relict wood. Sand is fine to medium. (ENFIELD SILT) 4.40 Moderate hydrocarbon odour.	
5.00	ES								
		SPT	N=12	● 12			5.50		
5.90	ES	HS	429 ppm						
6.00	B	HS	159 ppm					Medium dense grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						2.00	2.40	01:00	5.50	6.00	
						4.00	4.40	01:00			

1. Inspection pit to 1.2m. 2. Environmental seal placed from 4.0m to 5.0m. 3. Completed to 9.0m 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Cando 2000 /Hand Excavated	Method: Cable percussion (shell and auger) Hole Size: 200mm	Logged By: J. Blyth	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1005	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 12.32m	Co-ordinates: E535595 N191573	
Project: IKEA Clear GI					Sheet 2 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
7.15	EW	SPT	N=20	● 20			(2.30)	5.50 Strong hydrocarbon odour and sheen in water.	
8.00	D	HS	2 ppm				4.52	Stiff grey slightly gravelly sandy silty CLAY. Gravel is angular to subrounded fine to coarse flint. Sand is fine. (LONDON CLAY)	
8.50 - 8.95	UT	U	70				4.12	Stiff grey slightly sandy silty CLAY with occasional fine selenite. Sand is fine. (LONDON CLAY)	
9.00	D ES	HS	2 ppm				3.32	Borehole Complete at 9.00m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						2.00	2.40	01:00	5.50	6.00	1. Inspection pit to 1.2m. 2. Environmental seal placed from 4.0m to 5.0m. 3. Completed to 9.0m 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.
						4.00	4.40	01:00			

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000 /Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 200mm		Logged By: J. Blyth	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1006	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 11.37m	Co-ordinates: E535529 N191540	
Project: IKEA Clear GI					Sheet 1 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
0.50 0.50 - 1.00	B D	HS	0 ppm				(1.50)	Light grey slightly silty very sandy angular to subangular fine to coarse GRAVEL of brick, concrete, flint and clinker with high cobble content. Cobbles are subangular concrete. Sand is fine to coarse. (MADE GROUND) 0.00 Moderate hydrocarbon odour.	
1.00	1	D	HS	2 ppm					
1.50 - 2.00	B	SPT HS	N=50 0 ppm		9.87		1.50		
	2		HS	0 ppm				Dark grey mottled black slightly gravelly clayey fine to coarse SAND with frequent pockets of ash. Gravel is angular to subrounded fine to coarse brick, concrete, flint and clinker. (MADE GROUND) 1.50 Moderate hydrocarbon odour.	
2.50 - 3.00	B	SPT HS	N=32 2 ppm				(2.70)		
	3		HS	6 ppm				2.50 Becomes slightly clayey and gravelly with no ash present.	
3.50 3.50 - 4.00	B ES	SPT HS	N=19 1 ppm						
	4		HS	2 ppm			4.20		
4.20	B				7.17		4.20		
4.50 - 4.95	UT	U	15				(0.60)	Soft to firm light grey mottled orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to medium. (ENFIELD SILT)	
4.88 - 4.93	D	HS	2 ppm				4.80	4.20 Slight hydrocarbon odour.	
5.30	B						5.20	Soft to firm dark grey mottled light grey slightly sandy silty CLAY. Sand is fine to medium. (ENFIELD SILT)	
5.50 - 6.00	B	SPT HS	N=15 6 ppm					4.80 Slight hydrocarbon odour.	
6.00	ES	HS	7 ppm					Grey slightly clayey slightly silty fine to coarse SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. (KEMPTON PARK GRAVEL) 5.20 Strong hydrocarbon odour.	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.7m to 4.7m. 3. Completed to 9.2m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: J. Blyth		Approved By: FC	
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1006	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 11.37m	Co-ordinates: E535529 N191540	
Project: IKEA Clear GI					Sheet 2 of 2



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	
6.50	EW							Grey slightly clayey slightly silty fine to coarse SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. (KEMPTON PARK GRAVEL)	
7.00 - 7.50	B	SPT HS	N=18 2 ppm	● 18			(3.00)		
		HS	1 ppm						
8.20	B	HS	7 ppm		3.17		8.20		
8.30	ES	HS	7 ppm					Stiff grey slightly sandy silty CLAY with occasional fine selenite. Sand is fine. (LONDON CLAY)	
8.50 - 8.95	UT	SPT U	N=28 45	● 28			(1.00)		
8.61 - 8.66	D	U							
		HS	7 ppm		2.17		9.20		
Borehole Complete at 9.20m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.7m to 4.7m. 3. Completed to 9.2m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: J. Blyth	Approved By: FC
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BOREHOLE LOG

BOREHOLE No
GI_DZ4_BH1007

Client:
London Borough of Enfield



Project No: 409.05569.00004 Date: 25/07/2018 Ground Level: 12.08m Co-ordinates: E535589 N191508

Project:
IKEA Clear GI

Sheet
1 of 3

SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thickness)	
0.50	D	HS	0 ppm		11.48		(0.60)	Grey slightly silty gravelly fine to coarse SAND with occasional rootlets. Gravel is angular to subangular fine to coarse concrete, brick, flint and plastic. (MADE GROUND)	
1.00	1-D	HS	0 ppm		10.78		(0.70)	Dark grey occasionally mottled reddish brown clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete, brick, flint and plastic. (MADE GROUND)	
		HS SPT	0 ppm N=21	21					
2.00	2-D	SPT	N=30	30	9.38		(1.40)	Dark grey slightly sandy slightly gravelly silty CLAY with occasional pockets of clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, flint, concrete and clinker. Sand is fine to coarse. (MADE GROUND) 1.40 Cloth material. 1.90 Occasionally mottled brown with no silt present. 2.00 Occasional wood fragments.	
3.00	3-D				9.08			Concrete hardstanding. (MADE GROUND)	
3.50	ES				8.78			Dark grey slightly clayey slightly gravelly fine to coarse SAND with frequent pockets of ash. Gravel is angular to subangular fine to coarse brick, flint, concrete and clinker. (MADE GROUND) 3.00 Strong hydrocarbon odour.	
4.00	4-D				7.88		(0.90)	Dark grey mottled reddish brown slightly clayey slightly gravelly fine to coarse SAND with frequent pockets of ash and low cobble content. Gravel is angular to subangular fine to coarse brick, flint, concrete and clinker. Cobbles are subangular brick. (MADE GROUND) 3.30 Strong hydrocarbon odour.	
4.50	D	HS U	395 ppm 20		7.48			Soft to firm grey mottled yellowish brown CLAY with rare rootlets and occasional sand and silt lenses. (ENFIELD SILT) 4.20 Slight hydrocarbon odour.	
4.50 - 4.95	UT								
5.00	5-D							Soft to firm dark grey mottled brown slightly sandy slightly gravelly silty CLAY with occasional relict wood and rootlets. Gravel is angular to subangular fine to coarse flint. Sand is fine to coarse. (ENFIELD SILT)	
5.50 - 5.95	D	SPT	N=16	16			(2.30)		
5.90	ES	HS	335 ppm						
6.00	6-EW								

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.30	1.50	00:30			1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.5m to 4.5m. 3. Completed to 16.5m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.
						2.20	2.40	00:30			
						2.70	3.00	01:00			
						3.40	3.60	00:30			
						3.60	4.00	01:00			
						4.00	4.20	00:30			

All dimensions in metres Contractor: HGE Ltd Method: Cable percussion (shell and auger) Logged By: G. Pursey Approved By: FC
Scale 1:40 Plant: Hand Excavated/Dando 2000 Hole Size: 250mm

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1007	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 25/07/2018	Ground Level: 12.08m	Co-ordinates: E535589 N191508	
Project: IKEA Clear GI					Sheet 2 of 3



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
7.00 - 7.45	7	B	SPT HS N=16 650 ppm	● 16	5.18		6.90	Soft to firm dark grey mottled brown slightly sandy slightly gravelly silty CLAY with occasional relict wood and rootlets. Gravel is angular to subangular fine to coarse flint. Sand is fine to coarse. (ENFIELD SILT)	
8.50 - 9.05	8	D UT	U 65		3.78		1.40 8.30	Medium dense dark grey slightly clayey slightly silty sandy angular to subrounded fine to coarse GRAVEL of flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL) 6.90 Strong hydrocarbon odour and sheen in water.	
9.10	9	D						8.60 Thin band of very clayey sand. 9.00 Becomes slightly sandy.	
10.00 - 10.45	10	D	SPT N=18	● 18			7.60	11.00 Becomes very stiff.	
11.50 - 11.95	11	UT							
12.00	12	D							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.30	1.50	00:30			
						2.20	2.40	00:30			
						2.70	3.00	01:00			
						3.40	3.60	00:30			
						3.60	4.00	01:00			
						4.00	4.20	00:30			

1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.5m to 4.5m. 3. Completed to 16.5m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Hand Excavated/Dando 2000		Method: Cable percussion (shell and auger) Hole Size: 250mm		Logged By: G. Pursey	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1007	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 25/07/2018	Ground Level: 12.08m	Co-ordinates: E535589 N191508	
Project: IKEA Clear GI					Sheet 3 of 3



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
13.00 - 13.45	13	D	SPT	N=25				Stiff dark grey silty sandy CLAY with occasional fine selenite. Sand is fine. (LONDON CLAY)	
14.50 - 14.95	14	UT	U	90					
15.00	15	D							
16.00 - 16.45	16	D	SPT	N=45		-3.82	15.90	Dense light grey clayey silty fine to coarse SAND. (LAMBETH GROUP)	
16.50	16	D				-4.32	16.40		
	16	D				-4.42	16.50	Stiff light grey sandy CLAY with pockets of light grey sand. Sand is fine to medium. (LAMBETH GROUP)	
	17							Borehole Complete at 16.50m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.30	1.50	00:30			
						2.20	2.40	00:30			
						2.70	3.00	01:00			
						3.40	3.60	00:30			
						3.60	4.00	01:00			
						4.00	4.20	00:30			

1. Inspection pit to 1.2m. 2. Environmental seal placed from 3.5m to 4.5m. 3. Completed to 16.5m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Hand Excavated/Dando 2000		Method: Cable percussion (shell and auger) Hole Size: 250mm		Logged By: G. Pursey	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1008
Client: London Borough of Enfield				 SLR
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 11.76m	Co-ordinates: E535672 N191501	
Project: IKEA Clear GI				Sheet 1 of 3

SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
0.50	D	HS	4 ppm				(0.80)	Grey slightly silty gravelly fine to coarse SAND with occasional rootlets. Gravel is angular to subangular fine to coarse concrete, brick, flint and plastic. (MADE GROUND)	
0.50	ES								
1.00	1	D	HS	1 ppm			(0.80)	Grey clayey gravelly fine to coarse SAND with occasional pockets of soft to firm friable gravelly clay. Gravel is angular to surrounded fine to coarse brick, concrete, plastic and flint. (MADE GROUND)	
		SPT	N=22				1.60		
2.00	2	D	HS	0 ppm			(0.50)	Grey slightly sandy slightly gravelly silty CLAY with occasional pockets of dark brown clayey sand. Gravel is angular to subrounded fine to coarse brick, flint, concrete and clinker. Sand is fine to coarse. (MADE GROUND)	
		SPT	N=32				2.50		
		HS	8 ppm					Concrete hardstanding. (MADE GROUND)	
3.00	3	D	HS	0 ppm			(0.60)	Light brown mottled black slightly sandy slightly gravelly silty CLAY with occasional pockets of dark brown clayey sand. Gravel is angular to subrounded fine to coarse brick, flint, concrete and clinker. Sand is fine to coarse. (MADE GROUND)	
		SPT	N=13				3.10		
		HS	1 ppm					2.50 Strong hydrocarbon odour.	
4.00	4	D	HS	236 ppm			(1.40)	Soft to firm grey mottled light brown slightly sandy slightly gravelly silty CLAY with occasional rootlets. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to medium. (ENFIELD SILT)	
		SPT	N=9				4.50		
		HS	115 ppm					3.10 Strong hydrocarbon odour.	
4.50	D	SPT	N=9						
		HS	115 ppm						
5.00	5	D	HS	53 ppm			(1.00)	Firm locally soft dark grey mottled brown slightly sandy slightly gravelly silty CLAY. Gravel is subrounded fine to medium flint. Sand is fine to coarse. (ENFIELD SILT)	
5.00 - 5.45	UT	U	28					4.50 Slight hydrocarbon odour.	
5.50	D							Medium dense dark grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
6									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						2.00	2.40	01:00	5.50	6.50	1. Inspection pit to 1.2m. 2. Environmental seal placed from 4.0m to 5.0m. 3. Completed to 16.0m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated	Method: Cable percussion (shell and auger) Hole Size: 250mm	Logged By: J. Blyth	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1008	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 25/07/2018	Ground Level: 11.76m	Co-ordinates: E535672 N191501	
Project: IKEA Clear GI					Sheet 2 of 3



SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
7.00	7	B	SPT	N=18			(2.50)	5.50 Strong hydrocarbon odour and sheen in water.	
7.00 - 7.45		ES							
		EW							
			HS	70 ppm					
			HS	121 ppm		3.76		8.00	
8.50 - 8.95		UT	U	70				Stiff dark grey slightly sandy silty CLAY with occasional fine selenite. Sand is fine. (LONDON CLAY)	
9.00	9	D							
10.00 - 10.45	10	D	SPT	N=20			(7.50)		
11.50 - 11.95		UT							
12.00	12	D							

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						2.00	2.40	01:00	5.50	6.50	1. Inspection pit to 1.2m. 2. Environmental seal placed from 4.0m to 5.0m. 3. Completed to 16.0m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 250mm		Logged By: J. Blyth	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_BH1008	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 26/07/2018	Ground Level: 11.76m	Co-ordinates: E535672 N191501	
Project: IKEA Clear GI					Sheet 3 of 3



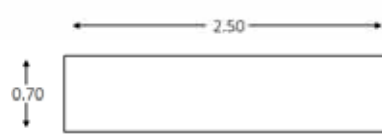
SAMPLES & TESTS					Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result	SPT N Value 10 20 30 40		Reduced Level	Legend	Depth (Thick-ness)	
13.00 - 13.45	13	D	SPT	N=27					Stiff dark grey slightly sandy silty CLAY with occasional fine selenite. Sand is fine. (LONDON CLAY)
14.50 - 14.95		UT	HS U	0 ppm 100					
15.00		D	HS	0 ppm					
15.50		D				-3.74		15.50	
							(0.50)		Light grey fine to coarse SAND with occasional shell fragments. (LAMBETH GROUP)
			HS	0 ppm		-4.24		16.00	
Borehole Complete at 16.00m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						2.00	2.40	01:00	5.50	6.50	1. Inspection pit to 1.2m. 2. Environmental seal placed from 4.0m to 5.0m. 3. Completed to 16.0m. 4. Installed 100mm standpipe for groundwater and gas monitoring and sump for collecting DNAPL.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000/Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 250mm		Logged By: J. Blyth	Approved By: FC
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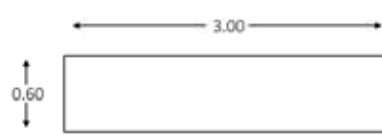
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1001	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 24/07/2018	Ground Level: 10.90m	Co-ordinates: E535475 N191654	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	ES	HS	480 ppm			(0.80)	Grey slightly clayey slightly silty gravelly fine to coarse SAND with rare rootlets and low cobble content. Gravel is angular to subrounded fine to coarse brick, concrete, asphalt, flint, wood, cloth, clinker and rebar metal. Cobbles are subangular brick. (MADE GROUND)	
1.20	B			10.10		0.80	Dark brown slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse flint, brick, timber and concrete. Sand is fine to coarse. (MADE GROUND) <i>0.80 Slight hydrocarbon odour.</i>	
1.30	ES	HS	370 ppm			(0.95)		
1.80	D	HS	350 ppm			9.15	1.75	
1.80	ES					(0.58)	Dark grey slightly gravelly clayey fine to coarse SAND with rare rootlets. Gravel is angular to subangular fine to coarse brick and flint. (MADE GROUND) <i>1.75 Slight hydrocarbon odour.</i>	
2.40	D	HS	370 ppm			8.57	2.33	
2.40	ES	HS	90 ppm			8.40	(0.17) 2.50	
						8.30	(0.10) 2.60	
							(ENFIELD SILT) <i>2.33 Slight organic odour.</i>	
							Firm light brown mottled grey slightly sandy silty CLAY with rare gypsum crystals. Sand is fine to coarse. (ENFIELD SILT)	
							(0.80)	
							Firm locally soft dark grey mottled brown CLAY with occasional lenses of peat. (ENFIELD SILT) <i>2.60 Slight organic odour.</i>	
3.20	B	HS	101 ppm			7.50	3.40	
3.20	ES							
Trial Pit Complete at 3.40m								

GENERAL REMARKS: 1. Excavated to 3.4m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

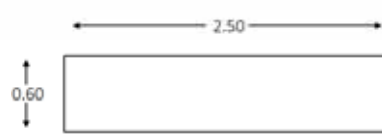
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1002	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 26/07/2018	Ground Level: 11.00m	Co-ordinates: E535565 N191657	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	ES	HS	2 ppm			(0.80)	Grey mottled dark grey silty gravelly fine to coarse SAND with occasional rootlets and low cobble content. Gravel is angular to subangular fine to coarse concrete, brick, flint, glass and plastic. Cobbles are subangular concrete. (MADE GROUND)	
1.00	B					0.80	Dark grey clayey very sandy angular to subangular fine to coarse GRAVEL of clinker, brick, concrete, plastic, bone and metal wire with frequent pockets of ash and occasional pockets of clay and medium cobble content. Cobbles are subangular brick. Sand is fine to coarse. <i>0.80 Slight hydrocarbon odour.</i>	
1.50 1.60	ES D	HS	16 ppm			1.60	Dark grey mottled reddish brown slightly clayey very sandy angular to subangular fine to coarse GRAVEL of clinker, concrete and brick with occasional pockets of sandy clay and medium cobble content. Cobbles are subangular brick. Sand is fine to coarse. (MADE GROUND) <i>1.60 Slight hydrocarbon odour.</i>	
2.00	B			▼				
2.50	ES	HS	62 ppm			(1.90)		
3.00								
3.60 3.60	D ES	HS	272 ppm			3.50 3.70	Firm dark grey mottled grey and brown slightly gravelly silty CLAY with rare pockets of grey fine to coarse sand and occasional rootlets. Gravel is angular to subangular fine to coarse brick and clinker. (MADE GROUND)	
4.00							Trial Pit Complete at 3.70m	


GENERAL REMARKS: 1. Excavated to 3.7m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

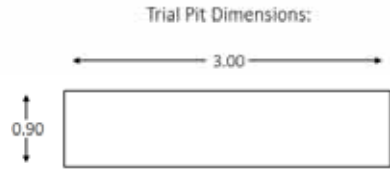
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1003	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 9.98m	Co-ordinates: E535654 N191648	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill	
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		DESCRIPTION
						9.79	(0.19) 0.19	Concrete hardstanding. (MADE GROUND)	Instrument Backfill
0.40	ES	HS	1 ppm			9.48	(0.31) 0.50	Grey mottled brown slightly clayey slightly silty gravelly fine to coarse SAND with occasional pockets of sandy clay. Gravel is angular to subangular fine to coarse clinker, brick, flint and concrete. (MADE GROUND)	
0.60	B							0.30 Becomes dark grey mottled black and brown. Soft to firm dark grey slightly gravelly silty sandy CLAY. Gravel is angular to subangular fine to coarse brick, flint, clinker, chalk and timber. Sand is fine to coarse. (MADE GROUND)	
1.00	ES	HS	1 ppm			8.78	(0.70) 1.20	0.50 Slight organic odour. Concrete hardstanding. (MADE GROUND)	
1.45	ES	HS	1 ppm	▼		8.58	(0.20) 1.40	Dark grey mottled reddish brown clayey sandy GRAVEL with occasional pockets of sandy clay. Gravel is angular to subangular fine to coarse flint, brick and clinker. Sand is fine to coarse. (MADE GROUND)	
1.50	B					8.43	(0.15) 1.55	Firm dark grey mottled brown slightly sandy silty CLAY with occasional rootlets. Sand is fine to medium. (ENFIELD SILT)	
1.50	D							1.55 Slight organic odour.	
1.70	ES	HS	1 ppm			7.63	(0.80) 2.35	Soft grey mottled brown slightly sandy clayey SILT. Sand is fine to medium. (ENFIELD SILT)	
2.40	D	HS	1 ppm			7.48	(0.15) 2.50		
2.40	ES							Trial Pit Complete at 2.50m	

GENERAL REMARKS: 1. Excavated to 2.5m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

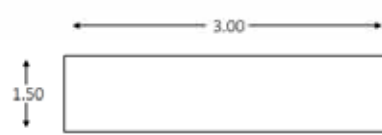
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1004	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 24/07/2018	Ground Level: 11.68m	Co-ordinates: E535495 N191605	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	B	HS	1 ppm			(1.10)	Grey mottled brown slightly clayey slightly silty gravelly SAND with medium cobble content. Gravel is angular to subangular fine to coarse brick, concrete, breeze block, flint, wood, plastic, rubber and steel. Cobbles are subangular brick, concrete and breeze block. (MADE GROUND)	
0.50	ES						0.60 - 0.90 Band of compacted brick and concrete with occasional pockets of sandy clay.	
1.20	ES			10.58		1.10	Concrete hardstanding. (MADE GROUND)	
1.40	D	HS	46 ppm	10.38		1.30	Soft to firm dark grey mottled brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to subangular fine to coarse brick, flint, clinker and timber. Sand is fine to coarse. (MADE GROUND) 1.30 Slight hydrocarbon odour.	
2.40	ES	HS	46 ppm	9.38		2.30	Dark grey clayey gravelly fine to coarse SAND with occasional lenses of silty clay and relict wood. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (ENFIELD SILT) 2.30 Strong hydrocarbon/creosote odour.	
2.50	B			8.98		2.70	Soft dark grey slightly sandy slightly gravelly silty CLAY. Gravel is angular to subrounded fine and medium flint. Sand is fine to coarse. (ENFIELD SILT) 2.70 Strong hydrocarbon/creosote odour.	
2.80	D					(0.80)		
3.50	ES	HS	1 ppm	8.18		3.50	Firm brown mottled greyish brown slightly sandy CLAY. Sand is fine to medium. (ENFIELD SILT) 3.50 Slight hydrocarbon/creosote odour.	
3.60	D			8.08		(0.10) 3.60		
							Trial Pit Complete at 3.60m	

GENERAL REMARKS: 1. Excavated to 3.6m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

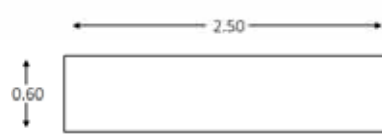
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1005	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 11.85m	Co-ordinates: E535556 N191613	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
1.00	ES	HS	1 ppm			(1.90)	Grey mottled dark grey slightly silty gravelly fine to coarse SAND with medium cobble and boulder content. Gravel is subangular to subrounded concrete, brick, flint, steel, rebar, plastic and glass. Cobbles and boulders are angular to subangular concrete. (MADE GROUND)		
1.20	B						1.50 Occasional wood, wire, metal and breeze block present.		
1.90	ES	HS	1 ppm	9.95		1.90	Trial Pit Complete at 1.90m		
2									
3									
4									


GENERAL REMARKS: 1. Terminated at 1.9m due to concrete obstruction. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

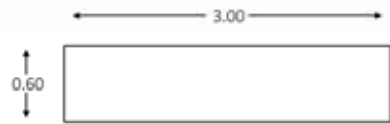
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1006	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 26/07/2018	Ground Level: 11.69m	Co-ordinates: E535662 N191607	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	ES	HS	1 ppm			(0.85)	Dark grey mottled light grey slightly clayey gravelly fine to coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse concrete, brick, flint, glass and plastic with rare asbestos cement sheet fragment. Cobbles are subangular brick and concrete. (MADE GROUND)	
1.00	ES	HS	1 ppm			(0.50)	Firm dark grey slightly sandy slightly gravelly silty CLAY. Gravel is angular to subangular fine to coarse brick, concrete, flint and clinker. Sand is fine to coarse. <i>0.85 Slight organic odour.</i> (MADE GROUND)	
1.50	ES	HS	1 ppm			(0.35)	Dark grey slightly gravelly silty fine to coarse SAND with frequent roots and rootlets. Gravel is angular to subangular fine to coarse brick, flint and timber. (MADE GROUND) <i>1.35 Slight organic odour.</i>	
2							Trial Pit Complete at 1.70m	
3								
4								

GENERAL REMARKS: 1. Terminated at 1.7m due to concrete obstruction. 2. Excavation was easy. 3. Excavation was easy.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

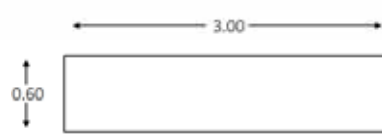
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1007	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 11.96m	Co-ordinates: E535550 N191561	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50 0.60	B ES	HS	1 ppm			(0.82)	Greyish brown slightly silty slightly gravelly fine to coarse SAND with occasional rootlets. Gravel is angular to subangular fine to coarse concrete, brick, flint, plastic and glass. (MADE GROUND)	
1.00	D	HS	61 ppm	11.14		0.82	Soft to firm dark grey mottled light grey and brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to subangular fine to coarse brick, concrete, flint, clinker, timber and metal wire. Sand is fine to coarse. (MADE GROUND) 0.82 Slight hydrocarbon odour.	
1.50	ES							
2.00 2.00	B ES	HS	31 ppm			(2.68)	2.20 Occasional pockets of slightly clayey slightly gravelly fine to coarse sand.	
3.00	D							
3.50 3.60	ES B	HS	31 ppm	8.46		3.50	Dark grey slightly clayey SAND and GRAVEL with occasional pockets of slightly sandy clay. Gravel is angular to subangular fine to coarse flint, concrete and brick. Sand is fine to coarse. (MADE GROUND) 3.50 Slight hydrocarbon odour.	
4				8.06		3.90	Trial Pit Complete at 3.90m	

GENERAL REMARKS: 1. Excavated to 3.9m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

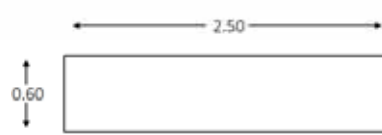
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1008	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 24/07/2018	Ground Level: 12.72m	Co-ordinates: E535614 N191560	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.60	ES	HS	1 ppm			(0.84)	Grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete, flint, plastic, steel and clinker. (MADE GROUND)	
0.90	D			11.88		0.84		
1						(0.36)	Firm dark grey slightly sandy slightly gravelly silty CLAY with occasional pockets of sand. Gravel is angular to subangular fine to coarse brick, flint and clinker. Sand is fine to coarse. (MADE GROUND)	
				11.52		1.20	<i>0.84 Slight hydrocarbon odour.</i>	
1.50	B	HS	147 ppm				Dark grey slightly clayey sandy angular to subangular fine to coarse GRAVEL of clinker, coal, flint, brick and concrete with occasional pockets of slightly gravelly sandy clay. Sand is fine to coarse. (MADE GROUND)	
1.50	ES						<i>1.20 Slight hydrocarbon odour.</i>	
2.00	D							
2.50	ES	HS	152 ppm			(2.30)		
3.00	B							
				9.22		3.50		
Trial Pit Complete at 3.50m								
4								

GENERAL REMARKS: 1. Excavated to 3.5m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

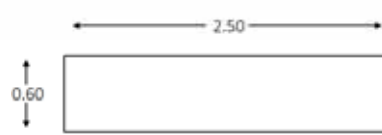
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1009	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 12.81m	Co-ordinates: E535668 N191553	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
1.00	ES	HS	1 ppm			(1.75)	Dark grey mottled brown clayey gravelly fine to coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse brick, concrete, flint, plastic, glass, mortar and clinker. Cobbles are subangular concrete. (MADE GROUND)	
2.00 2.00	B ES	HS	1 ppm			(0.65)	Dark grey slightly sandy clayey angular to subangular fine to coarse GRAVEL of clinker, brick, concrete and chalk with pockets of slightly sandy slightly gravelly clay. Sand is fine to coarse. <i>1.75 Slight organic odour.</i>	
Trial Pit Complete at 2.40m								
3								
4								

GENERAL REMARKS: 1. Terminated at 2.4m due to obstruction. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

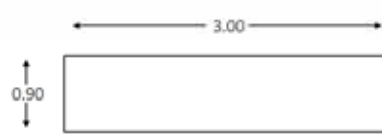
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1010	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 24/07/2018	Ground Level: 11.44m	Co-ordinates: E535535 N191522	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.40	B					(0.54)	Concrete hardstanding. (MADE GROUND)	Backfill
0.50	ES	HS	1 ppm	10.90		0.54	Dark brown slightly silty clayey gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subangular fine to coarse concrete, flint, steel, rebar metal, timber and clinker. Cobbles are subangular brick and concrete. (MADE GROUND) <i>0.90 Disused pipe encountered.</i>	
1.00	D			10.34		1.10	Dark grey slightly clayey slightly silty gravelly fine to coarse SAND with occasional pockets of soft sandy clay and frequent pockets of ash. Gravel is angular to subangular fine to coarse clinker, brick and flint. (MADE GROUND) <i>1.10 Strong hydrocarbon/creasote odour.</i>	
1.20	ES	HS	38 ppm			(1.60)	<i>2.00 Frequent orangish brown clinker present.</i>	
2.00	B					2.70	Firm locally soft dark grey slightly sandy silty CLAY. Sand is fine to medium. (ENFIELD SILT) <i>2.70 Strong hydrocarbon odour.</i>	
2.60	ES	HS	7 ppm	8.74		2.70		
3.00	D					(1.12)		
3.50	ES	HS	70 ppm	7.62		3.82		
4							Trial Pit Complete at 3.82m	

GENERAL REMARKS: 1. Excavated to 3.82m. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

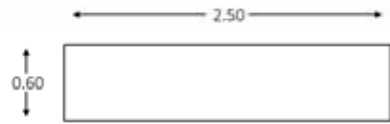
TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1011	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 12.06m	Co-ordinates: E535567 N191519	Sheet 1 of 1	


SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
1.00 1.00	B ES	HS	1 ppm			(1.80)	Grey slightly silty gravelly fine to coarse SAND with high cobble content. Gravel is angular to subangular fine to coarse concrete, brick, flint, glass, plastic, asphalt and rebar metal. Cobbles are subangular brick, concrete and asphalt. (MADE GROUND)	
							1.50 Becomes dark brown.	
2.00 2.00	D ES	HS	1 ppm	10.26		1.80	Dark grey mottled brown slightly silty slightly gravelly fine to coarse SAND with frequent pockets of ash and occasional pockets of brown slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse brick, timber, clinker and flint. (MADE GROUND)	
2.50 2.70	B ES	HS	1 ppm	9.26		2.80		
Trial Pit Complete at 2.80m								

GENERAL REMARKS: 1. Excavated to 2.8m. 2. Excavation was difficult. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1012	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 25/07/2018	Ground Level: 12.64m	Co-ordinates: E535656 N191506	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
1.00	ES	HS	1 ppm			(1.40)	Dark grey mottled brown clayey SAND and GRAVEL with occasional pockets of slightly sandy slightly gravelly clay. Gravel is angular to subangular fine to coarse concrete, brick, flint, plastic, glass and cloth. Sand is fine to coarse. (MADE GROUND)	
1.50	ES	HS	1 ppm			(0.30)	Firm locally soft dark brownish grey slightly sandy slightly gravelly silty CLAY with occasional pockets of clayey sand. Gravel is angular to subangular fine to coarse brick, flint, clinker, concrete and glass. Sand is fine to coarse. (MADE GROUND)	
2.00	ES	HS	1 ppm			(0.80)	1.40 Slight organic odour. Reddish brown mottled brown clayey gravelly fine to coarse SAND with frequent pockets of ash and high cobble content. Gravel is angular to subangular fine to coarse concrete, flint, brick, glass, metal and clinker. Cobble is subangular brick and concrete. (MADE GROUND)	
Trial Pit Complete at 2.50m								
3								
4								

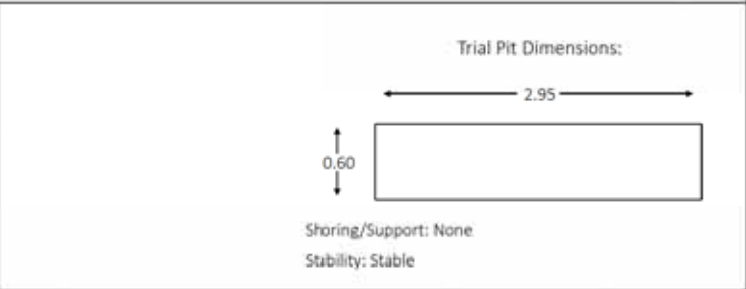
GENERAL REMARKS: 1. Terminated at 2.5m due to obstruction. 2. Excavation was easy. 3. Backfilled with arisings.		Trial Pit Dimensions: 	
KEY V = Hand Vane Shear Strength PP = Pocket Penetrometer Shear Strength J = Jar Sample D = Disturbed Sample B = Large Bulk Sample HS = Head Space Measurement		Shoring/Support: Stability: Stable	
All dimensions in metres Scale 1:30	Contractor: HGE Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: G. Pursey Approved By: FC

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1013	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.50	ES	HS	7 ppm		[Pattern]	(1.83)	[Pattern]		
1		HS	8 ppm						
1.20	ES	HS	10 ppm						
2						1.83	Trial Pit Complete at 1.83m		
3									
4									


GENERAL REMARKS:
1. Excavated to 1.83m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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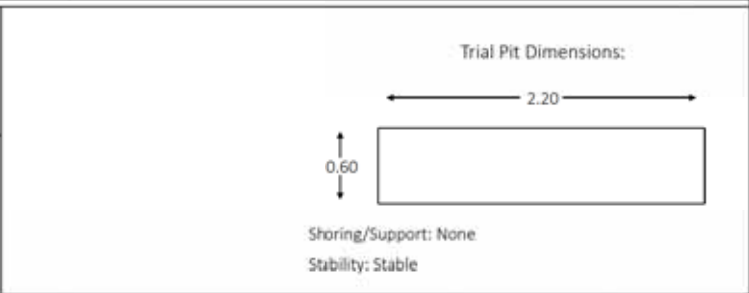
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1014	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.40	ES	HS	8 ppm			(0.79)	Brownish grey slightly gravelly clayey fine to coarse SAND with low cobble content. Gravel is subangular fine to coarse flint, brick, metal and concrete. Cobbles are subangular brick and concrete. (MADE GROUND)	
1		HS	5 ppm			0.79	0.73 - 0.79 Layer of brick cobbles present.	
		HS	7 ppm			(0.82)	Greyish brown slightly gravelly clay. Gravel is subangular fine to coarse flint and brick. (MADE GROUND)	
1.80	ES					1.61		
2		HS	7 ppm			(0.41)	Black angular to subangular fine to coarse GRAVEL of clinker. (MADE GROUND)	
						2.02	Trial Pit Complete at 2.02m	
3								
4								


GENERAL REMARKS:
1. Excavated to 2.02m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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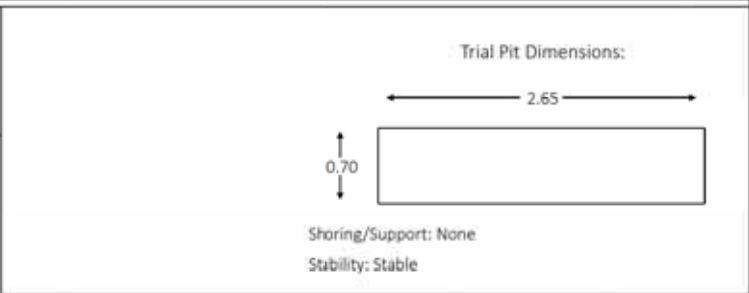
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1015	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA				Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	DESCRIPTION	
0.30	ES	HS	5 ppm			0.54	Brownish grey slightly gravelly clayey medium to coarse SAND with low cobble content. Gravel is subangular medium to coarse flint, brick, metal. Cobbles are subangular brick. (MADE GROUND)		
1		HS	6 ppm			1.09	Black angular to subrounded medium to coarse GRAVEL of flint and clinker. (MADE GROUND)		
1.30	ES	HS	8 ppm			1.63			
Trial Pit Complete at 1.63m									
2									
3									
4									


GENERAL REMARKS:
1. Excavated to 1.63m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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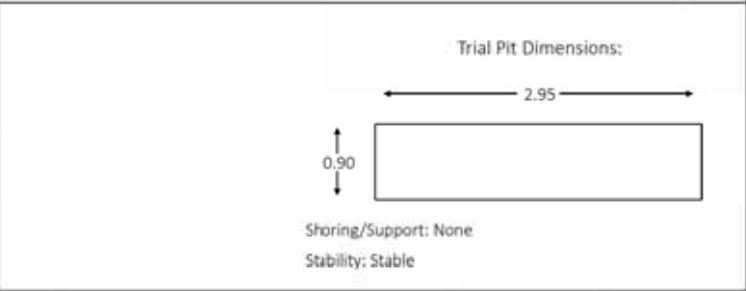
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1016	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.20	ES	HS	6 ppm		(1.55)	1.55	Greyish brown slightly gravelly clayey medium to coarse SAND with low cobble content. Gravel is subangular fine to coarse flint, brick, concrete, metal and glass. Cobbles are subangular brick and concrete. (MADE GROUND)	
1.00	ES	HS	7 ppm					
		HS	6 ppm					
2							Trial Pit Complete at 1.55m	
3								
4								


GENERAL REMARKS:
1. Excavated to 1.55m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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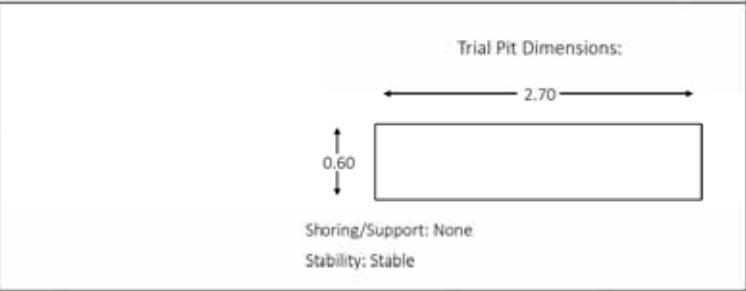
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1017	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.40	ES	HS	7 ppm			(0.91)	Greyish brown slightly gravelly clayey SAND with medium to coarse frequent rootlets and low cobble content. Gravel is subangular fine to coarse flint, brick, concrete, metal and glass. Cobbles are subangular brick and concrete. (MADE GROUND)	
1.10	ES	HS	48 ppm			(0.29)	Soft to firm dark grey CLAY with low cobble content. Cobbles are angular brick. (MADE GROUND) <i>0.91 Slight hydrocarbon odour.</i>	
2							Trial Pit Complete at 1.20m	
3								
4								


GENERAL REMARKS:
1. Excavated to 1.20m. 2. Backfilled with arisings.




KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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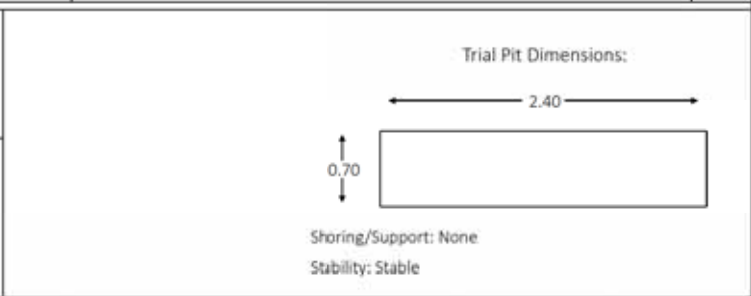
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1018	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	ES	HS	10 ppm			0.62	Greyish brown slightly gravelly clayey fine to coarse SAND with low cobble content. Gravel is subangular to subrounded medium to coarse flint, brick, concrete, metal and plastic. Cobbles are subangular brick and concrete. (MADE GROUND)	
1		HS	13 ppm			1.11	Firm dark grey slightly gravelly CLAY. Gravel is subangular fine to medium flint. (ENFIELD SILT) 0.62 Slight hydrocarbon odour.	
1.50	ES	HS	12 ppm			1.73		
Trial Pit Complete at 1.73m								
2								
3								
4								


GENERAL REMARKS:
1. Excavated to 1.73m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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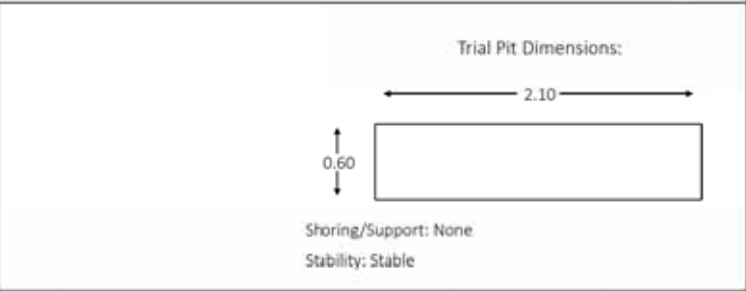
LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

TRIAL PIT LOG				TRIAL PIT No GI_DZ4_TP1019	
Client: London Borough of Enfield					
Project: IKEA Clear GI					
Project No: 409.05569.00004	Date: 20/11/2018	Ground Level:	Co-ordinates:	Sheet 1 of 1	

SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.30	ES	HS	9 ppm			(1.25)	Greyish brown slightly gravelly clayey fine to coarse SAND with medium cobble content. Gravel is subangular to subrounded medium to coarse flint, brick, concrete, metal and plastic. Cobbles are subangular brick and concrete. (MADE GROUND)	
1.10	ES	HS	7 ppm			1.25		
2							Trial Pit Complete at 1.25m	
3								
4								

GENERAL REMARKS:
1. Excavated to 1.25m. 2. Backfilled with arisings.

KEY
V = Hand Vane Shear Strength
PP = Pocket Penetrometer Shear Strength
J = Jar Sample
D = Disturbed Sample
B = Large Bulk Sample
HS = Head Space Measurement



All dimensions in metres Scale 1:30	Contractor: HGF Ltd Plant: JCB 3CX	Method: Trial pit/trench	Logged By: DGJ	Approved By: FC
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LOGGING HAS BEEN CARRIED OUT IN ACCORDANCE WITH 355930:2015

BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1001	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 30/07/2018	Ground Level: 10.86m	Co-ordinates: E535478 N191699	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	D ES B	HS	0 ppm		10.71		0.15	Concrete hardstanding. (MADE GROUND)	
					10.31		0.55	Light grey very gravelly fine to coarse SAND with low cobble content. Gravel is angular to subrounded fine to coarse concrete, brick, flint and plastic fragments. Cobbles are subangular brick and concrete. (MADE GROUND)	
1.00	1	D	HS	0 ppm		(0.55)	Dark grey slightly clayey gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subrounded fine to coarse concrete, brick, flint and clinker. Cobbles are subangular brick and concrete. (MADE GROUND)		
1.50		D	HS	0 ppm		(0.90)	Firm orangish brown mottled dark grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to coarse. (MADE GROUND)		
2.00	2	D	HS	0 ppm		8.86	2.00	Borehole Complete at 2.00m	
3									
4									
5									
6									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Inspection pit to 1.2m. 2. Completed at 2.0m. 3. Installed 50mm standpipe ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 115mm		Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1002	
Client: London Borough of Enfield					
Project No: 409.05569.00004	Date: 30/07/2018	Ground Level: 11.39m	Co-ordinates: E535497 N191634		
Project: IKEA Clear GI				Sheet 1 of 1	



SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	D ES B	HS	0 ppm			(0.90)	Light grey gravelly fine to coarse SAND with low cobble content. Gravel is angular to subrounded fine to coarse concrete, brick and flint. Cobbles are subrounded flint. (MADE GROUND)	
0.50 0.70 - 0.90		HS	0 ppm	10.49		0.90		
1							Borehole Complete at 0.90m	
2								
3								
4								
5								
6								

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Terminated at 0.9m due to pit collapse and concrete obstruction. 2. Backfilled with arisings.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Premier Compact	Method: Window Sampler Hole Size: 300mm	Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1002A	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 30/07/2018	Ground Level: 11.39m	Co-ordinates: E535500 N191634	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50	D				11.09		0.30	Light grey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse concrete and brick. (MADE GROUND)
					10.69		0.70	Firm sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse concrete, brick and flint. Sand is fine to coarse. (MADE GROUND)
								Borehole Complete at 0.70m

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Terminated at 0.7m due to concrete obstruction, 2. Backfilled with arisings.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 98mm		Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1002B	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 03/08/2018	Ground Level: 11.39m	Co-ordinates: E535497 N191634	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.30	ES	HS	2 ppm	11.09		0.30	Light grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, concrete, brick, plastic, metal and glass. (MADE GROUND)	
		HS	4 ppm	10.89		0.50	Concrete hardstanding with rebar. (MADE GROUND)	
1		HS	6 ppm			(2.00)	Light brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, concrete, brick, plastic, metal and glass. (MADE GROUND)	
		HS	2 ppm			8.89	2.50	Soft dark grey mottled black slightly sandy slightly gravelly silty CLAY with occasional lenses of peat. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to coarse. (ENFIELD SILT)
3.00	3	ES	6 ppm			(2.40)		
4.00	4	ES	23 ppm					
5				6.49		4.90		
				6.39		5.00	Grey slightly clayey slightly silty SAND and GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. (KEMPTON PARK GRAVEL)	
Borehole Complete at 5.00m								

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
						1.90	2.30	01:00			
						2.30	2.50	00:30			

1. Ground conditions hard and require Cable Percussive rig.
2. Completed to 5.0m. 3. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Cando 2000 /Hand Excavated		Method: Cable percussion (shell and auger) Hole Size: 150mm		Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1003
Client: London Borough of Enfield				 SLR
Project No: 409.05569.00004	Date: 31/07/2018	Ground Level: 11.03m	Co-ordinates: E535580 N191656	
Project: IKEA Clear GI				Sheet 1 of 1

SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	B	HS	8 ppm			0.40	Light grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete, flint and brick. (MADE GROUND)		
0.50 - 0.60	ES					(0.60)	Dark brown mottled black slightly clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is angular to subrounded fine to coarse brick, concrete, clinker and flint. (MADE GROUND)		
1.00	1	D	3 ppm			1.00	0.40 Slight hydrocarbon odour.		
1.50	ES	HS	0 ppm			(0.50)	Dark grey mottled black slightly clayey gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse brick, concrete, clinker, flint and timber. (MADE GROUND)		
2.00	2	D	1 ppm			(1.00)	1.00 Slight hydrocarbon odour. 1.30 Dark red brick staining present. 1.40 Small pocket of yellowish brown fine to coarse sand.		
2.50	D	HS	3 ppm			2.50	Soft dark grey slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse brick, concrete, clinker and flint. Sand is fine to coarse. (MADE GROUND)		
3.00						(1.40)	1.50 Strong hydrocarbon odour. 2.20 Becomes very soft.		
3.50	D	HS	31 ppm			3.90	Soft dark grey mottled light grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse flint. Sand is fine to coarse. (ENFIELD SILT)		
4.00	4	ES				4.00	2.50 Strong hydrocarbon odour. 3.00 Becomes firm.		
						7.03	Black mottled light grey clayey fine to coarse SAND. (KEMPTON PARK GRAVEL)		
							Borehole Complete at 4.00m		

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 4.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Premier Compact	Method: Window Sampler Hole Size: 115mm	Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1004	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 11.93m	Co-ordinates: E535608 N191622	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	D	HS	0 ppm			(1.10)	Light grey gravelly fine to coarse SAND with high cobble content. Gravel is angular to subangular fine to coarse brick, concrete, timber, plastic and metal. Cobbles are subangular brick and concrete. (MADE GROUND)		
1.20	D					1.10			
1.50	D	HS	0 ppm			1.30	Reddish brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick. (MADE GROUND)		
1.50						(0.70)	Dark grey mottled yellowish brown slightly clayey gravelly fine to coarse SAND with occasional pockets of dark grey mottled yellowish brown gravelly clay. Gravel is angular to subangular fine to coarse concrete, flint and brick. (MADE GROUND)		
2.00		HS	0 ppm			2.00			
Borehole Complete at 2.00m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 74mm		Logged By: J. Keay		Approved By: FC	
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1005	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 31/07/2018	Ground Level: 9.97m	Co-ordinates: E535671 N191637	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	D	HS	2 ppm		9.77		0.20	Concrete hardstanding with rebar. (MADE GROUND)	
					9.62		0.35	Light grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint and concrete.	
					9.37		0.60	(MADE GROUND)	
1.00 1.00	D ES	HS	3 ppm		9.07		0.90	Stiff grey mottled orangish brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse flint, clinker, brick and concrete. Sand is fine to coarse.	
								(MADE GROUND)	
1.50 1.50	D ES	HS	3 ppm				(1.10)	Stiff dark brown mottled orangish brown slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse flint, clinker, brick, concrete and porcelain. Sand is fine to coarse.	
								(MADE GROUND)	
2.00 2.00							2.00	Stiff locally firm grey mottled dark grey slightly sandy slightly gravelly CLAY with occasional small pockets of brown fine sand. Gravel is angular to subangular fine to coarse clinker. Sand is fine to coarse.	
								(MADE GROUND)	
								0.90 Slight hydrocarbon odour. 1.70 Pocket of pale yellow fine to coarse sand. Borehole Complete at 2.00m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 98mm		Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1006	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 30/07/2018	Ground Level: 11.54m	Co-ordinates: E535520 N191566	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	D	HS	35 ppm			(0.60)	Light grey gravelly fine to coarse SAND with low cobble content. Gravel is angular to subrounded fine to coarse flint, brick and concrete. Cobbles are subangular concrete. (MADE GROUND)		
0.50	ES			10.94		0.60			
1.00	1	D				(1.40)	Soft dark brown mottled black slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse concrete, brick and clinker. Sand is fine to coarse. (MADE GROUND) <i>0.60 Slight hydrocarbon odour.</i>		
		HS	16 ppm						
2.00	2	D		9.54		2.00			
Borehole Complete at 2.00m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 74mm		Logged By: J. Keay		Approved By: FC	
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1007	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 12.62m	Co-ordinates: E535635 N191588	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50 0.50 - 0.60	B ES	HS	0 ppm			(1.20)	Dark brown slightly clayey gravelly fine to coarse SAND with occasional rootlets. Gravel is angular to subangular fine to coarse brick, concrete, clinker, flint and plastic. (MADE GROUND)		
1.00	D	HS	2 ppm			11.42 1.20			
1.30	D					11.22 1.40	Firm locally soft dark grey slightly gravelly sandy CLAY with occasional pockets of orangish brown fine to coarse sand. Gravel is angular to subangular fine to coarse brick, concrete and flint. Sand is fine to coarse. (MADE GROUND)		
1.80	ES	HS	0 ppm			11.02 1.60	Reddish brown sandy angular to subangular fine to coarse GRAVEL of brick. Sand is fine to coarse. (MADE GROUND)		
2.00						10.62 2.00	Soft dark brown mottled black slightly gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse brick, clinker and concrete. Sand is fine to coarse. (MADE GROUND) <i>1.60 Slight hydrocarbon odour.</i> Borehole Complete at 2.00m		

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 74mm		Logged By: J. Keay		Approved By: FC	
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1008	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 31/07/2018	Ground Level: 12.33m	Co-ordinates: E535575 N191543	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50 - 0.60	B				11.63		(0.70) 0.70	Light grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse concrete, brick, plastic, metal, ceramics, rubber, clinker and glass. (MADE GROUND)
1					11.43		0.90	Concrete hardstanding. (MADE GROUND)
1.40	D				10.63		(0.80) 1.70	Firm locally soft grey mottled dark grey and red slightly gravelly sandy CLAY. Gravel is angular to subangular fine to coarse concrete, brick, plastic, metal, ceramics, rubber, clinker and glass. Sand is fine to coarse. (MADE GROUND)
Borehole Complete at 1.70m								

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 1.7m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Premier Compact	Method: Window Sampler Hole Size:	Logged By: J. Keay Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1008A	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 31/07/2018	Ground Level: 12.33m	Co-ordinates: E535575 N191543	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50	D	HS	0 ppm			(1.10)	Light grey mottled dark brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete, plastic, glass, ceramic and flint. (MADE GROUND)		
1.00		HS	9 ppm		11.23	1.10	0.90 Becomes slightly clayey.		
1.50	D	HS	2 ppm			(0.80)	Firm dark grey mottled yellowish brown slightly gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete, glass, ceramic, flint, clinker and timber. (MADE GROUND)		
2.00					10.43	1.90			
2.00	D ES	HS	16 ppm				Soft to firm light brown mottled dark grey slightly silty slightly gravelly sandy CLAY with occasional shell fragments. Gravel is angular to subangular fine to coarse brick, flint and clinker. Sand is fine to coarse. (MADE GROUND)		
		HS	10 ppm				1.90 Moderate hydrocarbon odour. 2.50 Pocket of concrete gravel.		
3.00	D	HS	6 ppm			(2.10)			
		HS	4 ppm				3.10 Becomes soft. 3.50 - 3.60 Band of dark grey sand.		
4.00	D	HS	5 ppm		8.33	4.00			
								Borehole Complete at 4.00m	

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 4.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40	Contractor: HGE Ltd Plant: Premier Compact	Method: Window Sampler Hole Size: 98mm	Logged By: J. Keay Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1009	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 30/07/2018	Ground Level: 11.06m	Co-ordinates: E535506 N191532	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)	
0.50 0.50	D ES	HS	4 ppm				0.60	Light grey gravelly fine to coarse SAND with medium cobble content. Gravel is angular to subrounded fine to coarse flint, concrete and brick. Cobbles are subangular brick and concrete. (MADE GROUND)
1							0.60	
		HS	119 ppm				1.40	Black gravelly fine to coarse SAND with frequent pockets of ash and low cobble content. Gravel is angular to subrounded fine to coarse brick, concrete and clinker. Cobbles are subangular brick. (MADE GROUND) <i>0.60 Slight hydrocarbon odour.</i> <i>1.20 - 1.30 Band of yellow fine to coarse sand.</i>
2							2.00	
								Borehole Complete at 2.00m
3								
4								
5								
6								

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 74mm		Logged By: J. Keay	Approved By: FC
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BOREHOLE LOG				BOREHOLE No GI_DZ4_WS1010	
Client: London Borough of Enfield					
Project No: 409.05569.00004		Date: 01/08/2018	Ground Level: 12.31m	Co-ordinates: E535629 N191500	
Project: IKEA Clear GI					Sheet 1 of 1



SAMPLES & TESTS				Water	STRATA			Instrument	Backfill
Depth	Type No	Test Type	Test Result		Reduced Level	Legend	Depth (Thickness)		
0.50 - 0.60	B	HS	0 ppm			(1.10)	Dark brown slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete, plastic, fabric, metal, flint and timber. (MADE GROUND)		
1.00	1	D	0 ppm			1.10			
1.50		D				1.30	Firm yellowish brown slightly sandy slightly gravelly CLAY. Gravel is angular to subangular fine and medium brick, plastic and flint. Sand is fine to coarse. (MADE GROUND)		
2.00	2	ES	0 ppm			1.80	Firm dark grey mottled black slightly gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse brick, concrete and flint. (MADE GROUND)		
						2.00	1.30 Slight hydrocarbon odour. Black gravelly fine to coarse SAND with frequent pockets of ash. Gravel is angular to subangular fine to coarse brick, concrete and flint. (MADE GROUND) 1.80 Slight hydrocarbon odour.		
Borehole Complete at 2.00m									

Boring Progress and Water Observations						Chiselling			Water Added		General Remarks
Date	Time	Depth	Casing Dpt	Casing Dia	Water Dpt	From	To	Hours	From	To	
											1. Completed to 2.0m. 2. Installed 50mm standpipe for ground gas monitoring.

All dimensions in metres Scale 1:40		Contractor: HGE Ltd Plant: Premier Compact		Method: Window Sampler Hole Size: 74mm		Logged By: J. Keay		Approved By: FC	
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