Caulmert Limited

Engineering, Environmental & Planning Consultancy Services

Riverside Waste Transfer Station

Williams Environmental Limited

Environmental Permit Application

Site Condition Report

Prepared by:

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APPROVAL RECORD

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Site Condition Report

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APPENDICES

Appendix 1 Envirocheck Report – Development at Riverside Industrial Park

Appendix 2 Phase II Site Investigation Report

1.0 INTRODUCTION

1.1 Background

1.1.1 Williams Environmental Limited (hereafter referred to as 'the operator') have appointed Caulmert Limited to prepare a Bespoke Environmental Permit application for a new Hazardous Waste Transfer Station located on the Riverside Industrial Estate off Oliver Road, West Thurrock, Grays, postcode RM20 3EF.

1.1.2 The operator currently operates a facility identical to that proposed at Unit 3 Charles Street Industrial Estate, in Silvertown, London under Environmental Permit ref. EPR/WP3336SA), however the land on which it is situated is subject to a compulsory land purchase order and so the operator has to relocate the facility before November 2023.

1.1.3 The current facility has operated for over 20 years in Silvertown and the operator has reported that they have a very good permit compliance record with no history of complaints.

1.1.4 The land on which the applicant proposes to relocate will eventually form part of a wider development comprising a large 'state of the art' tanker washing facility, not linked to the permitted activity, but this affects its final location and footprint within the site.

1.1.5 The area of land subject to this application has recently received planning consent for this proposed development, however a further Planning Application is to be submitted in the new year for the wider development that (subject to approval) will result in the relocation of the transfer station within the site that will require a further Permit Application.

1.1.6 It is envisaged that the waste transfer station will remain on the area of land proposed by this application for a period of 18-24 months before relocation to its final position.

1.1.7 This application involves a Waste Installation application for a Hazardous Waste Transfer Station for the following listed activities:

- Section 5.3 A (1)(a)(iv) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving repackaging.
- Section 5.3 A (1)(a)(ii) Disposal or recovery of hazardous waste involving physico-chemical treatment of hazardous waste (not exceeding 10 tonnes per day but associated with the above activity).
- Section 5.6 Part A (1)(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Section 5.1, 5.2 and 5.3.

1.1.8 This application also involves the following Waste Activity:

- Non-hazardous Household, Commercial and Industrial Waste Transfer activity

1.1.9 The installation will involve the temporary storage of hazardous and non-hazardous waste, prior to bulking and repackaging for subsequent transfer off-site for further treatment or disposal. In addition, activities at the site will include the scraping and emptying out of residues from containers and a drum crushing operation. Emptied containers and crushed drums from hazardous waste will be sent off site for further treatment. Containers and drums that had non-hazardous waste in will be sent straight for recycling at the appropriate facility.

1.1.10 As part of the permit application, this site condition report has been produced in accordance with Environment Agency (EA) guidance.

1.2 Template for Site Condition Reports

1.2.1 The Environment Agency guidance on Site Condition Reports (horizontal guidance note H5) sets out the requirements to prepare and maintain a site condition report for facilities that are regulated under the Environmental Permitting Regulations over the lifetime of the Site.

1.2.2 A Site Condition Report template is provided within the guidance. The template is divided into sections to be completed at different life stages of the regulated facility:

Sections 1-3 to be completed and submitted with applications for new facilities: This should include a description of the condition of the land at permit issue and a description of permitted activities at the site.

Sections 4-7 to be maintained during the life of the site: This should include a description of any changes to the activities and any changes to the use or production of dangerous substances at the facility. It should also include records of inspections for all pollution prevention measures, pollution incidents that may have had an impact on land and environmental monitoring.

Sections 8-10 to be completed and submitted with surrender applications: This should include a description of site decommissioning and removal of pollution risk and, where relevant, reference data and details of any remediation. Finally, it should include a 'statement of site condition' that is based on the information provided in the previous sections of the report.

1.2.3 To support the permit application for the new waste transfer station, sections 1 to 3 of the Environment Agency's Site Condition Report Template is addressed below.

2.0 SITE DETAILS

2.1 Operator and site location

2.1.1 The details of the operator and the site are as follows:

Table 1: Operator Details

Name of operator	Williams Environmental Limited
Activity address	Riverside Industrial Estate off Oliver Road West Thurrock Grays RM20 3EF
National grid reference	TQ 5818 7673.

2.1.2 In the context of this report, 'the site' refers to all of the land within the proposed permit boundary as shown on drawing ref. 5195-CAU-XX-XX-DR-V-1802.

2.2 Site plans

2.2.1 Site plans showing details of the site and its surroundings are included as part of the permit application for the facility. The list of drawings included in the permit application is provided in Table 2 below.

Table 2: List of Drawings

Drawing number	Drawing title
5195-CAU-XX-XX-DR-V-1800	Site Layout Plan
5195-CAU-XX-XX-DR-V-1801	Sensitive Receptors Plan
5195-CAU-XX-XX-DR-V-1802	Permit Boundary Plan

2.2.2 These drawings are not replicated within this report; reference should be made to the drawings section of the environmental permit application.

3.0 CONDITION OF THE LAND AT PERMIT ISSUE

3.1 Environmental Setting

3.1.1 The information presented within this section is based on information obtained from the Environment Agency's website, the British Geological Survey (BGS) and a Phase 1 Geo-Environmental Report conducted by Caulmert Limited in March 2022. The information provided in the Phase 1 report supported the initial planning application and provides a source of information about the physical conditions of the ground for the wider land holdings of the industrial park. The new site represents only a small section of this area and therefore only information pertinent to the site is presented below.

Geology

3.1.2 British Geological Survey (BGS) maps, scale 1:50,000 and the BGS Lexicon database have been used to assess the geology beneath the site.

3.1.3 The site is directly underlain by Made Ground where the pre-existing land surface has been raised through artificial deposits. These Made Ground deposits are underlain by Alluvium consisting of soft to firm clays, silts and sands with compressible silty clay and peats. A stronger, desiccated surface zone may be present.

3.1.4 The Alluvium is underlain by the Taplow Gravel Member comprising sand and gravel, locally with lenses of silt, clay, or peat and generally rests with a sharp base on bedrock.

3.1.5 The bedrock geology is that of the Turonian Age to Campanian Age, Lewes Nodular Chalk Formation, Seaford Chalk Formation and the Newhaven Chalk Formation (undifferentiated).

3.1.6 Borehole data is available via the BGS 'GeoIndex' viewer. Borehole data from those located closest to the site within the surrounding area are summarised in Table 3 below:

Table 3: Historical BGS Borehole Data

Borehole Ref	Distance from site (m approx.)	Geology
TQ57NE1117	Located <10m to the west	**0 – 0.66m –** MADE GROUND sand/clay/gravel containing bricks, concrete plastic and wooden debris.
TQ57NE1168	Located 20m to the west	**0-1.9m** MADE GROUND sand/silt/gravel containing plastic, concrete and tarmac. **1.9 – 2.0 –** soft clay ALLUVIUM **2 – 4.5m –** PEAT and soft clayey peat.
TQ57NE1165	Located 10m to the south	**0 – 2.3m –** MADE GROUND sand/clay/gravel containing wood. **2.3 – 3.2m –** soft CLAY alluvium **3.2 – 5.01m –** soft yellow CLAY alluvium

Borehole Ref	Distance from site (m approx.)	Geology
TQ57NE1290	Located 30m to the east	**0-1.5m-** MADE GROUND gravel/sand/cobbles containing fuel ash, brick, and concrete. **1.5-3.0m** -soft CLAY alluvium. **3.0-6.4m**-PEAT and soft clayey Peat. **6.4-10.6m**- very soft organic CLAY. **10.6-16.4m**- medium dense gravelly SAND **16.4-25.0m**-Chalk.
TQ57NE1166	40m southeast	**0-1.1m-** MADE GROUND clay with wood, metal, brick and sheeting.

Hydrogeology

3.1.7 The superficial deposits have been classified as a 'High Vulnerability Secondary Aquifer' which has been stated by the Environment Agency as being "areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits".

3.1.8 The chalk bedrock has been classified as a Principal Aquifer of high vulnerability which has been stated by the Environment Agency as being "areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits".

3.1.9 There is one groundwater abstraction licence recorded within 1km of the site. Licence reference An/037/0056/01, associated with Tarmac Trading Limited is located 775m west of the site at NGR TQ 57388 76868, which permits abstraction from the Upper Chalk aquifer.

3.1.10 The site is not located within a Source Protection Zone, with the closest, a Zone III, located 1.5km northeast of the site.

3.1.11 There are no records of pollution incidents to controlled waters on site. There are 15 records of pollution incidents to controlled waters within 1km of the site, details of which can be found in the Envirocheck report in Appendix 1.

Surface waters

3.1.12 The River Thames is located approximately 640m to the south of the site boundary. It appears that the West Thurrock Marshes that surround the site are directly linked to the River Thames via tidal channels which cross the marshes.

3.1.13 The site is located within a Flood Zone 3 with a high probability of flooding. The site is also in an area that benefits from flood defences.

3.1.14 The nearest mapped surface water feature is a small drainage channel that runs 85m east of the site boundary.

3.1.15 The proposed site area has a surface water drainage system, with stop valve installed.

3.1.16 There are two surface water abstractions within 1km of the site. These are as follows:

- The Land Restoration Trust, 587m southeast. Licence number: An/037/0056/016, located at River Thames at Southern Ashfield NGR 558784 176 339. The abstraction is classified as: Environmental: Non-remedial River/Wetland Support: Transfer between sources

- Navigator Terminals Tames Bv Limited (Vopak Terminal London Bv Limited), 687m southwest. Licence number: An/037/0056/003/R01, located at River Thames – Jetty, Navigator Terminal NGR 557581 176283. The abstraction is classified as: Other Industrial/Commercial/Public Services: Hydraulic Testing.

Topography

3.1.17 The site is generally flat and lies at approximately 5mAOD due to the close proximity to the River Thames.

Sensitive Sites

3.1.18 The West Thurrock Lagoon and Marshes is a designated SSSI located approximately 80m east of the site boundary at its closest point. The lagoon and marshes are a designated SSSI due to the importance of the site for wintering waders and wildfowl on the Inner Thames Estuary. The combination of extensive intertidal mudflats together with a large and secure high tide roost, attracts waders in nationally important numbers, with significant populations of other bird species.

3.1.19 There are three Local Wildlife Sites located within 1km of the site, West Thurrock Brownfields <10m to the south and west of the site, West Thurrock Reedbed 80m east at its closest point and West Thurrock Lagoon located 150m northeast.

3.1.20 There are no other sensitive sites located within 1km of the site boundary.

Pollution history

(Pollution history including:

- *pollution incidents that may have affected land;*

- *historical land-uses and associated contaminants;*

- *any visual/olfactory evidence of existing contamination;*

- *evidence of damage to pollution prevention measures.*

Old Landfills

3.1.21 There are three historical landfill sites within 1km of the site boundary which have been identified as:

- West Thurrock Power Station, 85m east. Waste identified as inert, industrial and liquid sludge. The landfill operated between October 1962 and April 1994.

- West Thurrock Marshes, 135m southwest. The waste has been identified as Industrial, commercial and household waste. The landfill operated between December 1942 and December 1958.

- Old Somerset House Site, 788m northwest. Waste identified as inert and special waste. The landfill operated between January 1970 and September 1987.

Pollution incidents

3.1.22 The Environment Agency publishes data on reported pollution incidents which were categorised as either 'significant' or 'major'. There are no published pollution incidents located on the site. There are 7 pollution incidents recorded within 1km of the site, the closest of which is 307m northwest of the site. Details are included within Appendix 1.

Historic land-uses

3.1.23 Historical maps of the area are included within the Envirocheck report in Appendix 1. The OS map dated 1867 shows the site to be within a managed wetland area with drainage channels cutting from the north to south, alongside a raised track or embankment cutting through the site. The site and wider area remain as marshland until 1977.

3.1.24 The 1977 OS map shows no change on the site, however the map shows two large earthworks/excavations approximately 40m east and 80m northeast of the site boundary, which are both approximately 80,000m^2 each. A brick works is present c.300m east, the earthworks could be associated with the brickworks. An oil storage depot c.320m west, warehouses and depots c.400m north and a generating station c.600m northeast.

3.1.25 The 1987 OS map shows the land at the site has been developed, with the land adjacent to the east within the wider site setting containing a small building. The map shows further development in the surrounding area with the earthworks c.80m to the east having been infilled and/or capped. Approximately 20m to the west two possible sand/gravel stockpiles are present. The generating station to the northeast is now named as a 'power station' and shows a 'coal heap' to its south which is c.400m east of the site boundary.

3.1.26 The 1992 map shows the site has been developed further with multiple small buildings present across the site. In 1993, there is no change on site, however both earthworks c.40m

east and c.80m northeast has been partly infilled/landscaped and now have lagoon/pond features with drainage channels running into them. The brick works and coal heap to the east have now gone.

3.1.27 The 1999 map shows a pond/lagoon feature where an old coal heap used to be present to the east.

3.1.28 There is little to no change shown on maps on the site or surrounding area until 2022. The 2022 map shows the channel tunnel rail link has been constructed which runs underground approximately 10m north of the site. Ponds/lagoons to the east in historic earthworks and the area of old coal heaps are no longer present.

3.1.29 Table 4 below indicates the sources of potential contamination at the site and the surrounding area based on the historical land uses.

Table 4: Potential contaminants

Potential Sources		Potential Contaminants
Within proposed site boundary	Made ground used to raise site levels and construction of buildings on site. Oil Spillages from vehicles and machinery on site.	Various contaminants including PAH, hydrocarbons, heavy metals, Asbestos.
Off-site	Historic Landfill	Leachate-derived contaminants (e.g. heavy metals), PAH, hydrocarbons.
	Surrounding industrial land uses	PAH, hydrocarbons.

Baseline soil and groundwater reference data

3.1.30 A Phase II Geo-environmental site investigation was undertaken by Southern Testing, on behalf of the Operator between 21st November and 8th December 2022 at the site, which provides information to help determine the baseline soil and groundwater conditions at the site. The Phase II report is included in Appendix 2 of this document, which includes the 'Factual Site Investigation Report' written by Southern Testing.

3.1.31 A total of thirteen exploratory holes were formed at the site, inclusive of nine continuous tube sample boreholes and four cable percussion boreholes. Exploratory holes were located to provide general site coverage and in proximity of proposed structures where utilities and site access allowed. An exploratory hole location plan and the logs by Southern Testing Ltd are

provided in Appendix A of the 'Factual Site Investigation Report' by Southern Testing, included in Appendix 1 of the Phase II report.

3.1.32 In summary the findings from the intrusive ground investigation undertaken by Southern Testing have concluded the following:

- In general, the ground conditions encountered during the ground investigation reflected those detailed within the published geology, comprising Made Ground underlain by Alluvium comprising alternating layers of clay and peat. The Alluvium is underlain by sand and gravel of the Taplow Gravel Member resting on bedrock of Chalk. Mainly granular Made Ground extends to depths of between 0.8 mbgl and 2.7 mbgl (metres below ground level).

- No visual or olfactory contamination indicators were reported during the intrusive works. Made Ground was encountered in all exploratory holes comprising predominantly gravelly sand with fragments of brick, concrete, clinker, wood, plastic, ash, and masonry.

- Soil samples taken from the Made Ground in boreholes between 0.2 mbgl and 1.5 mbgl were sent for laboratory testing, which included for an asbestos screen & quantification, a general metals and inorganics suite, an soil organic matter suite, a PAHs suite and a TPHs suite. The results of the analyses were compared to human health critical values (CVs) for initial screening purposes. Given the proposed industrial future use of the site, CVs were adopted for a commercial/industrial land use, primarily from the LQM/CIEH Suitable for Use Levels (S4ULs)1. These are derived for a sandy loam soil; reference is initially made to the S4Uls derived for a soil with 1% soil organic matter (commercial) as a conservative assumption for screening purposes. There were no exceedances of the adopted critical values for human health for any of the parameters tested in the soil samples.

- Asbestos fibres were detected in two soil samples, however asbestos quantification indicates the risk posed by the recorded asbestos is negligible and does not require any remedial action. However, it does suggest that further pockets of asbestos containing materials may be present which has not yet been identified on site.

- Standing groundwater levels were recorded at depths of between 0.6 mbgl and 1.95 mbgl. Four groundwater samples from BH01-BH04 were obtained and sent for laboratory testing which included a general organics and inorganics suite, aluminium, mercury, nitrate, water hardness, BOD, COD, PAHs suite, TPH suite, phenol, VOCs and SVOCs. No PAHs, chromium, selenium, mercury, lead, BTEX, TPHs, VOCs and SVOCs were detected above the laboratory limit of detection in the groundwater. It should be noted that concentrations of ammoniacal nitrogen were between 11 and 15 mg/l and sulphate concentrations were between 661 mg/l and 941mg/l. These elevated

levels are likely due to the presence of the Made Ground and are background levels at the site.

- Using the worst-case scenario of the gas monitoring results and considering the site is underlain by typical Made Ground, peat and locally organic clay, the site is classified as Characteristic Situation CS2 – low risk and basic ground gas protection measures will be required.

3.1.33 For a summary of the laboratory chemical analysis results of the soil and groundwater samples, see Section 6 of the Phase II report.

4.0 PERMITTED ACTIVITY

4.1 Permitted activities

4.1.1 The operator currently operates a facility identical to that proposed at Unit 3 Charles Street Industrial Estate in Silvertown, London, under Environmental Permit ref. EPR/WP3336SA, however the land on which it is situated is subject to a compulsory land purchase order and so the operator has to relocate the facility before November 2023.

4.1.2 As a permit cannot be moved from one location to another, this permit application is to apply for a new bespoke waste installation permit for the new hazardous waste transfer station at Riverside Industrial Estate.

4.1.3 This application involves a Waste Installation application for a Hazardous Waste Transfer Station for the following listed activities:

- Section 5.3 A (1)(a)(iv) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving repackaging.
- Section 5.3 A (1)(a)(ii) Disposal or recovery of hazardous waste involving physico-chemical treatment of hazardous waste (not exceeding 10 tonnes per day but associated with the above activity).
- Section 5.6 Part A (1)(a) Temporary storage of hazardous waste with a total capacity exceeding 50 tonnes pending any of the activities listed in Section 5.1, 5.2 and 5.3.

4.1.4 This application also involves the following Waste Activity:

- Non-hazardous Household, Commercial and Industrial Waste Transfer activity

4.1.5 The installation will involve the temporary storage of hazardous and non-hazardous waste, prior to bulking and repackaging for subsequent transfer off-site for further treatment or disposal. In addition, activities at the site will include the scraping and emptying out of residues from containers and a drum crushing operation. Emptied containers and crushed drums from hazardous waste will be sent off site for further treatment. Containers and drums that had non-hazardous waste in will be sent straight for recycling at the appropriate facility.

4.1.6 The site will accept and temporarily store waste types as outlined in the Supporting Document for this application. All wastes will be stored within suitable sealed containers within bunded bays on an impermeable concrete surface. The area proposed for the storage of hazardous wastes will be roofed to prevent rainwater collection. Repackaging and bulking of hazardous and non-hazardous wastes will be undertaken on-site and will consist of stacking, packing and palletising sealed containers or bulk items of wastes, ready for transfer off-site. For wastes that are required to be opened and poured/transferred between containers which are likely to give rise to odours or volatile organic compounds (VOCs) emissions, these will be

repackaged and bulked inside the enclosed building. This will be a 3-sided building with PVC strip door curtain, installed with air extraction and activated carbon filter for removal of odours and VOCs from the air prior to release.

4.2 Plan showing activity layout

4.2.1 The proposed site boundary is shown on drawing ref. 5195-CAU-XX-XX-D-V-1802. The site layout is shown on drawing ref. 5195-CAU-XX-XX-DR-V-1800.

4.3 Environmental risk assessment

4.3.1 An environmental risk assessment has been carried out to support the permit application; this is presented separately within the '*Amenity and Accident Risk Assessment*' (document reference 5195-CAU-XX-XX-RP-V-0302). This report is based on Environment Agency guidance and assesses the potential risks from odour, noise, fugitive emissions and accidents.

4.3.2 The risk assessments identifies risk mitigation measures such as infrastructure, equipment or operational practices that are required to manage the risks from the site. Identified mitigation measures are incorporated as part of the management system for the site.

5.0 REFERENCES

1. Environment Agency (2013). H5 SCR guide for applicants. Site condition report – guidance and templates. Version 3.0.

2. Caulmert Ltd (2022). Development at Riverside Industrial Park, West Thurrock, Essex. Phase 1 Geo-environmental Report. 5148-CAU-XX-XX-RP-O-0300.

3. British Geological Survey, Geoindex Onshore. Accessed 30/11/2022. Available at: https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.190003435.1713718151.1669906213-366785382.1669906213

APPENDIX 1

Envirocheck Report

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
291108793_1_1

Customer Reference:
5148

National Grid Reference:
558220, 176720

Slice:
A

Site Area (Ha):
1.28

Search Buffer (m):
1000

Site Details:

Flexible Storage Solutions Ltd, Flexible House
Watson Close
GRAYS
RM20 3EF

Client Details:

Mr A Jones
Caulmert Ltd
Unit F13
InTec
Parc Menai
Bangor
Gwynedd
LL57 4FG

Envirocheck®
LANDMARK INFORMATION GROUP

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Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			13	23
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls	pg 10				1
Integrated Pollution Prevention And Control	pg 10				6
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 12			1	8
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 13	Yes			
Pollution Incidents to Controlled Waters	pg 13			4	11
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 15			4	3
Water Abstractions	pg 16				4 (*10)
Water Industry Act Referrals	pg 20		2		
Groundwater Vulnerability Map	pg 20	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 20	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 20	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 20	Yes		n/a	n/a
Flooding from Rivers or Sea without Defences	pg 20	Yes		n/a	n/a
Areas Benefiting from Flood Defences	pg 21	Yes		n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 21		13	20	30

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites	pg 29		1		
Historical Landfill Sites	pg 29		2		1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 29		1		5
Local Authority Landfill Coverage	pg 31	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites	pg 31		1	1	2
Registered Landfill Sites	pg 32		1		1
Registered Waste Transfer Sites	pg 32		1		
Registered Waste Treatment or Disposal Sites	pg 33		1		3
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 35			3	1
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents	pg 35			5	4
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 37	Yes	n/a	n/a	n/a
BGS Recorded Mineral Sites	pg 37		1	1	3
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities	pg 38				2
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards				n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 38	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 38	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 38	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 38	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 40	1	12	17	164
Fuel Station Entries	pg 56				3
Gas Pipelines					
Underground Electrical Cables	pg 56				12
Sensitive Land Use					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves	pg 59				1
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 59		1		
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (S)	0	1	558220 176650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (NE)	0	1	558220 176721
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SE (E)	200	1	558500 176721
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	213	1	558100 177000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NE (SE)	495	1	558450 176200
1	**Discharge Consents** Operator: Saybolt United Kingdom Ltd Property Type: Not Given Location: Oliver Close, Riverside Estate, WEST THURROCK, Essex, RM16 1ED Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: PR2NF/E02383 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 22nd September 1983 Revocation Date: Not Supplied Discharge Type: Cooling Water Discharge Environment: Freshwater Stream/River Receiving Water: Not Supplied **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	264	2	558000 177000
2	**Discharge Consents** Operator: Brocks Haulage Ltd Property Type: Not Given Location: Burnley Road, Riverside Industrial Estate, West Thurrock, Thurrock Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: PRENF/04163 Permit Version: Not Supplied Effective Date: Not Supplied Issued Date: 4th April 1991 Revocation Date: Not Supplied Discharge Type: Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: West Thurrock Main Sewer **Status: Not Supplied** Positional Accuracy: Located by supplier to within 100m	A18SW (NW)	301	2	558050 177075
2	**Discharge Consents** Operator: Brocks Haulage Ltd Property Type: Not Supplied Location: Burnley Road, West Thurrock Riverside Industr, Thurrock Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Prenf04163 Permit Version: 1 Effective Date: 4th April 1991 Issued Date: 4th April 1991 Revocation Date: 30th January 2002 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Sewage Receiving Water: West Thurrock Main Sewer **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A18SW (NW)	306	2	558050 177080

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Discharge Consents** Operator: Mr Andreas Tauschinger Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 1 Effective Date: 1st February 2002 Issued Date: 20th February 2002 Revocation Date: 29th September 2002 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary Receiving Water: Land And Tidal River Thames **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (SW)	310	2	558030 176390
3	**Discharge Consents** Operator: Mr Geoff Willetts, Project Director Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 2 Effective Date: 30th September 2002 Issued Date: 20th February 2002 Revocation Date: 6th October 2003 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary Receiving Water: Land And Tidal River Thames **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (SW)	310	2	558030 176390
3	**Discharge Consents** Operator: Mr Geoff Willetts, Project Director Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 3 Effective Date: 7th October 2003 Issued Date: 20th February 2002 Revocation Date: 19th November 2004 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary Receiving Water: Land And Tidal River Thames **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A8NW (SW)	310	2	558030 176390
4	**Discharge Consents** Operator: Mr Andreas Tauschinger Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 1 Effective Date: 1st February 2002 Issued Date: 20th February 2002 Revocation Date: 29th September 2002 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Land/Soakaway Receiving Water: Land And Tidal River Thames **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	344	2	557960 177070

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Mr Geoff Willetts, Project Director Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 2 Effective Date: 30th September 2002 Issued Date: 20th February 2002 Revocation Date: 6th October 2003 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Land/Soakaway Receiving Water: Land And Tidal River Thames **Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	344	2	557960 177070
4	**Discharge Consents** Operator: Mr Geoff Willetts, Project Director Property Type: CONSTRUCTION OF BUILDINGS Location: Ctrl320 Thames Tunnels North Portal Nthn Approach Struct Constr Site, Riverside Industrial Estate, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0571 Permit Version: 3 Effective Date: 7th October 2003 Issued Date: 20th February 2002 Revocation Date: 19th November 2004 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Land/Soakaway Receiving Water: Land And Tidal River Thames **Status: Revoked (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A13NW (NW)	344	2	557960 177070
5	**Discharge Consents** Operator: Navigator Terminals Thames B.V. Limited Property Type: MAKING OF COKE + REFINED PETROLEUM PRODUCTS Location: Navigator Terminals Thames Bv Ltd Oliver Road West Thurrock Grays Essex Rm20 3ey Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Eprgp3229xh Permit Version: 2 Effective Date: 14th September 2018 Issued Date: 14th September 2018 Revocation Date: Not Supplied Discharge Type: Trade Discharges - Site Drainage (Contam Surface Water, Not Tips) Discharge Environment: Saline Estuary Receiving Water: The River Thames **Status: New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	361	2	557832 176520
5	**Discharge Consents** Operator: Navigator Terminals Thames B.V. Limited Property Type: MAKING OF COKE + REFINED PETROLEUM PRODUCTS Location: Navigator Terminals Thames Bv Ltd Oliver Road West Thurrock Grays Essex Rm20 3ey Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Eprgp3229xh Permit Version: 1 Effective Date: 2nd March 2011 Issued Date: 2nd March 2011 Revocation Date: 13th September 2018 Discharge Type: Trade Discharges - Site Drainage (Contam Surface Water, Not Tips) Discharge Environment: Saline Estuary Receiving Water: The River Thames **Status: New issued under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	361	2	557832 176520

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Discharge Consents** Operator: Thermalite Ytong Ltd Property Type: Not Supplied Location: West Thurrock Generating Station, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2nfe08762 Permit Version: 1 Effective Date: 14th December 1962 Issued Date: 14th December 1962 Revocation Date: 21st April 1992 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Not Supplied Receiving Water: Not Supplied **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	406	2	558700 176600
7	**Discharge Consents** Operator: Vopak Terminal London Bv Limited Property Type: MAKING OF COKE + REFINED PETROLEUM PRODUCTS Location: Navigator Terminals Thames Bv Ltd Oliver Road West Thurrock Grays Essex Rm20 3ey Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CPLP.0039 Permit Version: 1 Effective Date: 16th March 1972 Issued Date: 16th March 1972 Revocation Date: 1st March 2011 Discharge Type: Trade Discharge - Process Water Discharge Environment: Saline Estuary Receiving Water: Thames Tidal **Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961** Positional Accuracy: Located by supplier to within 10m	A12SE (W)	443	2	557740 176530
8	**Discharge Consents** Operator: Cegb Property Type: SUB-STATION/ELECTRICITY/GAS/AIR CONDITIONING SUPPLY Location: West Thurrock Power Station, Stoneness Road, Grays, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Ctmr.0157 Permit Version: 1 Effective Date: 3rd November 1980 Issued Date: 3rd February 1979 Revocation Date: 30th June 1993 Discharge Type: Unknown Discharge Environment: Saline Estuary Receiving Water: Thames **Status: Authorisation revoked** Positional Accuracy: Manually corrected supplier location	A14SW (E)	529	2	558800 176500
9	**Discharge Consents** Operator: National Power Plc Property Type: Undefined Or Other Location: West Thurrock Gen Stn, Essex Authority: Environment Agency, Anglian Region Catchment Area: River Mardyke (Grays) Reference: Pr2nfe05260 Permit Version: 1 Effective Date: 13th July 1960 Issued Date: 13th July 1960 Revocation Date: 12th February 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Sewage Receiving Water: West Thurrock Main Sewer **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	551	2	558850 176650

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: Saybolt United Kingdom Ltd Property Type: Undefined Or Other Location: Saybolt Uk Ltd Oliver Close, Riverside Estate, West Thurrock, Essex, Rm16 1ed Authority: Environment Agency, Anglian Region Catchment Area: River Mardyke (Grays) Reference: Pr2nfe02383 Permit Version: 1 Effective Date: 22nd September 1983 Issued Date: 22nd September 1983 Revocation Date: 3rd September 2010 Discharge Type: Trade Discharges - Cooling Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib Of Thames Estuary **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	561	2	557752 177175
11	**Discharge Consents** Operator: Thames Matex Ltd Property Type: Not Supplied Location: Areas J & L Thames Matex, Oliver Rd, West Thurrock, Grays Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2lf181 Permit Version: 1 Effective Date: 11th February 1986 Issued Date: 11th February 1986 Revocation Date: 1st October 1996 Discharge Type: Unknown Discharge Environment: Land/Soakaway Receiving Water: Soakaway Into Land **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12NE (W)	572	2	557600 176900
12	**Discharge Consents** Operator: Vopak Terminal London Bv Ltd Property Type: Not Given Location: Oliver Road Premises (Railway Tracks), West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Pr2nfe11272 Permit Version: 1 Effective Date: 18th August 1972 Issued Date: 18th August 1972 Revocation Date: 17th March 2004 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib River Thames **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Manually corrected supplier location	A18SW (N)	600	2	558200 177400
13	**Discharge Consents** Operator: Elliott Group Ltd Property Type: Undefined Or Other Location: Oliver Road, West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: River Mardyke (Grays) Reference: Pr2nfc9785 Permit Version: 1 Effective Date: 8th May 1985 Issued Date: 8th May 1985 Revocation Date: 22nd July 2002 Discharge Type: Trade Discharges - Site Drainage (Contam Surface Water, Not Tips) Discharge Environment: Saline Estuary Receiving Water: West Thurrock Main Sewer **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	648	2	557808 177335

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Discharge Consents** Operator: Bulk Storage Ltd Property Type: Not Supplied Location: Ind. Devlpt At Oliver Road, West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2nfe21667 Permit Version: 1 Effective Date: 13th December 1967 Issued Date: 13th December 1967 Revocation Date: 24th March 1992 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib River Thames **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	652	2	558600 177300
15	**Discharge Consents** Operator: B V Schieveem Property Type: Not Supplied Location: Oil Tanker Park Oliver Road, West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Pr2nfe15172 Permit Version: 1 Effective Date: 30th October 1972 Issued Date: 30th October 1972 Revocation Date: 23rd April 1996 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib River Thames **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	707	2	557800 177400
16	**Discharge Consents** Operator: Alstom Grid Uk Limited Property Type: Undefined Or Other Location: West Thurrock 275kv Substation Stoneness Road, West Thurrock, Grays, Essex, Rm20 3ag Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Epreb3599ng Permit Version: 1 Effective Date: 13th November 2013 Issued Date: 13th November 2013 Revocation Date: 20th July 2016 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	711	2	559000 176550
16	**Discharge Consents** Operator: Mott Macdonald Limited Property Type: Undefined Or Other Location: West Thurrock 275kv Substation Stoneness Road, West Thurrock, Grays, Essex, Rm20 3ag Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Epreb3599ng Permit Version: 1 Effective Date: 13th November 2013 Issued Date: 13th November 2013 Revocation Date: 20th July 2016 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	711	2	559000 176550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Discharge Consents** Operator: Skanska Uk Plc Property Type: Undefined Or Other Location: West Thurrock 275kv Substation Stoneness Road, West Thurrock, Grays, Essex, Rm20 3ag Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Epreb3599ng Permit Version: 1 Effective Date: 13th November 2013 Issued Date: 13th November 2013 Revocation Date: 20th July 2016 Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Surrendered under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	711	2	559000 176550
16	**Discharge Consents** Operator: Industrial Chemicals Limited Property Type: MAKING OF CHEMICALS + CHEMICAL PRODUCTS Location: Industrial Chemicals Limited West Thurrock Power Station Stone Ness Road West Thurrock, Grays Essex Rm20 3ag Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0738 Permit Version: 2 Effective Date: 7th May 2013 Issued Date: 7th May 2013 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Saline Estuary Receiving Water: The Tidal Thames **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14SE (E)	711	2	559000 176550
17	**Discharge Consents** Operator: Scottish Widows Property Type: SHOP INCL GARDEN CENTRE/RETAIL TRADE(NOT MOTOR VEHICLE) Location: Oliver Rd Service Area, West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Prenf04250 Permit Version: 1 Effective Date: 18th June 1991 Issued Date: 18th June 1991 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: West Thurrock Main Sewer **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	718	2	557890 177460
17	**Discharge Consents** Operator: The Occupier Property Type: Not Supplied Location: Veh.Wkshop Thames Martex, Oliver Road, West Thurrock, Essex Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2nfe04571 Permit Version: 1 Effective Date: 24th May 1971 Issued Date: 24th May 1971 Revocation Date: 5th May 1992 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib River Thames **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A18NW (N)	751	2	557900 177500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	**Discharge Consents** Operator: Arc Conbloc (John Spindley) Property Type: Not Supplied Location: Edenhall Concrete Products Ltd, London Rd, West Thurrock Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Pr2nf217 Permit Version: 1 Effective Date: 4th June 1986 Issued Date: 4th June 1986 Revocation Date: 19th September 1996 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib West Thurrock Main Sewer **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	793	2	557800 177500
19	**Discharge Consents** Operator: Arc Conbloc (John Spindley) Property Type: Undefined Or Other Location: Edenhall Concrete Products Ltd, London Rd, West Thurrock Authority: Environment Agency, Anglian Region Catchment Area: River Mardyke (Grays) Reference: Pr2nf218 Permit Version: 1 Effective Date: 23rd May 1986 Issued Date: 23rd May 1986 Revocation Date: 19th September 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Trib West Thurrock Main Sewer **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	845	2	557700 177500
20	**Discharge Consents** Operator: Balfour Beatty Civil Engineering Ltd Property Type: WASTE COLLECTION/TREATMENT/DISPOSAL/MATERIALS RECOVERY Location: Queen Elizabeth 11 Br & E Tunnel Thurrock Thurrock Essex Cm15 Authority: Environment Agency, Thames Region Catchment Area: Non-Tidal (River Roding) Reference: Canm.1162 Permit Version: 1 Effective Date: 11th November 2006 Issued Date: 21st November 2006 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Saline Estuary Receiving Water: Tidal River Thames **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	927	2	557234 176805
21	**Discharge Consents** Operator: Tunnel Building Products Property Type: Not Supplied Location: West Thurrock, Essex, Rm20 4bh Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2nfe02561 Permit Version: 1 Effective Date: 26th April 1961 Issued Date: 26th April 1961 Revocation Date: 25th March 1992 Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Unknown Trib **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A11SE (W)	960	2	557200 176700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
22	**Discharge Consents** Operator: Tarmac Aggregates Limited Property Type: WASTE COLLECTION/TREATMENT/DISPOSAL/MATERIALS RECOVERY Location: Lafarge Redland Aggregates Limited Thurrock Plant, Oliver Close, West Thurrock, Grays, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Casm.0356 Permit Version: 1 Effective Date: 1st April 2001 Issued Date: 30th April 2001 Revocation Date: Not Supplied Discharge Type: Trade Effluent Discharge-Site Drainage Discharge Environment: Saline Estuary Receiving Water: Tidal River Thames **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A11SE (W)	963	2	557200 176600
23	**Discharge Consents** Operator: Edenhall Concrete Products Ltd Property Type: Undefined Or Other Location: London Rd-W Thurrock London Rd, West Thurrock, Grays, Rm20 Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Pr2lfc9685 Permit Version: 1 Effective Date: 8th May 1985 Issued Date: 8th May 1985 Revocation Date: 5th March 1993 Discharge Type: Trade Effluent Discharge Environment: Onto Land Receiving Water: Land **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	984	2	557600 177600
24	**Discharge Consents** Operator: Anglian Water Services Ltd. Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: West Thurrock Pumping Station, West Thurrock, Essex Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CNTW.0151 Permit Version: 1 Effective Date: 8th November 1989 Issued Date: 8th November 1989 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Saline Estuary Receiving Water: River Thames Tidal **Status: Transferred from Water Act 1989** Positional Accuracy: Located by supplier to within 10m	A11SE (W)	988	2	557180 176550
25	**Discharge Consents** Operator: Civil & Marine Limited Property Type: Not Supplied Location: Civil & Marine Ltd London Road, West Thurrock, Grays, Essex, Rm20 3nl Authority: Environment Agency, Anglian Region Catchment Area: Not Given Reference: Prenf00343 Permit Version: 2 Effective Date: 15th January 1992 Issued Date: 15th January 1992 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Stonehouse Sewer **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	994	2	557260 177210

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
25	**Discharge Consents** Operator: Civil & Marine Slag Cement Ltd Property Type: Not Supplied Location: Civil & Marine Ltd London Road, West Thurrock, Grays, Essex, Rm20 3nl Authority: Environment Agency, Anglian Region Catchment Area: Not Supplied Reference: Prenf00343 Permit Version: 1 Effective Date: 19th December 1988 Issued Date: 19th December 1988 Revocation Date: 14th January 1992 Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge Environment: Sewage Receiving Water: Stonehouse Sewer **Status:** **Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	994	2	557260 177210
26	**Integrated Pollution Controls** Name: Rwe Npower Plc Location: West Thurrock Power Station, Stone Ness Road, GRAYS, Essex, RM16 1DX Authority: Environment Agency, Anglian Region Permit Reference: AA3182 Dated: 8th April 1993 Process Type: IPC application for process that was regulated by HMIP for air releases under previous legislation Description: 1.3 A (A) Combustion processes within the Fuel & Power Industry **Status:** **Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A19SE (NE)	798	2	558991 177115
27	**Integrated Pollution Prevention And Control** Name: Industrial Power Limited Location: Industrial Power Limited, Industrial Power Limited, Stoneness Road,,, West Thurrock, Essex, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: SP3932JT Original Permit Ref: Sp3932jt Effective Date: 3rd June 2019 **Status:** **Effective** Application Type: Application App. Sub Type: New Positional Accuracy: Located by supplier to within 10m Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: Y	A14NE (E)	730	2	558980 176980
27	**Integrated Pollution Prevention And Control** Name: Industrial Chemicals Limited Location: Stoneness Road Chemical Facility Epr/Bj7298if, Stoness Road Chemicals Facility, Stoneness Road,,West Thurrock, GRAYS, Essex, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: RP3736RD Original Permit Ref: Bj7298if Effective Date: 17th March 2016 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 4.2 A(1) (A) (III) Activity Description: Inorganic Chemicals; Bases Eg Ammonium Hydroxide Primary Activity: N Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N	A14NE (E)	757	2	559012 176971

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**Integrated Pollution Prevention And Control** Name: Industrial Chemicals Limited Location: Stoneness Road Chemical Facility Epr/Bj7298if, Stone Ness Road, West Thurrock,,, GRAYS, Essex, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: DP3537KY Original Permit Ref: Bj7298if Effective Date: 22nd August 2011 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Located by supplier to within 100m Activity Code: 4.1 A(1) (B) Activity Description: Organic Chemicals; Any Other Organic Compounds (Not Described 4.1 A(1)(A) Primary Activity: Y Activity Code: 4.2 A(1) (B) Activity Description: Inorganic Chemicals; Using Halogens Etc If Release To Air/Water (Unless Otherwisde Prescribed) (Unless Chlorination Of Water) Primary Activity: N	A19SE (NE)	912	2	559000 177300
29	**Integrated Pollution Prevention And Control** Name: Industrial Chemicals Limited Location: Stoneness Road Chemical Facility Epr/Bj7298if, Stoneness Road Chemical Facility, Stoneness Road,West Thurrock,, Grays, Thurrock, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: BP3132JP Original Permit Ref: Bj7298if Effective Date: 5th June 2019 **Status:** **Effective** Application Type: Variation App. Sub Type: Substantial Positional Accuracy: Located by supplier to within 10m Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N Activity Code: 4.2 A(1) (A) (III) Activity Description: Inorganic Chemicals; Bases Eg Ammonium Hydroxide Primary Activity: N	A19SE (E)	925	2	559150 177080
29	**Integrated Pollution Prevention And Control** Name: Industrial Chemicals Limited Location: Stoneness Road Chemical Facility Epr/Bj7298if, Stoness Road Chemicals Facility, Stoneness Road,,West Thurrock, GRAYS, Essex, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: LP3337WZ Original Permit Ref: Bj7298if Effective Date: 27th March 2015 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.1 A(1) (B) Activity Description: Organic Chemicals; Any Other Organic Compounds (Not Described 4.1 A(1)(A) Primary Activity: Y Activity Code: 4.2 A(1) (B) Activity Description: Inorganic Chemicals; Using Halogens Etc If Release To Air/Water (Unless Otherwisde Prescribed) (Unless Chlorination Of Water) Primary Activity: N	A19SE (E)	931	2	559156 177081
29	**Integrated Pollution Prevention And Control** Name: Industrial Chemicals Limited Location: Stoneness Road Chemical Facility Epr/Bj7298if, Stone Ness Road, West Thurrock,,, GRAYS, Essex, RM20 3AG Authority: Environment Agency, Anglian Region Permit Reference: WP3933WM Original Permit Ref: Bj7298if Effective Date: 31st December 2014 **Status:** **Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.1 A(1) (B) Activity Description: Organic Chemicals; Any Other Organic Compounds (Not Described 4.1 A(1)(A) Primary Activity: Y Activity Code: 4.2 A(1) (B) Activity Description: Inorganic Chemicals; Using Halogens Etc If Release To Air/Water (Unless Otherwisde Prescribed) (Unless Chlorination Of Water) Primary Activity: N	A19SE (E)	931	2	559156 177081

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Local Authority Pollution Prevention and Controls** Name: Thurrock 4x4 Centre Location: Oliver Road, West Thurrock, Essex, RM20 Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 198 Dated: 8th March 2006 Process Type: Local Authority Air Pollution Control Description: PG1/1Waste oil burners, less than 0.4MW net rated thermal input **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A18SE (N)	439	3	558271 177229
31	**Local Authority Pollution Prevention and Controls** Name: Vopak West Thurrock Terminal Location: Oliver Road, West Thurrock, GRAYS, Essex, RM20 3EY Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 170 Dated: 26th March 1999 Process Type: Local Authority Air Pollution Control Description: PG1/13 Processes for the storage, loading and unloading of petrol at terminals **Status: Authorised** Positional Accuracy: Located by supplier to within 10m	A12NE (W)	511	3	557650 176800
32	**Local Authority Pollution Prevention and Controls** Name: Enterprise Coachworks Ltd Location: Riverside Industrial Estate, Oliver Close, WEST THURROCK, Essex, RM16 1ED Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 153 Dated: 13th December 1996 Process Type: Local Authority Air Pollution Control Description: PG6/34 Respraying of road vehicles **Status: Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	577	3	557815 177253
33	**Local Authority Pollution Prevention and Controls** Name: Euromix Concrete Ltd Location: Oliver Close, WEST THURROCK, Essex, RM20 3EE Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 194 Dated: 12th October 2005 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Authorised** Positional Accuracy: Located by supplier to within 10m	A12NW (W)	684	3	557511 177004
34	**Local Authority Pollution Prevention and Controls** Name: Lafarge Tarmac Cement Ltd Location: Thurrock Marine Terminal , Oliver Close, WEST THURROCK, Essex, RM20 3EE Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 110 Dated: 18th February 1993 Process Type: Local Authority Air Pollution Control Description: PG3/1Blending, packing, loading and use of bulk cement **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A12NW (W)	763	3	557399 176815
35	**Local Authority Pollution Prevention and Controls** Name: Trelleborg Stanton Location: Admiral House, Weston Avenue, Waterglade Industrial Park, WEST THURROCK, Essex, RM20 3F Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 163 Dated: 16th October 1998 Process Type: Local Authority Air Pollution Control Description: PG6/32 Adhesive coating **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	881	3	557741 177568
35	**Local Authority Pollution Prevention and Controls** Name: Stanton Rubber & Plastics Ltd Location: Waterglade Industrial Park, Western Avenue, GRAYS, Essex, RM20 3FZ Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 146 Dated: 1st May 1998 Process Type: Local Authority Air Pollution Control Description: PG6/23 Coating of metal and plastic **Status: Authorisation revoked** Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	881	3	557741 177568

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	**Local Authority Pollution Prevention and Controls** Name: Trelleborg Stanton Ltd Location: Admiral House, 853 London Road, West Thurrock, GRAYS, RM20 Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: 179 Dated: 7th December 2001 Process Type: Local Authority Air Pollution Control Description: PG6/29 Di-isocyanate processes **Status: Authorisation revoked** Positional Accuracy: Manually positioned to the address or location	A17NE (NW)	959	3	557692 177630
37	**Local Authority Pollution Prevention and Controls** Name: London Road Service Station Location: 712 London Road, West Thurrock, Grays, Essex, RM20 3JT Authority: Thurrock Borough Council, Environmental Health Department Permit Reference: SS16 Dated: 7th January 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A17NE (N)	973	3	557831 177711
	Nearest Surface Water Feature	A13SW (S)	0	-	558220 176671
38	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Foul Sewer Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Crude Sewage Note: River Thames Tributary Incident Date: 23rd April 1997 Incident Reference: 3381 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Poor/Inadequate Maintenance Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	281	2	557900 176895
38	**Pollution Incidents to Controlled Waters** Property Type: Water Company Sewage: Foul Sewer Location: WEST THURROCK Authority: Environment Agency, Anglian Region Pollutant: Crude Sewage Note: Tributary Of River Thames Incident Date: 23rd April 1997 Incident Reference: 3381 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Poor/Inadequate Maintenance Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	283	2	557900 176900
39	**Pollution Incidents to Controlled Waters** Property Type: Waste Handling Facilities Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Miscellaneous - Vehicle Washings And De Waxing Note: W Thurrock Drain Incident Date: 27th November 1995 Incident Reference: 2903 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Poor Operational Practice Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	308	2	558100 177100
40	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Miscellaneous - Unknown Note: West Thurrock Main Sewer Incident Date: 12th October 1994 Incident Reference: 2487 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	500	2	558100 177295

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Unknown Note: W Thurrock Main Sewer Incident Date: 15th January 1993 Incident Reference: 1776 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	505	2	558100 177300
41	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Chelmsford District, WEST THURROCK Authority: Environment Agency, Anglian Region Pollutant: Oils - Other Oil Note: Tributary Of West Thurrock Main Sewer Incident Date: 22nd April 1999 Incident Reference: 4096 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	687	2	557700 177300
42	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Unknown Note: West Thurrock Main Sewer Incident Date: 26th July 1992 Incident Reference: 1617 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	711	2	558300 177500
43	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Oils - Tars/Bitumen Note: Not Supplied Incident Date: 6th July 1997 Incident Reference: 3471 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	735	2	558400 177500
44	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Oils - Other Oil Note: Tributary Of Thames Incident Date: 24th March 1994 Incident Reference: 2242 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NE (E)	756	2	559000 177000
45	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: WEST THURROCK Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 6th April 1995 Incident Reference: SE950153 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	860	2	557300 176700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: WEST THURROCK Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 11th October 1993 Incident Reference: SE930313 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NW (W)	861	2	557300 176795
46	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: WEST THURROCK Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Confirmed As A Pollution Incident Incident Date: 28th April 1993 Incident Reference: SE930110 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NW (W)	861	2	557300 176800
47	**Pollution Incidents to Controlled Waters** Property Type: Road Location: Chelmsford District Authority: Environment Agency, Anglian Region Pollutant: Chemicals - Unknown Note: Tributary Of Thames Incident Date: 28th October 1994 Incident Reference: 2508 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Leaking Tank Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	863	2	558500 177600
48	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: WEST THURROCK Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 9th May 1990 Incident Reference: SE900143 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NE (E)	944	2	559200 177000
49	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: WEST THURROCK Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 21st September 1989 Incident Reference: SE890343 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A11SE (W)	963	2	557200 176600
50	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 11th July 2008 Incident Reference: 604024 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: General Biodegradable : Other Pollutant: Inert : Construction / Demolition Material	A18SW (NW)	307	2	558041 177077

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 12th November 2012 Incident Reference: 1055454 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste Materials: Commercial Waste	A18SE (N)	465	2	558281 177253
51	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 16th November 2012 Incident Reference: 1056758 Water Impact: Category 4 - No Impact Air Impact: Category 3 - Minor Incident Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Specific Waste Materials: Commercial Waste Pollutant: Specific Waste Materials: Household Waste	A18SE (N)	481	2	558274 177271
52	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 27th June 2011 Incident Reference: 897198 Water Impact: Category 3 - Minor Incident Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Oils - Petrol	A12SE (W)	492	2	557669 176650
53	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 29th October 2002 Incident Reference: 117432 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Inorganic Chemicals : Acids Pollutant: Oils And Fuel: Other Oil Or Fuel	A17SE (NW)	548	2	557702 177089
54	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 6th January 2020 Incident Reference: 1767204 Water Impact: Category 3 - Minor Incident Air Impact: Category 1 - Major Incident Land Impact: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Atmospheric Pollutants and Effects: Fumes Pollutant: Inorganic Chemicals : Acids	A14NW (NE)	622	2	558859 176989
55	**Substantiated Pollution Incident Register** Authority: Environment Agency - Anglian Region, Central Area Incident Date: 3rd July 2002 Incident Reference: 89102 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Organic Chemicals : Other Organic Wastes	A17SE (NW)	801	2	557634 177394
56	**Water Abstractions** Operator: The Land Restoration Trust Licence Number: An/037/0056/016 Permit Version: 1 Location: River Thames At Southern Ashfield Authority: Environment Agency, Anglian Region Abstraction: Environmental: Non-remedial River/Wetland Support: Transfer between sources Abstraction Type: Water may be abstracted from a single point Source: Tidal Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 21st November 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A9NW (SE)	587	2	558784 176339

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	**Water Abstractions** Operator: Navigator Terminals Thames Bv Limited Licence Number: An/037/0056/003/R01 Permit Version: 1 Location: River Thames - Jetty, Navigator Terminal Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Hydraulic Testing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	697	2	557581 176283
57	**Water Abstractions** Operator: Vopak Terminal London Bv Limited Licence Number: An/037/0056/003 Permit Version: 1 Location: River Thames - Jetty At Vopak Terminal Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Hydraulic Testing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th January 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	697	2	557581 176283
58	**Water Abstractions** Operator: Tarmac Trading Limited Licence Number: An/037/0056/013 Permit Version: 2 Location: Upper Chalk At Mardyke And Fobbing Authority: Environment Agency, Anglian Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 28th June 2018 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NW (W)	777	2	557388 176868
	Water Abstractions Operator: Hanson Quarry Products Europe Ltd Licence Number: 8/37/56/*S/0070 Permit Version: 102 Location: River Thames - Purfleet Authority: Environment Agency, Anglian Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 7th September 2017 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SE (W)	1160	2	557000 176700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Purfleet Aggregates Ltd Licence Number: 8/37/56/*S/0070 Permit Version: 101 Location: River Thames - Purfleet Authority: Environment Agency, Anglian Region Abstraction: Mineral Products: Mineral Washing Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd June 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A11SE (W)	1160	2	557000 176700
	Water Abstractions Operator: R.T.Z. Estates Ltd., Licence Number: 8/37/56/*g/056 Permit Version: Not Supplied Location: Cement Works Well, WEST THURROCK Authority: Environment Agency, Anglian Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): 1000 Yearly Rate (m3): 19640000 Details: E chalk; Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SE (NW)	1197	2	557700 177900
	Water Abstractions Operator: Proctor & Gamble Ltd., Licence Number: 8/37/56/*t/012 Permit Version: Not Supplied Location: Factory Jetty, WEST THURROCK Authority: Environment Agency, Anglian Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Stream Daily Rate (m3): 3410 Yearly Rate (m3): 13640000 Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A20SE (E)	1356	2	559600 177100
	Water Abstractions Operator: Pura Foods Ltd Licence Number: 8/37/56/*T/0094/R01 Permit Version: 1 Location: River Thames At Purfleet Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Tidal Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Purfleet, Essex Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2016 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1462	2	556700 176830

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Pura Foods Ltd Licence Number: 8/37/56/*T/0094 Permit Version: 2 Location: River Thames At Purfleet Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Tidal Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Purfleet, Essex Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 3rd August 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1462	2	556700 176830
	Water Abstractions Operator: Unilever Bestfoods Uk Ltd Licence Number: 8/37/56/*T/0094 Permit Version: 1 Location: River Thames At Purfleet Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Tidal Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 16th June 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A11NW (W)	1462	2	556700 176830
	Water Abstractions Operator: Kerneos Ltd Licence Number: 8/37/56/*G/0040 Permit Version: 101 Location: London Road (No.3) Well Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Works Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st October 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SW (NW)	1484	2	557300 178000
	Water Abstractions Operator: Lafarge Aluminous Cement Co Ltd Licence Number: 8/37/56/*G/0040 Permit Version: 100 Location: London Road (No.3) Well Authority: Environment Agency, Anglian Region Abstraction: Other Industrial/Commercial/Public Services: Non-Evaporative Cooling Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st May 1967 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A22SW (NW)	1484	2	557300 178000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: R.T.Z. Estates Ltd., Licence Number: 8/37/56/*g/056 Permit Version: Not Supplied Location: Cement Works Quarry, WEST THURROCK Authority: Environment Agency, Anglian Region Abstraction: Cooling Abstraction Type: Not Supplied Source: Catchpit, Catchment Tank or Collecting Tank Daily Rate (m3): 1000 Yearly Rate (m3): 19640000 Details: E chalk; Status: Revoked Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A23NW (N)	1601	2	558100 178400
59	**Water Industry Act Referrals** Name: Bw Enterprises Uk Ltd Location: BURNLEY ROAD, WEST THURROCK, GRAYS, ESSEX, RM20 3EG Authority: Environment Agency, Anglian Region Permit Reference: Bg2744 Dated: 24th May 1999 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations **Status: Application has been authorised and any conditions apply to the operator** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	49	2	558144 176839
60	**Water Industry Act Referrals** Name: At Stevens Transport (1985) Ltd (Dissolved) Location: THAMES TANKWASH (PURFLEET) LTD, BURNLEY ROAD, GRAYS, ESSEX, RM16 1EG Authority: Environment Agency, Anglian Region Permit Reference: AN9689 Dated: 27th July 1994 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations **Status: Application has been authorised and any conditions apply to the operator** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	99	2	558076 176842
	Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: High Bedrock Flow: Well Connected Fractures Dilution: <300 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: >10m Superficial Recharge: Low	A13SW (NE)	0	4	558220 176721
	Groundwater Vulnerability - Soluble Rock Risk None				
	Bedrock Aquifer Designations Aquifer Designation: Principal Aquifer	A13SW (NE)	0	4	558220 176721
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13SW (NE)	0	4	558220 176721
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NE)	0	2	558220 176721
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Tidal Models Boundary Accuracy: As Supplied	A13SW (NE)	0	2	558220 176721

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Areas Benefiting from Flood Defences Type: Area Benefiting from Flood Defences Boundary Accuracy: As Supplied	A13SW (NE)	0	2	558220 176721
	Flood Water Storage Areas None				
	Flood Defences None				
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 360.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	4	5	558304 176700
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 60.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	4	5	558304 176721
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 32.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	39	5	558304 176760
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	66	5	558304 176792
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 60.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	66	5	558304 176792
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 162.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	96	5	558353 176799
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	99	5	558348 176807
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	114	5	558330 176833

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 271.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NE (NE)	117	5	558323 176842
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 98.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	127	5	558427 176674
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 327.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	192	5	558492 176721
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 639.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	192	5	558492 176721
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 235.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13SE (E)	246	5	558546 176679
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 158.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A13NW (NW)	286	5	557908 176923
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 330.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (N)	303	5	558214 177105
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	329	5	558297 177106
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	331	5	558300 176341

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 579.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A8NE (S)	333	5	558303 176339
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 138.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	354	5	558305 177129
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	354	5	558305 177129
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 59.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A13NE (NE)	358	5	558424 177063
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 66.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (NW)	364	5	557965 177098
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 71.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (NW)	366	5	557967 177102
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 61.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (NW)	390	5	557914 177092
85	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (NW)	433	5	557909 177143
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 133.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SW (NW)	433	5	557909 177143

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	457	5	558739 176545
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 2	A14SW (E)	457	5	558739 176545
89	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 268.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	477	5	557880 177177
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	477	5	557880 177177
91	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	484	5	558767 176548
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	486	5	558314 177266
93	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	486	5	558312 177267
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	503	5	558325 177280
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	509	5	558790 176534

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
96	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 106.3 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A14SW (E)	513	5	558793 176533
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	516	5	557881 177225
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 232.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	516	5	557881 177225
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 163.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (N)	519	5	558351 177288
100	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 17.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (NE)	587	5	558512 177280
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (NE)	597	5	558530 177280
102	**OS Water Network Lines** Watercourse Form: Tidal river Watercourse Length: 524.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Not Supplied Primacy: 1	A14SW (E)	617	5	558888 176484
103	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18SE (NE)	618	5	558552 177292
104	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 33.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SW (NE)	629	5	558570 177292

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
105	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 7.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SW (NE)	642	5	558604 177285
106	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 154.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SW (NE)	648	5	558604 177292
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 164.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A18NW (N)	672	5	557969 177441
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 162.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	699	5	557813 177399
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 65.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	699	5	557813 177399
110	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 49.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SW (NE)	739	5	558758 177295
111	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17NE (NW)	751	5	557823 177464
112	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 110.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17NE (NW)	765	5	557847 177492
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A19SW (NE)	771	5	558807 177296

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SE (NW)	792	5	557587 177336
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17NE (NW)	807	5	557652 177417
116	**OS Water Network Lines** Watercourse Form: Tidal river Watercourse Length: 2051.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Thames Catchment Name: Thames Primacy: 1	A7SE (SW)	820	5	557801 175934
117	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17NE (NW)	826	5	557739 177503
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 178.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	840	5	557442 177225
119	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 25.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17NE (NW)	847	5	557741 177529
120	**OS Water Network Lines** Watercourse Form: Tidal river Watercourse Length: 1051.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: River Thames Catchment Name: Thames Primacy: 1	A7NW (SW)	861	5	557543 176071
121	**OS Water Network Lines** Watercourse Form: Tidal river Watercourse Length: 336.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Not Supplied Primacy: 1	A7NW (SW)	861	5	557543 176071
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 166.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	942	5	557308 177189

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
123	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 248.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Thames Primacy: 1	A17SW (NW)	990	5	557267 177214

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
124	**BGS Recorded Landfill Sites** Site Name: West Thurrock Power Station Location: LONDON Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A13SE (E)	1	-	558301 176721
125	**Historical Landfill Sites** Licence Holder: National Power Location: Grays, West Thurrock, Essex Name: West Thurrock Power Station Operator Location: Summer Street, London Boundary Accuracy: As Supplied Provider Reference: EAHLD01255 First Input Date: 31st October 1962 Last Input Date: 28th April 1994 Specified Waste Type: Deposited Waste included Inert and Industrial Waste, and Liquid Sludge EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 1500/0106 BGS Ref: 1942 Other Ref: 040/78, THU012	A13SE (E)	9	2	558309 176721
126	**Historical Landfill Sites** Licence Holder: Not Supplied Location: West Thurrock, Grays, Essex Name: West Thurrock Marshes Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD00571 First Input Date: 31st December 1942 Last Input Date: 31st December 1958 Specified Waste Type: Deposited Waste included Industrial, Commercial and Household Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 1500/0075 BGS Ref: Not Supplied Other Ref: THU053	A13SW (SW)	135	2	558105 176548
127	**Historical Landfill Sites** Licence Holder: RTZ Estates Limited Location: London Road, West Thurrock Name: Old Somerset House Site Operator Location: 6 St Jamess Square, London Boundary Accuracy: As Supplied Provider Reference: EAHLD00562 First Input Date: Not Supplied Last Input Date: 19th September 1987 Specified Waste Type: Deposited Waste included Inert and Special Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 1500/0088 BGS Ref: Not Supplied Other Ref: 104/84, THU040	A17NE (NW)	788	2	557870 177528
128	**Licensed Waste Management Facilities (Locations)** Licence Number: 71500 Location: Land/ Premises At, Watson Close, West Thurrock, Grays, Essex, RM20 3EF Operator Name: Brocks Haulage Ltd Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Physical Treatment Facilities **Licence Status: Issued** Issued: 26th July 2007 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A13NW (N)	56	2	558223 176835

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
129	**Licensed Waste Management Facilities (Locations)** Licence Number: 71114 Location: Land / Premises At, Oliver Close, Riverside Estate, West Thurrock, Essex, RM20 3EE Operator Name: P F Ahern (London) Ltd Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Modified** Issued: 27th April 1998 Last Modified: 4th January 2017 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (NW)	582	2	557637 177043
130	**Licensed Waste Management Facilities (Locations)** Licence Number: 101371 Location: 27a Oliver Close, West Thurrock, Essex, RM20 3EE Operator Name: Asbestos Waste Solutions Llp Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Asbestos Waste Transfer Station **Licence Status: Expired** Issued: 25th January 2010 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	617	2	557646 177131
131	**Licensed Waste Management Facilities (Locations)** Licence Number: 71505 Location: Plot 8, St Clements Way, West Thurrock, Essex, RM20 3EE Operator Name: Thurrock Council Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Household Waste Amenity Sites **Licence Status: Surrendered** Issued: 24th August 2007 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 12th May 2015 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	751	2	557585 177272
132	**Licensed Waste Management Facilities (Locations)** Licence Number: 71281 Location: Unit 7 Eurocourt, Oliver Close, West Thurrock, Essex, RM20 3EE Operator Name: Regenersis Environmental Services Ltd Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Material Recycling Treatment Facilities **Licence Status: Surrendered** Issued: 24th March 2003 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: 28th March 2011 IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	784	2	557470 177160

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
133	**Licensed Waste Management Facilities (Locations)** Licence Number: 70370 Location: Land/premises At, Fox Manorway, West Thurrock, Grays, Essex, RM20 3HJ Operator Name: W C W Hambrook (Mobile Scrap) Ltd Operator Location: Not Supplied Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Metal Recycling Sites (Vehicle Dismantlers) **Licence Status: Revoked** Issued: 1st July 1994 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A19NW (NE)	880	2	558603 177569
	Local Authority Landfill Coverage Name: Thurrock Unitary Council - Has supplied landfill data		0	3	558220 176721
	Local Authority Landfill Coverage Name: Dartford Borough Council - Has no landfill data to supply		939	6	557706 175849
134	**Local Authority Recorded Landfill Sites** Location: West Thurrock, Power Station Reference: THU012 Authority: Thurrock Borough Council, Environmental Health Department **Last Reported Status: Unknown** Types of Waste: Fly Ash Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A13SE (E)	9	3	558310 176722
135	**Local Authority Recorded Landfill Sites** Location: West Thurrock Marshes, Thurrock Reference: THU053 Authority: Thurrock Borough Council, Environmental Health Department **Last Reported Status: Closed** Types of Waste: Household, Industrial And Commercial Date of Closure: 31/12/1958 Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Not Applicable	A12SE (W)	360	3	557800 176700
136	**Local Authority Recorded Landfill Sites** Location: Old Somerset House, London Road, Thurrock Reference: THU040 Authority: Thurrock Borough Council, Environmental Health Department **Last Reported Status: Unknown** Types of Waste: Asbestos Cement Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate	A17NE (NW)	792	3	557837 177518
137	**Local Authority Recorded Landfill Sites** Location: South Of London Rd. Reference: Not Supplied Authority: Thurrock Borough Council, Environmental Health Department **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Unknown Boundary Quality: Not Applicable	A18NW (N)	845	3	557900 177600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
138	**Registered Landfill Sites** Licence Holder: National Power Licence Reference: 40/78 Site Location: West Thurrock Power Station, West Thurrock, Grays, Essex Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: Bankside House, Sumner Street, SOUTHWARK, London, SE1 9JU Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Landfill Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 27th January 1978 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate Authorised Waste: Pulverised Fuel Ash	A13SE (E)	63	2	558363 176719
139	**Registered Landfill Sites** Licence Holder: R.T.Z. Estates Licence Reference: 104/84 Site Location: Somerset House Site, London Road, West Thurrock, Grays, Essex Licence Easting: 557750 Licence Northing: 177600 Operator Location: 6 St James Square, WESTMINSTER, London, SW1 4LD Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Landfill Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st February 1984 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Asbestos Cement Excavated On Site Excavated Natural Materials $	A17NE (NW)	905	2	557750 177600
140	**Registered Waste Transfer Sites** Licence Holder: A T Stevens (1985) Ltd Licence Reference: 194/91 Site Location: Burnley Road, Riverside Industrial Estate, West Thurrock, GRAYS, Essex, RM16 1EG Operator Location: 85 High Street, GREAT DUNMOW, Essex, CM6 1AP Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 19th December 1991 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Chlorinated Solvents For Transfer Only Max.Storage Of Empty Drums Max.Storage Of Haz.Liquid Waste Max.Storage Of These Solvents Prohibited Waste: Waste N.O.S.	A13NW (NW)	55	2	558150 176850

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
141	**Registered Waste Treatment or Disposal Sites** Licence Holder: R.M.W.S. Group Ltd Licence Reference: 92/82 Site Location: Oliver Road Trading Estate, West Thurrock, Grays, Essex Operator Location: 36 Foxmoor Road, Collier Row, Romford, Essex Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Storage - with transfer Max Input Rate: Undefined Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 4th October 1982 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Quality: Good Authorised Waste: Only Bagged Asbestos	A13NW (N)	81	2	558220 176871
142	**Registered Waste Treatment or Disposal Sites** Licence Holder: Anti-Waste Ltd Licence Reference: 392/98 Site Location: Olivers Close, Riverside Street, West Thurrock, Grays, Essex Operator Location: 3 Sidings Court, White Rose Way, DONCASTER, South Yorkshire, DN4 5NU Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Transfer - with treatment Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 1st December 2000 Preceded By Licence: 392/98 Superseded By Licence: Not Given Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Not Supplied Authorised Waste: Degradable Commercial Waste (As In Post'98 E.A.Lics & Equivalent To 22.09.02) Degradable Household Waste (As In Post'98 E.A.Lics & Equivalent To 22.09.01) Degradable Industrial Waste (As In Post'98 E.A.Lics & Equivalent To 22.09.03) Inert Materials (As In Post'98 E.A.Lics And Equivalent To 21.00.00) Material With Any Haz.Code In (H5,H6,H7,H8,H9,H10,H11,H12,H13,H14) Maximum Waste Permitted (From Subs, Charges) Metal Waste/Scrap Metal (As In Post'98 E.A.Lics And Equivalent To 23.00.00) Special Waste (As In Epa 1990:S62 Of 1996 Regs) Prohibited Waste: Liquid Wastes Material With Any Haz.Code In (H1, H2, H3a,H3b) Other Waste / Waste Not Otherwise Specified Powders Sludge Wastes	A17SE (NW)	641	2	557600 177100
142	**Registered Waste Treatment or Disposal Sites** Licence Holder: Anti-Waste Ltd Licence Reference: 392/98 Site Location: Olivers Close, Riverside Street, West Thurrock, Grays, Essex Operator Location: 3 Sidings Court, White Rose Way, DONCASTER, South Yorkshire, DN4 5NU Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Treatment Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Record supersededSuperseded Dated: 27th April 1998 Preceded By Licence: Not Given Superseded By Licence: 392/98 Positional Accuracy: Manually positioned within the geographical locality Boundary Quality: Not Supplied Authorised Waste: Essex Cat.A - V.Slow Degrad. Max.Stor Essex Cat.B - Gen.(Com./Ind) Max.Stor Max.Storage Of Processed Wood Max.Storage Of Recyclables Max.Storage Of Reject Material Trees/Bushes/Weeds/Grass Prohibited Waste: Clinical Wastes Liquid Wastes Sludge Wastes Spec.Waste (Epa'90:S62/1996 Regs) Waste N.O.S.	A17SE (NW)	641	2	557600 177100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites				
143	Licence Holder: W C W Hambrook (Mobile Scrap) Ltd Licence Reference: 304/94 Site Location: Fox Manorway, West Thurrock, GRAYS, Essex, RM16 1HJ Operator Location: 200 Brent Street, HENDON, London, NW4 Authority: Environment Agency - Anglian Region, Eastern Area Site Category: Scrapyard Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 1st July 1994 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Cleaned & Drained Transformers Computer/Electronic Equipment Electrical Cable & Wire Ferrous Metal Scrap Heavy/Light Industrial Machinery Max.Waste Permitted By Licence Non-Ferrous Metal Scrap Transformers & Capacitors Prohibited Waste: Spec.Waste (Epa'90:S62/1996 Regs)N.O.S Waste N.O.S.	A19NW (NE)	857	2	558590 177550

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
144	**Control of Major Accident Hazards Sites (COMAH)** Name: Vopak Terminal London Bv Limited Location: Oliver Road, West Thurock, GRAYS, Essex, RM20 3EY Reference: Not Supplied Type: Upper Tier **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	289	7	557883 176590
144	**Control of Major Accident Hazards Sites (COMAH)** Name: Vopak Terminal London Bv Ltd Location: Oliver Road, West Thurock, GRAYS, Essex, RM20 3EY Reference: Not Supplied Type: Upper Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Automatically positioned to the address	A12SE (W)	289	7	557883 176590
145	**Control of Major Accident Hazards Sites (COMAH)** Name: Navigator Terminals Thames Bv Limited Location: West Thurrock, Oliver Road, Grays, Essex, Rm20 3ed Reference: Not Supplied Type: Upper Tier **Status: Active** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	393	7	557783 176559
146	**Control of Major Accident Hazards Sites (COMAH)** Name: Industrial Chemicals Limited Location: Old Power Station Site, Stoneness Road, West Thurrock, Grays, Essex, RM20 3AG Reference: Not Supplied Type: Upper Tier **Status: Active** Positional Accuracy: Manually positioned to the address or location	A19SE (E)	931	7	559156 177081
147	**Planning Hazardous Substance Consents** Name: Van Ommeren Tank Terminal London Bv Ltd Location: Oliver Road, West Thurrock, GRAYS, Essex, RM20 3EY Authority: Thurrock Borough Council, Development Control Application Ref: D/Hsc/Thu/2/92 Hazardous Substance: Part C, Flammable Substance (Not in Parts A&B), All other liquid or liquids with flashpoint less than 21C, where amount held is >= 10,000 tonnes Maximum Quantity: 300000 Application date: 5th August 1992 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Automatically positioned to the address	A12SE (W)	290	8	557882 176590
147	**Planning Hazardous Substance Consents** Name: Vopak Terminal London Bv Ltd Location: Oliver Road, West Thurrock, RM20 Authority: Thurrock Borough Council, Development Control Application Ref: 99/01053/Hsc Hazardous Substance: Unknown at time of report Maximum Quantity: 0 Application date: 10th September 1999 **Decision: New application granted conditionallyGranted** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	294	8	557875 176599
148	**Planning Hazardous Substance Consents** Name: Vopak Terminal London Bv Ltd Location: Oliver Road, West Thurrock, Rm20 3ed Authority: Thurrock Borough Council, Development Control Application Ref: 09/00262/HSC Hazardous Substance: Unknown at time of report Maximum Quantity: 0 Application date: 15th April 2009 **Decision: Withdrawn** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	393	8	557783 176559
149	**Planning Hazardous Substance Consents** Name: Vopak Terminal London B V Ltd Location: Oliver Road, West Thurrock, Essex, Rm20 3ee Authority: Thurrock Borough Council, Development Control Application Ref: 14/00509/HSC Hazardous Substance: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not) Maximum Quantity: 10000 Application date: 2nd June 2014 **Decision: Unknown at time of reportUnknown** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	496	8	557666 176813

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
149	**Planning Hazardous Substance Consents** Name: Vopak Terminal London B V Ltd Location: Oliver Road, West Thurrock, Essex, Rm20 3ee Authority: Thurrock Borough Council, Development Control Application Ref: 14/00510/HSC Hazardous Substance: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not) Maximum Quantity: 9900 Application date: 9th May 2014 **Decision: Unknown at time of reportUnknown** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	496	8	557666 176813
150	**Planning Hazardous Substance Consents** Name: Vopak Terminal Ltd Location: Oliver Road, West Thurrock, Grays, Essex, Rm20 Authority: Thurrock Borough Council, Development Control Application Ref: 00/00168/Hsc Hazardous Substance: Part A, Toxic Substance, Tetraethyl lead, where amount held is greater than or equal to 50 tonnes Maximum Quantity: 12 Application date: 24th February 2000 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	529	8	557632 176648
151	**Planning Hazardous Substance Consents** Name: Industrial Chemicals Group Ltd Location: Stoneness Road, West Thorrock, Essex, Rm20 3ag Authority: Thurrock Borough Council, Development Control Application Ref: 13/00338/HSC Hazardous Substance: Very toxic Maximum Quantity: 755 Application date: 8th April 2013 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14NE (E)	754	8	559009 176972
152	**Planning Hazardous Substance Consents** Name: West Thurrock Power Station Location: Stoneness Road, West Thurrock, RM20 3AG Authority: Thurrock Borough Council, Development Control Application Ref: 04/00946/Hsc Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 0 Application date: 29th July 2004 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14NE (E)	829	8	559087 176976
153	**Planning Hazardous Substance Consents** Name: Industrial Chemicals Group Ltd Location: Stoneness Road, West Thurrock, Rm20 3ag Authority: Thurrock Borough Council, Development Control Application Ref: 11/00617/HSC Hazardous Substance: Unknown at time of report Maximum Quantity: 0 Application date: 5th August 2011 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A19SE (E)	931	8	559156 177081

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: White Chalk Subgroup	A13SW (NE)	0	1	558220 176721
154	**BGS Recorded Mineral Sites** Site Name: Brocks Location: West Thurrock, Grays, Essex Source: British Geological Survey, National Geoscience Information Service Reference: 190892 Type: Opencast **Status: Active** Operator: Brocks Haulage Ltd Operator Location: Not Supplied Periodic Type: Anthropogene Geology: Aggregates For Recycling Commodity: Secondary Positional Accuracy: Located by supplier to within 10m	A13NW (N)	56	1	558223 176835
155	**BGS Recorded Mineral Sites** Site Name: Thames Matex Depot Location: West Thurrock, Essex Source: British Geological Survey, National Geoscience Information Service Reference: 13575 Type: Rail Depot **Status: Ceased** Operator: Foster Yeoman Ltd. Operator Location: Not Supplied Periodic Type: Silurian Geology: Quarry (Hard Rock) Commodity: Crushed Rock Positional Accuracy: Located by supplier to within 10m	A18SW (NW)	480	1	557900 177195
156	**BGS Recorded Mineral Sites** Site Name: West Thurrock Gravel Pit Location: West Thurrock, Grays, Essex Source: British Geological Survey, National Geoscience Information Service Reference: 67195 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Wolstonian Geology: Taplow Gravel Formation (Taplow Terrace) Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A18SE (NE)	706	1	558530 177410
157	**BGS Recorded Mineral Sites** Site Name: West Thurrock Ballast Pits Location: West Thurrock, Grays, Essex Source: British Geological Survey, National Geoscience Information Service Reference: 67194 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Wolstonian Geology: Taplow Gravel Formation (Taplow Terrace) Commodity: Sand and Gravel Positional Accuracy: Located by supplier to within 10m	A19NW (NE)	810	1	558645 177460
158	**BGS Recorded Mineral Sites** Site Name: Thurrock Marine Terminal Location: West Thurrock, Grays, Essex Source: British Geological Survey, National Geoscience Information Service Reference: 10501 Type: Wharf **Status: Active** Operator: Tarmac (A Crh Company) Operator Location: Not Supplied Periodic Type: Quaternary Geology: Marine Deposits Commodity: Marine Sand And Gravel Positional Accuracy: Located by supplier to within 10m	A11SE (W)	983	1	557185 176550
	Coal Mining Affected Areas In an area that might not be affected by coal mining				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Man-Made Mining Cavities Easting: 558500 Northing: 176200 Distance: 513 Quadrant Reference: A8 Quadrant Reference: NE Bearing Ref: SE Cavity Type: Potential Mining Collapse Commodity: Chalk Solid Geology Detail: Chalk Group, Lambeth Group Superficial Geology Detail: No Details	A8NE (SE)	513	9	558500 176200
	Man-Made Mining Cavities Easting: 558600 Northing: 176200 Distance: 559 Quadrant Reference: A9 Quadrant Reference: NW Bearing Ref: SE Cavity Type: Potential Mining Collapse Commodity: Chalk Solid Geology Detail: Chalk Group, Lambeth Group Superficial Geology Detail: No Details	A9NW (SE)	559	9	558600 176200
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Potential for Compressible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Potential for Compressible Ground Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	558186 176693
	Potential for Compressible Ground Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	1	558223 176674
	Potential for Compressible Ground Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	95	1	558350 176797
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	1	558223 176674
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	0	1	558186 176693
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	95	1	558350 176797
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	1	558220 176721

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
159	**Contemporary Trade Directory Entries** Name: Linkload Municipal Vehicle Hire Ltd Location: Burnley Road, Grays, Essex, RM20 3EG Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	0	-	558238 176726
160	**Contemporary Trade Directory Entries** Name: Stocks Transport Engineering Ltd Location: Burnley Road, Grays, Essex, RM20 3EG Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	36	-	558230 176807
161	**Contemporary Trade Directory Entries** Name: B W Tank Wash Ltd Location: Burnley Rd, Grays, Essex, RM20 3EG Classification: Tank Cleaning & Repairing **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	36	-	558134 176814
161	**Contemporary Trade Directory Entries** Name: B W Enterprises Ltd Location: Burnley Road, Grays, Essex, RM20 3EG Classification: Tank Cleaning & Repairing **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	49	-	558144 176839
162	**Contemporary Trade Directory Entries** Name: J W B Transport Services Ltd Location: Watson Cl, Grays, Essex, RM20 3EF Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13NW (N)	65	-	558220 176848
162	**Contemporary Trade Directory Entries** Name: J S Wilson Location: Watson Close, Grays, Essex, RM20 3EF Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	66	-	558220 176849
162	**Contemporary Trade Directory Entries** Name: P N L Commercials Location: Watson Clo, Grays, Essex, RM20 3EF Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (N)	70	-	558208 176862
162	**Contemporary Trade Directory Entries** Name: Burdens Location: Watson Cl, Grays, Essex, RM20 3EF Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (N)	88	-	558208 176882
162	**Contemporary Trade Directory Entries** Name: Abird Power Solutions Location: Unit 4 Watson Close, Grays, Essex, RM20 3EF Classification: Generators - Sales & Service **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (N)	101	-	558206 176897
162	**Contemporary Trade Directory Entries** Name: Beaver 84 Ltd Location: Watson Close, Grays, Essex, RM20 3EF Classification: Scaffolding & Work Platforms **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	134	-	558236 176919
162	**Contemporary Trade Directory Entries** Name: Burdens Location: Watson Close, Grays, Essex, RM20 3EF Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A13NE (N)	134	-	558236 176919
163	**Contemporary Trade Directory Entries** Name: Premier Location: Burnley Rd, Grays, Essex, RM20 3EG Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (NW)	173	-	558005 176866

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
164	**Contemporary Trade Directory Entries** Name: Burdens Location: Watson Close, Grays, RM20 3EF Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	223	-	558192 177023
165	**Contemporary Trade Directory Entries** Name: Somerleyton Oils Location: Oliver Rd, Grays, Essex, RM20 3EY Classification: Oil Fuel Distributors **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A13NW (W)	267	-	557894 176742
166	**Contemporary Trade Directory Entries** Name: Webster Miller Ltd Location: Unit 3, Burnley Road, Grays, RM20 3EG Classification: Crane Hire, Sales & Service **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	269	-	557933 176934
167	**Contemporary Trade Directory Entries** Name: Vopak Logistic Services Uk Ltd Location: Oliver Road, Grays, Essex, RM20 3EY Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	289	-	557883 176591
167	**Contemporary Trade Directory Entries** Name: Exel Location: Oliver Road, Grays, Essex, RM20 3EY Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	289	-	557883 176591
167	**Contemporary Trade Directory Entries** Name: Somerleyton Oils Location: Oliver Road, Grays, Essex, RM20 3EY Classification: Oil Fuel Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	289	-	557883 176591
168	**Contemporary Trade Directory Entries** Name: 1st Cool Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A14NW (E)	391	-	558661 176865
169	**Contemporary Trade Directory Entries** Name: Navigator Terminals Thames Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Chemical Plant & Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	393	-	557783 176559
170	**Contemporary Trade Directory Entries** Name: Viridor Location: Oliver Road, Grays, Essex Classification: Recycling Services **Status: Active** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	422	-	558160 177222
171	**Contemporary Trade Directory Entries** Name: Spartan Metal Recycling Location: Oliver Road, Grays, RM20 3AS Classification: Scrap Metal Merchants **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	462	-	557858 177139
172	**Contemporary Trade Directory Entries** Name: Samat (Uk) Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	493	-	558141 177292
172	**Contemporary Trade Directory Entries** Name: C M S Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Refrigeration Equipment - Commercial **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	493	-	558123 177291

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
172	**Contemporary Trade Directory Entries** Name: R F Transport Ltd Location: 8 Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	493	-	558130 177292
172	**Contemporary Trade Directory Entries** Name: R F Transport Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	493	-	558132 177292
172	**Contemporary Trade Directory Entries** Name: Iveco Ford Truck Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Commercial Vehicle Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	493	-	558142 177292
172	**Contemporary Trade Directory Entries** Name: Loadwell Transport Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	494	-	558116 177291
172	**Contemporary Trade Directory Entries** Name: Square Partners Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Recycling Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: 1st Cool Ltd Location: Yard 5 Riverside Industrial Estate, Oliver Road, Grays, Essex, RM20 3ED Classification: Air Conditioning & Refrigeration Contractors **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: Marshall Thermo King Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Refrigerators & Freezers - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: Webster Miller Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: Jma Services Commerical Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: S & I Fuels Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Fuel Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: Thameside Truckpaint Location: Webster Millers Yard,Unit 3 Oliver Rd, Grays, Essex, RM20 3ED Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	502	-	558124 177300
172	**Contemporary Trade Directory Entries** Name: R F Transport Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A18SW (N)	513	-	558123 177311

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
172	**Contemporary Trade Directory Entries** Name: Co-Op Food Primary Logistics Services Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Distribution Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	518	-	558119 177316
172	**Contemporary Trade Directory Entries** Name: Drainfast Ltd Location: Unit 1 Thurrock Trade Park,Oliver Road, Grays, Essex, RM20 3ED Classification: Builders' Merchants **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	518	-	558119 177316
172	**Contemporary Trade Directory Entries** Name: Generation Location: Riverside Industrial Unit 5,Oliver Road, Grays, Essex, RM20 3ED Classification: Scaffolding & Work Platforms **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18SW (N)	518	-	558119 177316
173	**Contemporary Trade Directory Entries** Name: Food & Drink Sales Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Soft Drinks - Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	495	-	558212 177294
173	**Contemporary Trade Directory Entries** Name: Transport Management Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	497	-	558229 177294
174	**Contemporary Trade Directory Entries** Name: Temple Transport Services Location: Unit 14 Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	502	-	558061 177290
174	**Contemporary Trade Directory Entries** Name: Sprint Logistics Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SW (N)	510	-	558032 177290
174	**Contemporary Trade Directory Entries** Name: Clements Cars Location: Unit 5, Thurrock Trade Park, Oliver Road, Grays, Essex, RM20 3AL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	521	-	558071 177311
174	**Contemporary Trade Directory Entries** Name: Magnet Trade Location: Unit 6-8, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Kitchen Furniture Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	528	-	558059 177316
175	**Contemporary Trade Directory Entries** Name: D H L Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Fuel Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	504	-	558270 177295
175	**Contemporary Trade Directory Entries** Name: M & B Freight Ltd Location: Oliver Clo, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	505	-	558282 177294
176	**Contemporary Trade Directory Entries** Name: Warton Freight Services Ltd Location: Unit 1 River Side Industrial Estate,Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	539	-	557844 177227

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
176	**Contemporary Trade Directory Entries** Name: Steve Rowland Location: Riverside Estate, Oliver Close, Grays, Essex, RM20 3EE Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	543	-	557865 177247
176	**Contemporary Trade Directory Entries** Name: Team Flitwick Location: Silwood Depot, Oliver Close, Grays, Essex, RM20 3EE Classification: Oil Fuel Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	543	-	557865 177247
177	**Contemporary Trade Directory Entries** Name: Cleanaway Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Waste Disposal Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	551	-	558414 177296
177	**Contemporary Trade Directory Entries** Name: C R D Transport Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	552	-	558417 177296
177	**Contemporary Trade Directory Entries** Name: H & F Trans Location: 19 Oliver Rd, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18SE (N)	556	-	558425 177296
177	**Contemporary Trade Directory Entries** Name: Tablogix Location: Thurrock Euro Terminal, Oliver Road, Grays, Essex, RM20 3ED Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	563	-	558417 177308
178	**Contemporary Trade Directory Entries** Name: L B P Uk Ltd Location: Unit 14, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Frozen Food Processors & Distributors **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	555	-	558067 177345
179	**Contemporary Trade Directory Entries** Name: Ahern Location: Oliver Cl, Grays, Essex, RM20 3EE Classification: Waste Disposal Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12NE (NW)	558	-	557661 177039
179	**Contemporary Trade Directory Entries** Name: Ahern Waste Management & Recycling Services Location: Oliver Close, Grays, RM20 3EE Classification: Waste Disposal Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	563	-	557654 177036
179	**Contemporary Trade Directory Entries** Name: Mor Oils Location: Oliver Cl, Grays, Essex, RM20 3EE Classification: Oil Fuel Distributors **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	591	-	557648 177084
180	**Contemporary Trade Directory Entries** Name: West Thurrock I C D Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	560	-	557982 177327
180	**Contemporary Trade Directory Entries** Name: Transtor Uk Ltd Location: North Side, Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	560	-	557982 177327

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
180	**Contemporary Trade Directory Entries** Name: Magnet Location: Oliver Road, Grays, RM20 3ED Classification: Kitchen Furniture Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	570	-	557973 177334
181	**Contemporary Trade Directory Entries** Name: Jayco International Location: Unit 15, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Freight Forwarders **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	575	-	558117 177373
182	**Contemporary Trade Directory Entries** Name: Hanbury Davis Ltd Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	577	-	557815 177253
182	**Contemporary Trade Directory Entries** Name: Hanbury Riverside Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Commercial Vehicle Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	577	-	557815 177253
182	**Contemporary Trade Directory Entries** Name: Enterprise Vehicle Care Services Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	577	-	557815 177253
183	**Contemporary Trade Directory Entries** Name: I D E Rental Ltd Location: Unit 13, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Generators - Sales & Service **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	580	-	558085 177374
183	**Contemporary Trade Directory Entries** Name: Amouage Location: Unit 11-12, Thurrock Trade Park, Oliver Road, Grays, Essex, RM20 3AL Classification: Perfume Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	591	-	558061 177381
183	**Contemporary Trade Directory Entries** Name: Brothers S T S Ltd Location: Unit 18, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Freight Forwarders **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	615	-	558050 177403
183	**Contemporary Trade Directory Entries** Name: Advanced Cleaning Solutions Location: Thurrock trade park,Oliver Rd, Grays, Essex, RM20 3ED Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	617	-	558032 177401
183	**Contemporary Trade Directory Entries** Name: T Griffiths & Sons Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (N)	619	-	558055 177408
183	**Contemporary Trade Directory Entries** Name: Sunny Ventures Ltd Location: Unit 21, Thurrock Trade Park, Oliver Road, Grays, RM20 3AL Classification: Cheese Makers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SW (N)	622	-	558021 177403
184	**Contemporary Trade Directory Entries** Name: Agility Logistics Location: Unit 1, Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	608	-	557880 177332

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
184	**Contemporary Trade Directory Entries** Name: Quest Medical Location: Unit 1, Oliver Close, Grays, Essex, RM20 3EE Classification: Medical & Dental Laboratories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	608	-	557880 177332
184	**Contemporary Trade Directory Entries** Name: Continental Transport Services Ltd Location: Oliver Road, Grays, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	610	-	557881 177335
184	**Contemporary Trade Directory Entries** Name: Thurrock 4x4 Centre Ltd Location: Oliver Road, Grays, RM20 3ED Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	610	-	557881 177335
184	**Contemporary Trade Directory Entries** Name: Holloseal Glass Ltd Location: Unit 1 Oliver Cl, Grays, Essex, RM20 3EE Classification: Glass Products - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	611	-	557870 177330
185	**Contemporary Trade Directory Entries** Name: Ahern Waste Management & Recycling Services Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Waste Disposal Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	614	-	557647 177127
185	**Contemporary Trade Directory Entries** Name: Isotank Services Location: Plot 44 Riverside Estate,Oliver Close, Grays, Essex, RM20 3EE Classification: Tank Cleaning & Repairing **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	614	-	557647 177127
186	**Contemporary Trade Directory Entries** Name: Reynolds Logistics Ltd Location: OLIVER ROAD, GRAYS, RM20 3ED Classification: Fuel Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	623	-	558811 177072
187	**Contemporary Trade Directory Entries** Name: Felgate Services Ltd Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	626	-	558116 177424
188	**Contemporary Trade Directory Entries** Name: Supply Chain Support Location: Riverside Ind Est,Unit 20-26 Oliver Cl, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (NW)	638	-	557581 177057
188	**Contemporary Trade Directory Entries** Name: Motorway European Ltd Location: Oliver Close, West Thurrock, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	666	-	557558 177073
189	**Contemporary Trade Directory Entries** Name: Nyfas Ukab Ltd Location: Oliver Rd, Grays, Essex, RM20 3ED Classification: Asphalt & Macadam Suppliers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A19SW (NE)	678	-	558646 177300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
190	**Contemporary Trade Directory Entries** Name: Enterprise Coachworks Location: Rivergate House, Riverside Industrial Estate, Oliver Close, Grays, Essex, RM20 3EE Classification: Commercial Vehicle Bodybuilders & Repairers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	679	-	557606 177182
190	**Contemporary Trade Directory Entries** Name: Smith Brothers Stores Rainham London East Location: 3-4, Euro Court, Oliver Close, Grays, Essex, RM20 3EE Classification: Builders' Tools & Equipment Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	727	-	557563 177204
191	**Contemporary Trade Directory Entries** Name: Euromix Concrete Ltd Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Concrete & Mortar Ready Mixed **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	681	-	557515 177008
192	**Contemporary Trade Directory Entries** Name: Tarmac Cement & Lime Location: Thurrock Marine Terminal,Oliver Close, Grays, Essex, RM20 3EE Classification: Sand, Gravel & Other Aggregates **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	683	-	557572 177136
192	**Contemporary Trade Directory Entries** Name: Specialist Insulation Location: 10 Euro Court, Oliver Close, Grays, RM20 3EE Classification: Insulation Materials **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	683	-	557572 177136
192	**Contemporary Trade Directory Entries** Name: Optare Location: 9 Euro Court, Oliver Close, Grays, RM20 3EE Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	692	-	557562 177136
192	**Contemporary Trade Directory Entries** Name: A & R Board Sales Location: Euro Court,Oliver Cl, Grays, Essex, RM20 3EE Classification: Paper & Cardboard Products & Packaging - Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17SW (NW)	727	-	557546 177178
193	**Contemporary Trade Directory Entries** Name: Skittrall Crane & Plant Hire Ltd Location: 27, Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	684	-	557642 177237
193	**Contemporary Trade Directory Entries** Name: Mcmahon Plant Services Ltd Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	700	-	557607 177218
194	**Contemporary Trade Directory Entries** Name: Van Zelm Chem Location: Schoolfield Road, Grays, Essex, RM20 3HR Classification: Chemical Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	725	-	558344 177505
194	**Contemporary Trade Directory Entries** Name: Vortex Exhaust Technology Location: Bridge House,Schoolfield Rd, Grays, Essex, RM20 3HR Classification: Exhaust System Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	773	-	558354 177552

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
195	**Contemporary Trade Directory Entries** Name: Paramount 26 Ltd Location: 7, Euro Court, Oliver Close, Grays, Essex, RM20 3EE Classification: Roller Shutter Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	734	-	557502 177114
195	**Contemporary Trade Directory Entries** Name: Walley Location: 8 Euro Court, Oliver Close, Grays, RM20 3EE Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	736	-	557509 177132
195	**Contemporary Trade Directory Entries** Name: Paramount 26 Ltd Location: 7 Euro Court, Oliver Close, Grays, RM20 3EE Classification: Roller Shutter Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	779	-	557460 177129
196	**Contemporary Trade Directory Entries** Name: A 5 Star Service Location: Acorn House, Schoolfield Road, West Thurrock, RM20 3HR Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	735	-	558236 177533
196	**Contemporary Trade Directory Entries** Name: Diesel Power Location: Acorn House, Unit 2, Schoolfield Road, Grays, Essex, RM20 3HR Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	748	-	558223 177547
197	**Contemporary Trade Directory Entries** Name: Pac Fabrications Ltd Location: Unit 2c, Queensbridge Industrial Park, 795, London Road, Grays, RM20 3LH Classification: Engineering Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	736	-	558141 177536
198	**Contemporary Trade Directory Entries** Name: Tarmac Location: Thurrock Marine Terminal, Oliver Close, GRAYS, Essex, RM20 3EE Classification: Sand, Gravel & Other Aggregates **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NW (W)	746	-	557416 176819
198	**Contemporary Trade Directory Entries** Name: Tarmac Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Asphalt & Coated Macadam Laying Contractors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	746	-	557416 176819
198	**Contemporary Trade Directory Entries** Name: Lafarge Aggregates Ltd Location: Oliver Close, Grays, Essex, RM20 3EE Classification: Sand, Gravel & Other Aggregates **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	746	-	557416 176819
199	**Contemporary Trade Directory Entries** Name: X P O Tankers Location: Stoneness Road, West Thurrock, Grays, Essex, RM20 3AG Classification: Fuel Dealers **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A14NE (NE)	771	-	558983 177072
200	**Contemporary Trade Directory Entries** Name: Pacific Auto Parts Location: Bridge House,Schoolfield Rd, Grays, Essex, RM20 3HR Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	776	-	558368 177552
200	**Contemporary Trade Directory Entries** Name: Hendricks Farnsworth Location: Schoolfield Rd, Grays, Essex, RM20 3HR Classification: Builders' Merchants **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	779	-	558380 177552

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
200	**Contemporary Trade Directory Entries** Name: Shanks Chemical Services Location: Schoolfield Rd, Grays, Essex, RM20 3HR Classification: Tank Cleaning & Repairing **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	780	-	558384 177552
201	**Contemporary Trade Directory Entries** Name: Thake International Ltd Location: Unit 2, Euro Court, Oliver Close, Grays, Essex, RM20 3EE Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	777	-	557522 177233
201	**Contemporary Trade Directory Entries** Name: Thake International Location: 1, Euro Court, Oliver Close, Grays, Essex, RM20 3EE Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	777	-	557522 177233
201	**Contemporary Trade Directory Entries** Name: Victor Marine Location: 2, Euro Court, Oliver Close, Grays, Essex, RM20 3EE Classification: Marine Equipment & Supplies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	777	-	557522 177233
201	**Contemporary Trade Directory Entries** Name: Johnson & Fitzmaurice Location: 1 Euro Court, Oliver Close, Grays, RM20 3EE Classification: Medical Equipment Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	797	-	557482 177207
202	**Contemporary Trade Directory Entries** Name: Camion Engineering Location: Queensbridge Industrial Park, 795, London Road, Grays, Essex, RM20 3LH Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	786	-	558105 177584
202	**Contemporary Trade Directory Entries** Name: Autoplus Location: Queensbridge Industrial Park, 795, London Road, Grays, Essex, RM20 3LH Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	786	-	558105 177584
203	**Contemporary Trade Directory Entries** Name: Schwick Techniks Location: Schoolfield Rd, Grays, Essex, RM20 3HR Classification: Engine Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	801	-	558452 177552
204	**Contemporary Trade Directory Entries** Name: The Factory Blind Shop Location: 14, Breach Road, Grays, Essex, RM20 3NR Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	810	-	557888 177559
204	**Contemporary Trade Directory Entries** Name: The Pet Zone Location: Unit 15, Breach Road, Grays, Essex, RM20 3NR Classification: Pet Foods & Animal Feeds **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	812	-	557881 177558
204	**Contemporary Trade Directory Entries** Name: Essex Factors Ltd Location: Unit 15, Breach Road, Grays, Essex, RM20 3NR Classification: Commercial Vehicle Component Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	812	-	557881 177558
204	**Contemporary Trade Directory Entries** Name: Transport & Log (Kent) Location: Unit 15,Breach Rd, Grays, Essex, RM20 3NR Classification: Distribution Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A17NE (N)	813	-	557880 177558

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
204	**Contemporary Trade Directory Entries** Name: Kool Serve Location: 16, Breach Road, Grays, Essex, RM20 3NR Classification: Catering Equipment - Servicing & Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	814	-	557875 177558
204	**Contemporary Trade Directory Entries** Name: Motorvation Location: 17, Breach Road, Grays, Essex, RM20 3NR Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	816	-	557869 177558
204	**Contemporary Trade Directory Entries** Name: Auto Market Location: 801a London Road, Grays, Essex, RM20 3LH Classification: Commercial Vehicle Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	821	-	557911 177578
205	**Contemporary Trade Directory Entries** Name: Pycrest Cars Location: UNIT 11,799 London Rd, Grays, Essex, RM20 3LH Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	820	-	558019 177606
205	**Contemporary Trade Directory Entries** Name: Engine Gearbox Rebuilders Location: Bridge View Estate, 799, London Road, Grays, Essex, RM20 3LH Classification: Engine Rebuilding & Reconditioning **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	821	-	558020 177607
205	**Contemporary Trade Directory Entries** Name: Thurrock Freight Location: Bridge View Industrial Estate, London Road, West Thurrock, RM20 3LH Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18NW (N)	821	-	558020 177607
205	**Contemporary Trade Directory Entries** Name: Gateway Freight Solutions Ltd Location: Bridge View Estate, 799, London Road, Grays, RM20 3LH Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	829	-	558009 177613
205	**Contemporary Trade Directory Entries** Name: Y T S Car Paints Location: Bridge View Estate, 799, London Road, Grays, RM20 3LH Classification: Car Paint & Lacquer Manufacturers & Suppliers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	829	-	558009 177613
205	**Contemporary Trade Directory Entries** Name: Rykel Automotive Group Location: Bridge View Estate, 799, London Road, Grays, RM20 3LH Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	829	-	558009 177613
205	**Contemporary Trade Directory Entries** Name: Engine Gearbox Specialists Location: Unit 5a, 799, London Road, West Thurrock, RM20 3LH Classification: Engine Rebuilding & Reconditioning **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	829	-	558009 177613
205	**Contemporary Trade Directory Entries** Name: Treadhill Motors Location: London Rd, Grays, Essex, RM20 3LH Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A18NW (N)	831	-	557992 177611
206	**Contemporary Trade Directory Entries** Name: R I S Rainham Industrial Services Location: Queensbridge Industrial Park, 795, London Road, Grays, RM20 3LH Classification: Scaffolding & Work Platforms **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	835	-	558077 177630

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
206	**Contemporary Trade Directory Entries** Name: Simply Smart Cleaning Services Location: edwards house,795 London Rd, Grays, Essex, RM20 3LH Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	835	-	558076 177630
206	**Contemporary Trade Directory Entries** Name: Ats Euromaster Ltd Location: Unit 1 Queensbridge Ind Park 795 London rd, Grays, Essex, RM20 3LH Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	836	-	558074 177631
206	**Contemporary Trade Directory Entries** Name: Bana Services Ltd Location: 795, London Road, Grays, Essex, RM20 3LH Classification: Car & Commercial Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	836	-	558077 177630
206	**Contemporary Trade Directory Entries** Name: Camion Engineering Ltd Location: 795, London Road, Grays, Essex, RM20 3LH Classification: Engineering Machine Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	836	-	558077 177630
206	**Contemporary Trade Directory Entries** Name: Grupo Antonin Location: 795, London Road, Grays, Essex, RM20 3LH Classification: Automation Systems & Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	836	-	558077 177630
207	**Contemporary Trade Directory Entries** Name: M M R Transport Location: Unit 1 Titan Truck Park,Stoneness Road, West Thurrock, Grays, Essex, RM20 3AG Classification: Road Haulage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A19SE (NE)	840	-	558933 177267
208	**Contemporary Trade Directory Entries** Name: Terry'S Location: Unit 12 799 London Rd, Grays, Essex, RM20 3LH Classification: Car Body Repairs **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	844	-	557970 177620
208	**Contemporary Trade Directory Entries** Name: Rykel Test Centres Ltd Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Tnt Logistics (Uk) Ltd Location: Edward Cecil House, 799, London Road, Grays, Essex, RM20 3LH Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Autonation Trade Centre Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Tomlin Transport Location: Unit 1-4,799 London Rd, Grays, Essex, RM20 3LH Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
208	**Contemporary Trade Directory Entries** Name: Motorprep Group Ltd Location: Edward Cecil House, 799, London Road, Grays, Essex, RM20 3LH Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Quest Pest Control Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Car Plus Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Car & Truck Ltd Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Coolwater Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Water Coolers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: Rykel Automotive Group Location: Edward Cecil House, 799, London Road, Grays, Essex, RM20 3LH Classification: Mot Testing Centres **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: J & B'S Auto Technicians Location: 799, London Road, Grays, Essex, RM20 3LH Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	850	-	557972 177626
208	**Contemporary Trade Directory Entries** Name: E & C Export Location: 801, London Road, Grays, Essex, RM20 3LH Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	851	-	557939 177619
208	**Contemporary Trade Directory Entries** Name: Jetyres (Services) Ltd Location: 801, London Road, Grays, Essex, RM20 3LH Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	851	-	557939 177619
208	**Contemporary Trade Directory Entries** Name: Jetyres Ltd Location: 801, London Road, Grays, Essex, RM20 3LH Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	851	-	557939 177619
208	**Contemporary Trade Directory Entries** Name: Jetyres Ltd Location: 801, London Road, Grays, Essex, RM20 3LH Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	851	-	557939 177619
208	**Contemporary Trade Directory Entries** Name: Universal Tyre & Auto Centre Location: 801, London Road, Grays, Essex, RM20 3LH Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	851	-	557939 177619

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
209	**Contemporary Trade Directory Entries** Name: Red Rose Drainage Location: Unit 7,Thurrock Business Centre,1 Breach Rd, Grays, Essex, RM20 3NR Classification: Sewage Pump Stations **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17NE (N)	852	-	557884 177602
209	**Contemporary Trade Directory Entries** Name: Cool Water (Essex) Ltd Location: 9, Breach Road, Grays, Essex, RM20 3NR Classification: Water Coolers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	865	-	557883 177615
209	**Contemporary Trade Directory Entries** Name: Coolwater (Essex) Ltd Location: 9, Breach Road, GRAYS, Essex, RM20 3NR Classification: Water Coolers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	865	-	557883 177615
209	**Contemporary Trade Directory Entries** Name: Norman Lewis Tankers Location: 803, London Road, Grays, Essex, RM20 3LH Classification: Chemicals - Distributors & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	875	-	557919 177638
209	**Contemporary Trade Directory Entries** Name: Lehrian Commercials Ltd Location: 803, London Road, Grays, Essex, RM20 3LH Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	875	-	557919 177638
209	**Contemporary Trade Directory Entries** Name: H C Lazell Lashings Ltd Location: Unit 6, Thurrock Business Centre, Breach Road, Grays, RM20 3NR Classification: Lifting Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	884	-	557877 177633
209	**Contemporary Trade Directory Entries** Name: Roadline Parts Ltd Location: Unit 6, Thurrock Business Centre, Breach Road, Grays, Essex, RM20 3NR Classification: Trailers & Towing Equipment **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	884	-	557882 177635
209	**Contemporary Trade Directory Entries** Name: Abbey Hose Co Ltd Location: 5, Breach Road, Grays, Essex, RM20 3NR Classification: Hose, Tubing & Fittings **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	890	-	557881 177641
209	**Contemporary Trade Directory Entries** Name: Envirotec Integrated Services Ltd Location: Unit 4, Thurrock Business Centre, Breach Road, Grays, RM20 3NR Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	896	-	557876 177646
209	**Contemporary Trade Directory Entries** Name: Gallows Brackets Location: Unit 1, Thurrock Business Centre, Breach Road, Grays, RM20 3NR Classification: Metal Products - Fabricated **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	915	-	557875 177665
209	**Contemporary Trade Directory Entries** Name: Tanktruk Location: Unit 1,Breach Rd, Grays, Essex, RM20 3NR Classification: Garage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A17NE (N)	915	-	557878 177666
210	**Contemporary Trade Directory Entries** Name: Direct Pest Control Location: 729, London Road, Grays, Essex, RM20 3HX Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	877	-	558330 177664

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
211	**Contemporary Trade Directory Entries** Name: Co-Operative Food Primary Logistics Services Location: Oliver Road, Grays, Essex, RM20 3ED Classification: Distribution Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	893	-	558843 177425
212	**Contemporary Trade Directory Entries** Name: Crayford Freight Services Ltd Location: Flint Street, Grays, Essex, RM20 3HA Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	903	-	558683 177547
213	**Contemporary Trade Directory Entries** Name: M & T M Freight Uk Ltd Location: 690, London Road, GRAYS, Essex, RM20 3LD Classification: Freight Forwarders **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	907	-	558050 177699
213	**Contemporary Trade Directory Entries** Name: H & S Trucking Ltd Location: Nelson House,690 London Rd, Grays, Essex, RM20 3LD Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	907	-	558050 177699
213	**Contemporary Trade Directory Entries** Name: De Georgio Transport Uk Ltd Location: Nelson House,690 London Road, Grays, Essex, RM20 3LD Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	938	-	558049 177730
214	**Contemporary Trade Directory Entries** Name: House Proud Location: 3, Second Avenue, Grays, Essex, RM20 3JB Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	917	-	558278 177712
215	**Contemporary Trade Directory Entries** Name: East Thames Aggregates Ltd Location: Thameside House, Schoolfield Road, Grays, Essex, RM20 3HR Classification: Sand, Gravel & Other Aggregates **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	917	-	558525 177648
216	**Contemporary Trade Directory Entries** Name: Millennium Tyre Services Ltd Location: 680, London Road, Grays, Essex, RM20 3LX Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	918	-	558098 177715
216	**Contemporary Trade Directory Entries** Name: Universal Tyre & Autocentres Location: 680, London Road, Grays, Essex, RM20 3LX Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	918	-	558098 177715
217	**Contemporary Trade Directory Entries** Name: Belmont Laundry Location: Stone Ness Road, West Thurrock, Grays, Essex, RM20 3AG Classification: Laundries & Launderettes **Status: Inactive** Positional Accuracy: Automatically positioned in the proximity of the address	A19SE (E)	931	-	559156 177081
218	**Contemporary Trade Directory Entries** Name: Surplus World Ltd Location: Trading Estate, Motherwell Way, Grays, Essex, RM20 3XD Classification: Fork Lift Trucks **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	938	-	557967 177716

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
218	**Contemporary Trade Directory Entries** Name: Logistics Movements Ltd Location: Unit 1, European Cargo Centre, Trading Estate, Motherwell Way, Grays, Essex, RM20 3XD Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	938	-	557967 177716
219	**Contemporary Trade Directory Entries** Name: South Essex Concrete & Pumping Ltd Location: 8, First Avenue, Grays, Essex, RM20 3JR Classification: Concrete Pumping Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	946	-	558159 177746
220	**Contemporary Trade Directory Entries** Name: Trelleborg Stanton Ltd Location: 853, London Road, GRAYS, Essex, RM20 3LG Classification: Plastic Products - Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	955	-	557716 177639
221	**Contemporary Trade Directory Entries** Name: Transvalfreight Location: Trafalgar House, 712, London Road, Grays, RM20 3JT Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	960	-	557870 177711
221	**Contemporary Trade Directory Entries** Name: Asr Forwarding Location: Trafalgar House, 712, London Road, Grays, Essex, RM20 3JT Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	961	-	557869 177711
221	**Contemporary Trade Directory Entries** Name: Bring Cargo Ltd Location: 712, London Road, Grays, RM20 3JT Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	961	-	557869 177711
221	**Contemporary Trade Directory Entries** Name: R S International Freight Ltd Location: 712, London Road, Grays, Essex, RM20 3JT Classification: Freight Forwarders **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	961	-	557869 177711
221	**Contemporary Trade Directory Entries** Name: Texaco Location: 712 London Road West, Grays, Essex, RM20 3JT Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	961	-	557870 177712
221	**Contemporary Trade Directory Entries** Name: Asr Forwarding Location: Trafalgar House, 712, London Road, Grays, Essex, RM20 3JT Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	961	-	557869 177711
221	**Contemporary Trade Directory Entries** Name: Texaco Location: 712, London Road, Grays, RM20 3JT Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (N)	972	-	557830 177710
221	**Contemporary Trade Directory Entries** Name: National Motorcycle Inspections Location: 712 London Rd, West Thurrock/, Grays, Essex, RM20 3HH Classification: Vehicle Inspection Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A17NE (N)	972	-	557830 177710

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
221	**Contemporary Trade Directory Entries** Name: J & S Support Services Location: 712, London Road, Grays, RM20 3JT Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (N)	973	-	557831 177711
222	**Contemporary Trade Directory Entries** Name: Aquitaine Maritime Agencies Location: Nelson House, Motherwell Way, Grays, RM20 3XD Classification: Freight Forwarders **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A23SW (N)	970	-	558010 177757
222	**Contemporary Trade Directory Entries** Name: Mbb Liftsystems Location: Trafalgar House, 712, London Road, Grays, Essex, RM20 3JT Classification: Commercial Vehicle Component Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A23SW (N)	979	-	557994 177763
223	**Contemporary Trade Directory Entries** Name: Fusion Motors Ltd Location: Baymanor Lane, Grays, Essex, RM20 3LL Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A18NW (N)	975	-	557911 177739
224	**Contemporary Trade Directory Entries** Name: Thurrock Engineering Supplies Ltd Location: Motherwell Way, Grays, RM20 3XD Classification: Engineering Materials **Status: Active** Positional Accuracy: Automatically positioned to the address	A23SW (N)	989	-	558087 177786
224	**Contemporary Trade Directory Entries** Name: Abbey Hose Location: Motherwell Way, Grays, RM20 3XD Classification: Hydraulic Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A23SW (N)	989	-	558087 177786
225	**Contemporary Trade Directory Entries** Name: Business Furniture Services Ltd Location: B F S House,London Rd, Grays, Essex, RM20 3LH Classification: Office Furniture & Equipment **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17NE (NW)	997	-	557724 177690
226	**Fuel Station Entries** Name: Truckworld Hgv Location: Oliver Road , , West Thurrock, Thurrock, RM20 3ED Brand: Unbranded Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the address or location	A18SW (N)	511	-	558145 177311
227	**Fuel Station Entries** Name: Certas Energy Silwood West Thurrock Hgv Location: Riverside Estate , Oliver Close , West Thurrock, Thurrock, RM20 3EE Brand: Certas Energy Premises Type: Petrol Station **Status: Non-Retail** Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	601	-	557798 177270
228	**Fuel Station Entries** Name: London Road Service Station Location: 712a, London Road , , Grays, Thurrock, RM20 3JT Brand: Texaco Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A17NE (N)	975	-	557829 177712
229	**Underground Electrical Cables** Unique Feature Identifier: 10005560 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	649	10	557888 177384

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
230	**Underground Electrical Cables** Unique Feature Identifier: 10005562 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	649	10	557889 177383
231	**Underground Electrical Cables** Unique Feature Identifier: 10005561 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	654	10	557878 177384
232	**Underground Electrical Cables** Unique Feature Identifier: 10005599 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	654	10	557877 177383
233	**Underground Electrical Cables** Unique Feature Identifier: 10005467 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	734	10	557755 177404
234	**Underground Electrical Cables** Unique Feature Identifier: 10005466 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SE (NW)	734	10	557755 177404
235	**Underground Electrical Cables** Unique Feature Identifier: 10007511 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 25th May 2017	A19SE (NE)	771	10	558930 177160
236	**Underground Electrical Cables** Unique Feature Identifier: 10005377 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 5th April 2018	A19SE (NE)	788	10	558942 177171
237	**Underground Electrical Cables** Unique Feature Identifier: 10005378 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 5th April 2018	A19SE (NE)	798	10	558965 177155
238	**Underground Electrical Cables** Unique Feature Identifier: 10007510 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 25th May 2017	A19SE (NE)	827	10	558955 177220
239	**Underground Electrical Cables** Unique Feature Identifier: 10007035 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SW (NW)	908	10	557475 177386

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
240	**Underground Electrical Cables** Unique Feature Identifier: 10006970 Cable Status: Commissioned Cable Type: Alternating Current Record Last Updated: 23rd March 2018	A17SW (NW)	908	10	557475 177385

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
241	**Marine Nature Reserves** Name: Swanscombe Multiple Area: N Area (m2): 3352118.13 Source: Natural England	A9NW (SE)	576	11	558699 176256
242	**Sites of Special Scientific Interest** Name: West Thurrock Lagoon & Marshes Multiple Areas: N Total Area (m2): 664958.62 Source: Natural England Reference: 1006132 Designation Details: Site Of Special Scientific Interest Designation Date: 14th November 1991 Date Type: Notified Designation Details: Water Framework Directive (WFD) Designation Date: 14th November 1991 Date Type: Notified	A13SE (E)	1	11	558301 176721

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Environment Agency - Head Office	June 2020	Annually
London Borough of Havering - Environmental Health Department	October 2017	Annual Rolling Update
Sevenoaks District Council - Environmental Health Department	October 2017	Annual Rolling Update
Thurrock Borough Council - Environmental Health Department	October 2017	Annually
Dartford Borough Council - Environmental Health Department	September 2017	Annual Rolling Update
Gravesham Borough Council - Public Health Services	September 2017	Annual Rolling Update
London Borough of Bexley - Environmental Health Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Anglian Region	January 2022	Quarterly
Environment Agency - Southern Region	January 2022	Quarterly
Environment Agency - Thames Region	January 2022	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Anglian Region	March 2013	
Environment Agency - Southern Region	March 2013	
Environment Agency - Thames Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Anglian Region	January 2009	
Environment Agency - Southern Region	January 2009	
Environment Agency - Thames Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Anglian Region	January 2022	Quarterly
Environment Agency - South East Region - Kent & South London Area	January 2022	Quarterly
Environment Agency - South East Region - North East Thames Area	January 2022	Quarterly
Environment Agency - Southern Region	January 2022	Quarterly
Environment Agency - Thames Region	January 2022	Quarterly
Local Authority Integrated Pollution Prevention And Control		
London Borough of Havering - Environmental Health Department	April 2015	Variable
Thurrock Borough Council - Environmental Health Department	February 2015	Variable
London Borough of Bexley - Environmental Health Department	March 2015	Variable
Gravesham Borough Council - Environmental Health Department	October 2014	Variable
London Port Health Authority - Environmental Services	October 2014	Variable
Dartford Borough Council - Environmental Health Department	September 2014	Variable
Sevenoaks District Council - Environmental Health Department	September 2014	Variable
Local Authority Pollution Prevention and Controls		
London Borough of Havering - Environmental Health Department	April 2015	Annual Rolling Update
Thurrock Borough Council - Environmental Health Department	February 2015	Not Applicable
London Borough of Bexley - Environmental Health Department	March 2015	Annual Rolling Update
Gravesham Borough Council - Environmental Health Department	October 2014	Annual Rolling Update
London Port Health Authority - Environmental Services	October 2014	Annual Rolling Update
Dartford Borough Council - Environmental Health Department	September 2014	Annual Rolling Update
Sevenoaks District Council - Environmental Health Department	September 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
London Borough of Havering - Environmental Health Department	April 2015	Variable
Thurrock Borough Council - Environmental Health Department	February 2015	Variable
London Borough of Bexley - Environmental Health Department	March 2015	Variable
Gravesham Borough Council - Environmental Health Department	October 2014	Variable
London Port Health Authority - Environmental Services	October 2014	Variable
Dartford Borough Council - Environmental Health Department	September 2014	Variable
Sevenoaks District Council - Environmental Health Department	September 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	November 2021	

Agency & Hydrological	Version	Update Cycle
Pollution Incidents to Controlled Waters		
Environment Agency - Southern Region	December 1999	
Environment Agency - Anglian Region	September 1999	
Environment Agency - Thames Region	September 1999	
Prosecutions Relating to Authorised Processes		
Environment Agency - Anglian Region	July 2015	
Environment Agency - Southern Region	July 2015	
Environment Agency - Thames Region	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Anglian Region	March 2013	
Environment Agency - Southern Region	March 2013	
Environment Agency - Thames Region	March 2013	
Registered Radioactive Substances		
Environment Agency - Anglian Region	June 2016	As notified
Environment Agency - Southern Region	June 2016	As notified
Environment Agency - Thames Region	June 2016	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	April 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	April 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - Anglian Region - Central Area	January 2022	Quarterly
Environment Agency - Anglian Region - Eastern Area	January 2022	Quarterly
Environment Agency - South East Region - Kent & South London Area	January 2022	Quarterly
Environment Agency - South East Region - North East Thames Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent and East Sussex	January 2022	Quarterly
Environment Agency - Thames Region - North East Area	January 2022	Quarterly
Environment Agency - Thames Region - South East Area	January 2022	Quarterly
Water Abstractions		
Environment Agency - Anglian Region	January 2022	Quarterly
Environment Agency - Southern Region	January 2022	Quarterly
Environment Agency - Thames Region	January 2022	Quarterly
Water Industry Act Referrals		
Environment Agency - Anglian Region	October 2017	
Environment Agency - Southern Region	October 2017	
Environment Agency - Thames Region	October 2017	
Groundwater Vulnerability Map		
Environment Agency - Head Office	June 2018	As notified
Groundwater Vulnerability - Soluble Rock Risk		
Environment Agency - Head Office	June 2018	As notified
Bedrock Aquifer Designations		
Environment Agency - Head Office	January 2018	Annually
Superficial Aquifer Designations		
Environment Agency - Head Office	January 2018	Annually
Source Protection Zones		
Environment Agency - Head Office	May 2021	Bi-Annually
Extreme Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	November 2021	Quarterly
Flooding from Rivers or Sea without Defences		
Environment Agency - Head Office	November 2021	Quarterly

Agency & Hydrological	Version	Update Cycle
Areas Benefiting from Flood Defences Environment Agency - Head Office	September 2021	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	September 2021	Quarterly
Flood Defences Environment Agency - Head Office	September 2021	Quarterly
OS Water Network Lines Ordnance Survey	October 2021	Quarterly
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	Not Applicable
Historical Landfill Sites		
Environment Agency - Head Office	January 2022	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Anglian Region	January 2009	Not Applicable
Environment Agency - Southern Region	January 2009	Not Applicable
Environment Agency - Thames Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Anglian Region - Eastern Area	January 2022	Quarterly
Environment Agency - South East Region - Kent & South London Area	January 2022	Quarterly
Environment Agency - South East Region - North East Thames Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent and East Sussex	January 2022	Quarterly
Environment Agency - Thames Region - North East Area	January 2022	Quarterly
Environment Agency - Thames Region - South East Area	January 2022	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Anglian Region - Eastern Area	January 2022	Quarterly
Environment Agency - South East Region - Kent & South London Area	January 2022	Quarterly
Environment Agency - South East Region - North East Thames Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent Area	January 2022	Quarterly
Environment Agency - Southern Region - Kent and East Sussex	January 2022	Quarterly
Environment Agency - Thames Region - North East Area	January 2022	Quarterly
Environment Agency - Thames Region - South East Area	January 2022	Quarterly
Local Authority Landfill Coverage		
Dartford Borough Council - Environmental Health Department	February 2003	Not Applicable
Gravesham Borough Council	February 2003	Not Applicable
Kent County Council - Waste Management Group	February 2003	Not Applicable
London Borough of Bexley - Environmental Health Department	February 2003	Not Applicable
London Borough of Havering - Environmental Health Department	February 2003	Not Applicable
Sevenoaks District Council	February 2003	Not Applicable
Thurrock Borough Council - Environmental Health Department	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Dartford Borough Council - Environmental Health Department	October 2018	
Gravesham Borough Council	October 2018	
Kent County Council - Waste Management Group	October 2018	
London Borough of Bexley - Environmental Health Department	October 2018	
London Borough of Havering - Environmental Health Department	October 2018	
Sevenoaks District Council	October 2018	
Thurrock Borough Council - Environmental Health Department	October 2018	
Registered Landfill Sites		
Environment Agency - Anglian Region - Eastern Area	March 2006	Not Applicable
Environment Agency - Southern Region - Kent Area	March 2006	Not Applicable
Environment Agency - Southern Region - Kent and East Sussex	March 2006	Not Applicable
Environment Agency - Thames Region - North East Area	March 2006	Not Applicable
Environment Agency - Thames Region - South East Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Anglian Region - Eastern Area	April 2018	
Environment Agency - Southern Region - Kent Area	April 2018	
Environment Agency - Southern Region - Kent and East Sussex	April 2018	
Environment Agency - Thames Region - North East Area	April 2018	
Environment Agency - Thames Region - South East Area	April 2018	

Waste	Version	Update Cycle
Registered Waste Treatment or Disposal Sites		
Environment Agency - Anglian Region - Eastern Area	June 2015	
Environment Agency - Southern Region - Kent Area	June 2015	
Environment Agency - Southern Region - Kent and East Sussex	June 2015	
Environment Agency - Thames Region - North East Area	June 2015	
Environment Agency - Thames Region - South East Area	June 2015	
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2022	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Thurrock Borough Council - Development Control	December 2015	Variable
London Borough of Havering - Planning Department	February 2016	Variable
Sevenoaks District Council	February 2016	Variable
London Port Health Authority - Environmental Services	January 2008	Annual Rolling Update
Dartford Borough Council	January 2016	Variable
Kent County Council	January 2016	Variable
London Borough of Bexley - Development Control	January 2016	Variable
Gravesham Borough Council	October 2015	Variable
Planning Hazardous Substance Consents		
Thurrock Borough Council - Development Control	December 2015	Variable
London Borough of Havering - Planning Department	February 2016	Variable
Sevenoaks District Council	February 2016	Variable
London Port Health Authority - Environmental Services	January 2008	Annual Rolling Update
Dartford Borough Council	January 2016	Variable
Kent County Council	January 2016	Variable
London Borough of Bexley - Development Control	January 2016	Variable
Gravesham Borough Council	October 2015	Variable

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2021	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	Annually
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	January 2022	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2021	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Underground Electrical Cables National Grid	May 2021	Bi-Annually

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural England	February 2021	Bi-Annually
Areas of Adopted Green Belt		
Dartford Borough Council	October 2020	Quarterly
Gravesham Borough Council	October 2020	Quarterly
London Borough of Bexley - Development Control	October 2020	Quarterly
London Borough of Havering - Planning Department	October 2020	Quarterly
Sevenoaks District Council	October 2020	Quarterly
Thurrock Borough Council - Development Control	October 2020	Quarterly
Areas of Unadopted Green Belt		
Dartford Borough Council	October 2020	Quarterly
Gravesham Borough Council	October 2020	Quarterly
London Borough of Bexley - Development Control	October 2020	Quarterly
London Borough of Havering - Planning Department	October 2020	Quarterly
Sevenoaks District Council	October 2020	Quarterly
Thurrock Borough Council - Development Control	October 2020	Quarterly
Areas of Outstanding Natural Beauty		
Natural England	January 2021	Bi-Annually
Environmentally Sensitive Areas		
Natural England	January 2017	
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	February 2021	Bi-Annually
Marine Nature Reserves		
Natural England	July 2019	Bi-Annually
National Nature Reserves		
Natural England	January 2021	Bi-Annually
National Parks		
Natural England	February 2018	Bi-Annually
Nitrate Sensitive Areas		
Natural England	April 2016	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	
Environment Agency - Head Office	June 2017	Bi-Annually
Ramsar Sites		
Natural England	August 2020	Bi-Annually
Sites of Special Scientific Interest		
Natural England	February 2021	Bi-Annually
Special Areas of Conservation		
Natural England	July 2020	Bi-Annually
Special Protection Areas		
Natural England	February 2021	Bi-Annually

Data Suppliers

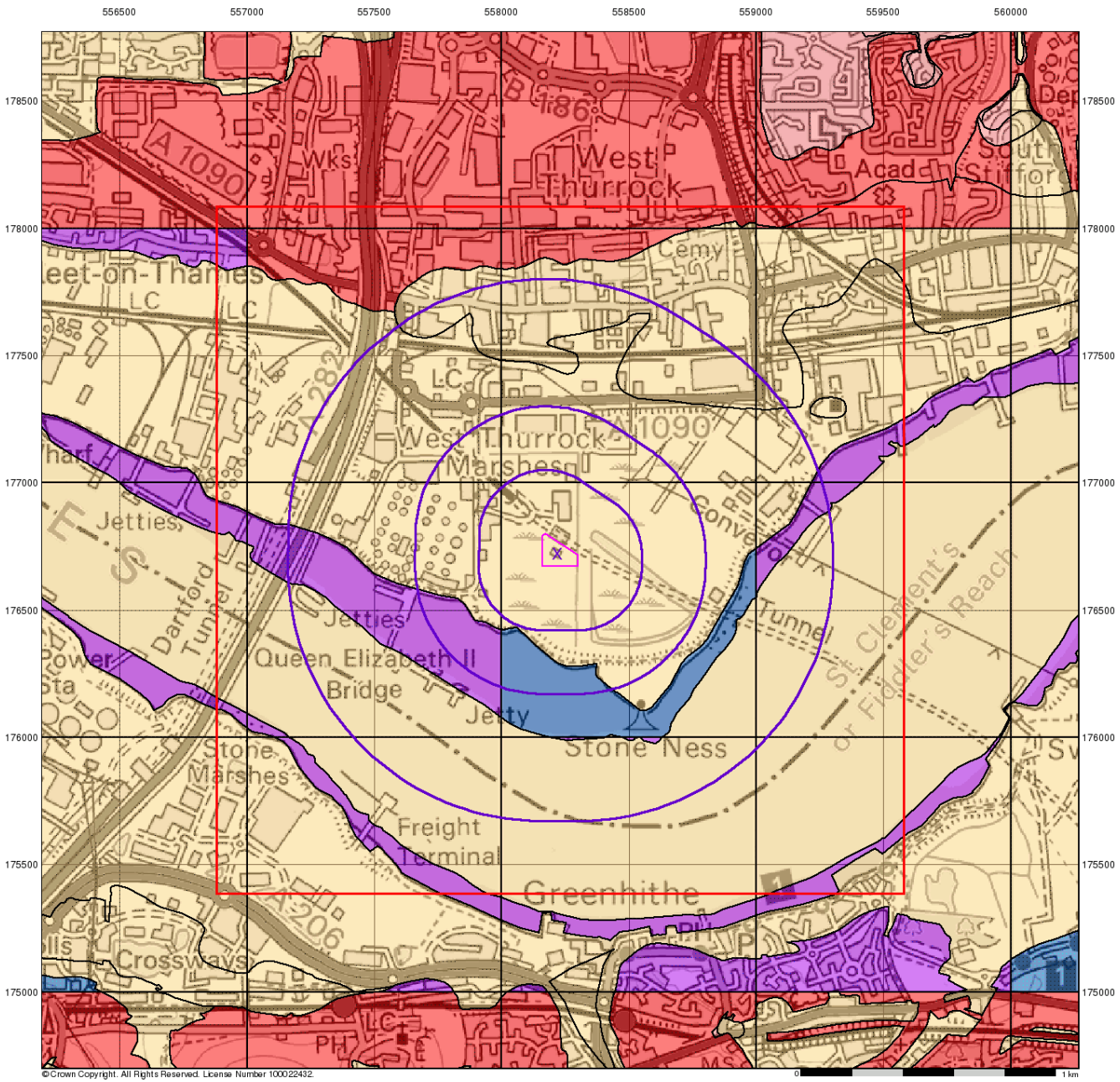
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Stantec UK Ltd	

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Thurrock Borough Council - Environmental Health Department** Civic Offices, New Road, Grays, Essex, RM17 6SL	Telephone: 01375 390000 Fax: 01375 652359 Website: www.thurrock.gov.uk
4	**Environment Agency - Head Office** Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
5	**Ordnance Survey** Adanac Drive, Southampton, Hampshire, SO16 0AS	Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk
6	**Dartford Borough Council - Environmental Health Department** Civic Centre, Home Gardens, Dartford, Kent, DA1 1DR	Telephone: 01322 343233 Fax: 01322 343963 Website: www.dartford.gov.uk
7	**Health and Safety Executive** 5S.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Website: www.hse.gov.uk
8	**Thurrock Borough Council - Development Control** Civic Offices, New Road, Grays, Essex, RM17 6SL	Telephone: 01375 390000 Fax: 01375 652359 Website: www.thurrock.gov.uk
9	**Stantec UK Ltd** Caversham Bridge House, Waterman Place, Reading, RG1 8DN	Telephone: 0118 950 0761 Email: pba.reading@stantec.com Website: www.stantec.com
10	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9966 Fax: 0844 844 9951 Email: helpdesk@landmark.co.uk Website: www.landmark.co.uk
11	**Natural England** County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



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LANDMARK INFORMATION GROUP

Groundwater Vulnerability

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

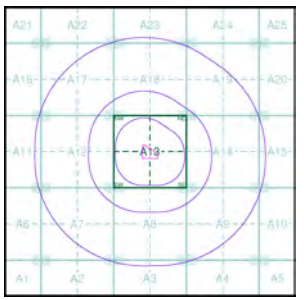
Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



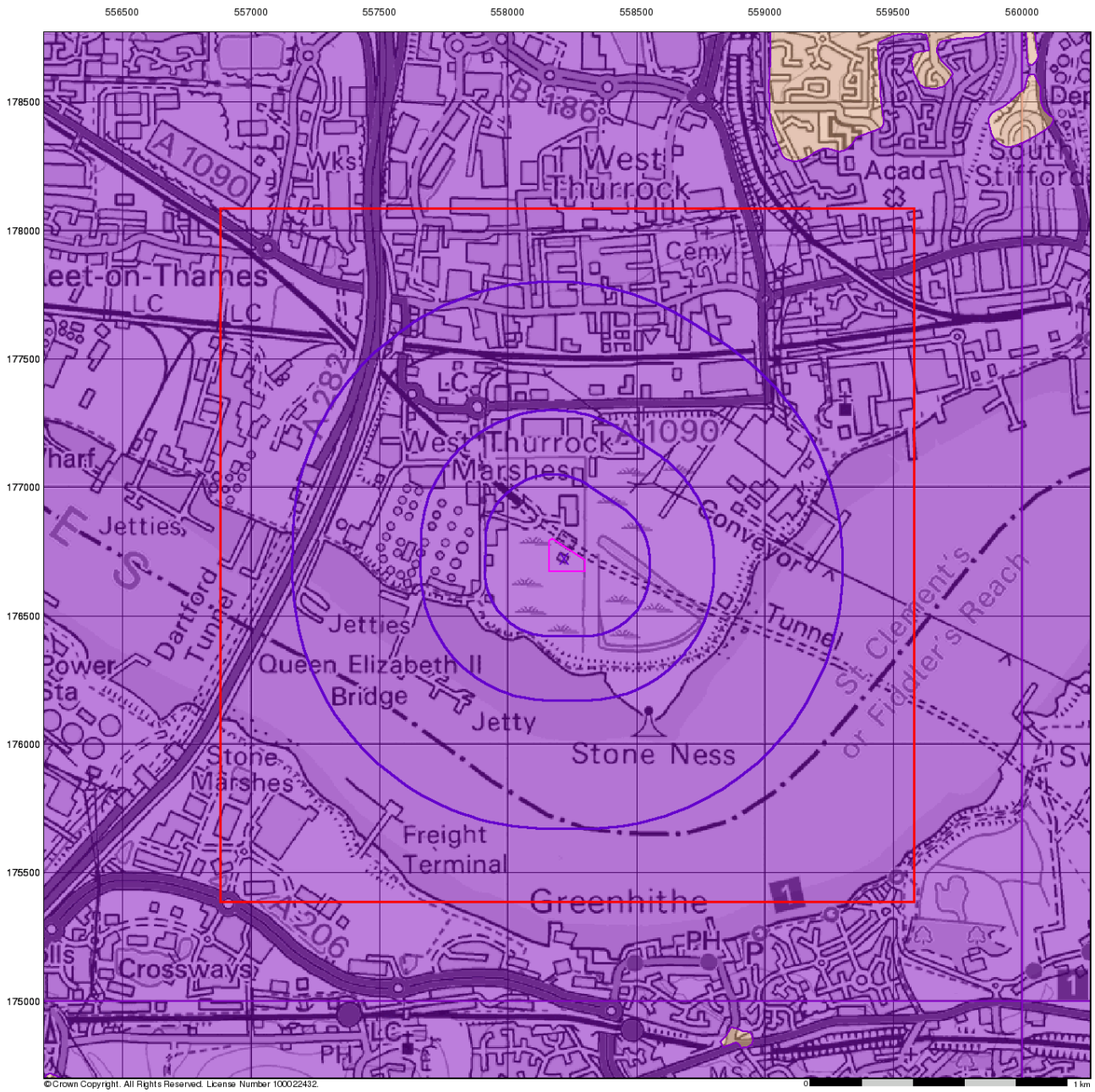
Order Details

Order Number:	291108793_1_1
Customer Ref:	5148
National Grid Reference:	558220, 176720
Slice:	A
Site Area (Ha):	1.28
Search Buffer (m):	1000

Site Details

Flexible Storage Solutions Ltd, Flexible House, Watson Close, GRAYS, RM20 3EF

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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LANDMARK INFORMATION GROUP

Bedrock Aquifer Designation

General

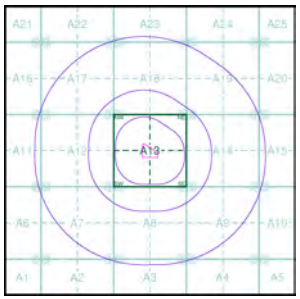
Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



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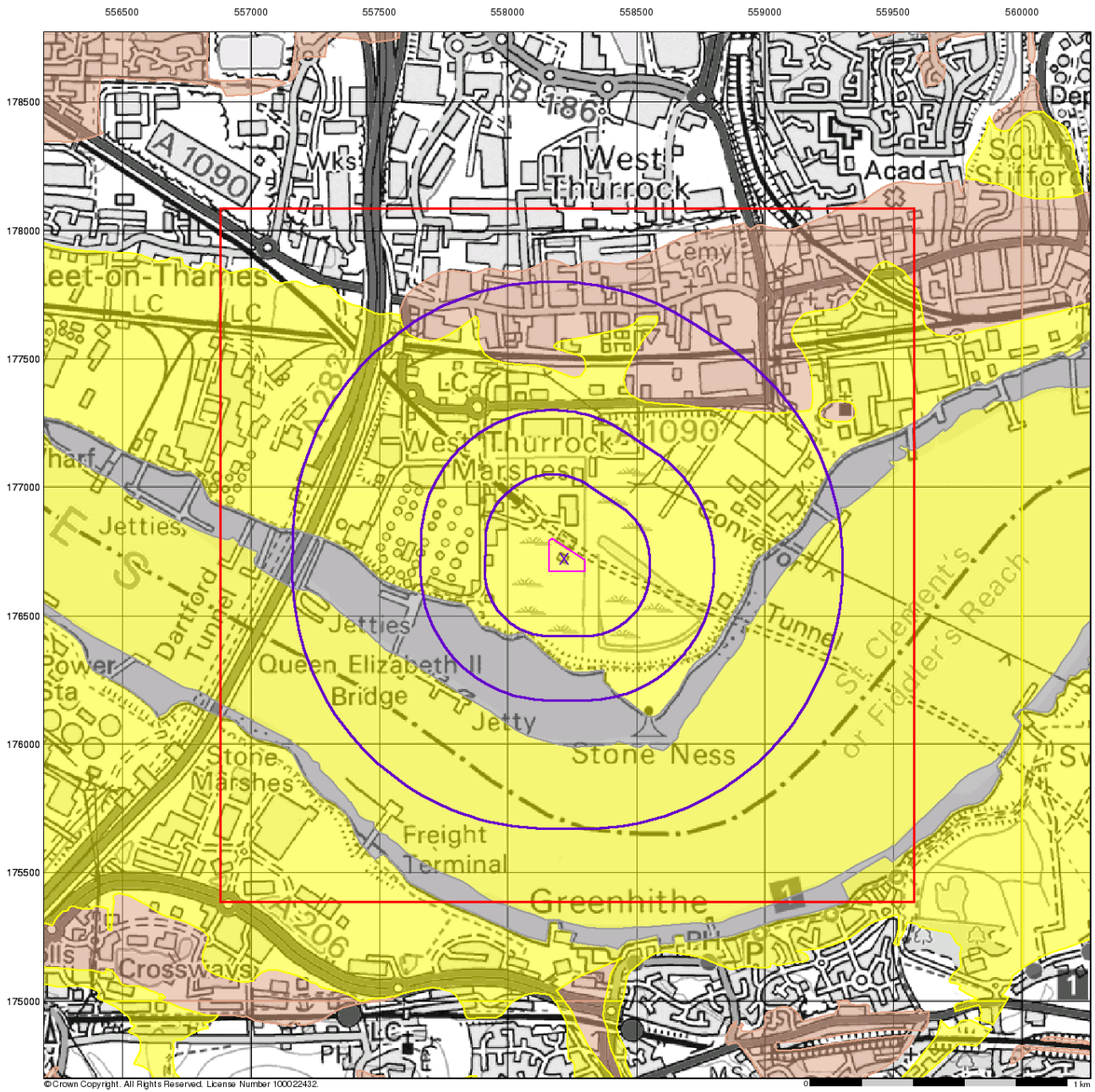

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Superficial Aquifer Designation

General

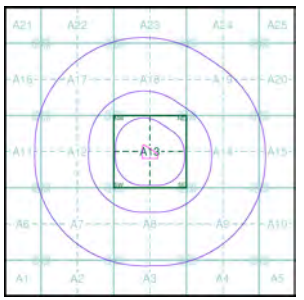
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A



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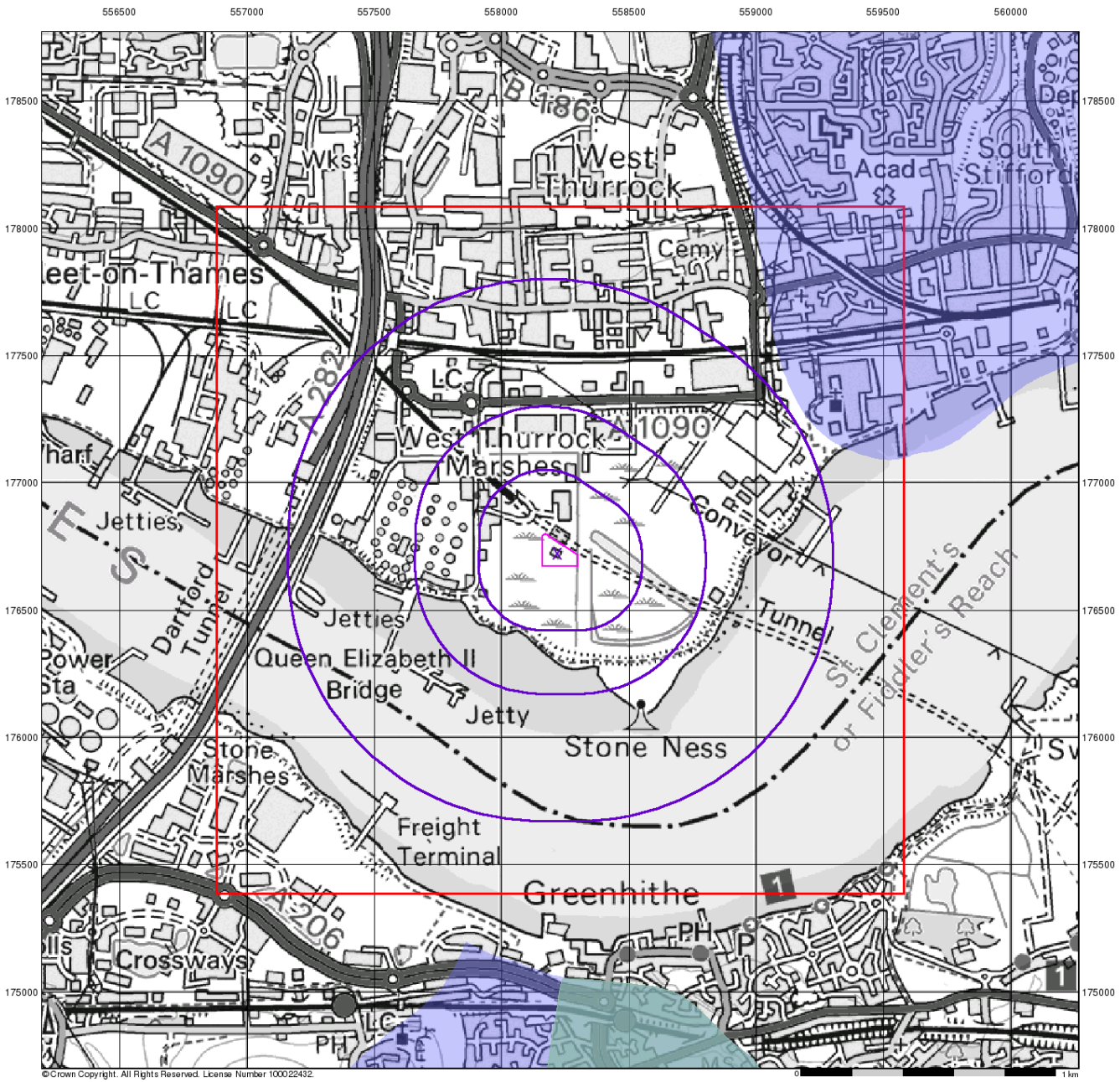

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LANDMARK INFORMATION GROUP

Source Protection Zones

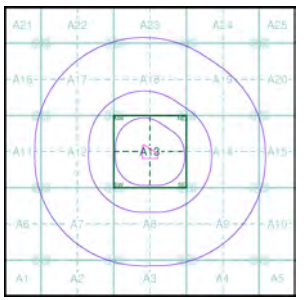
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)

Site Sensitivity Context Map - Slice A



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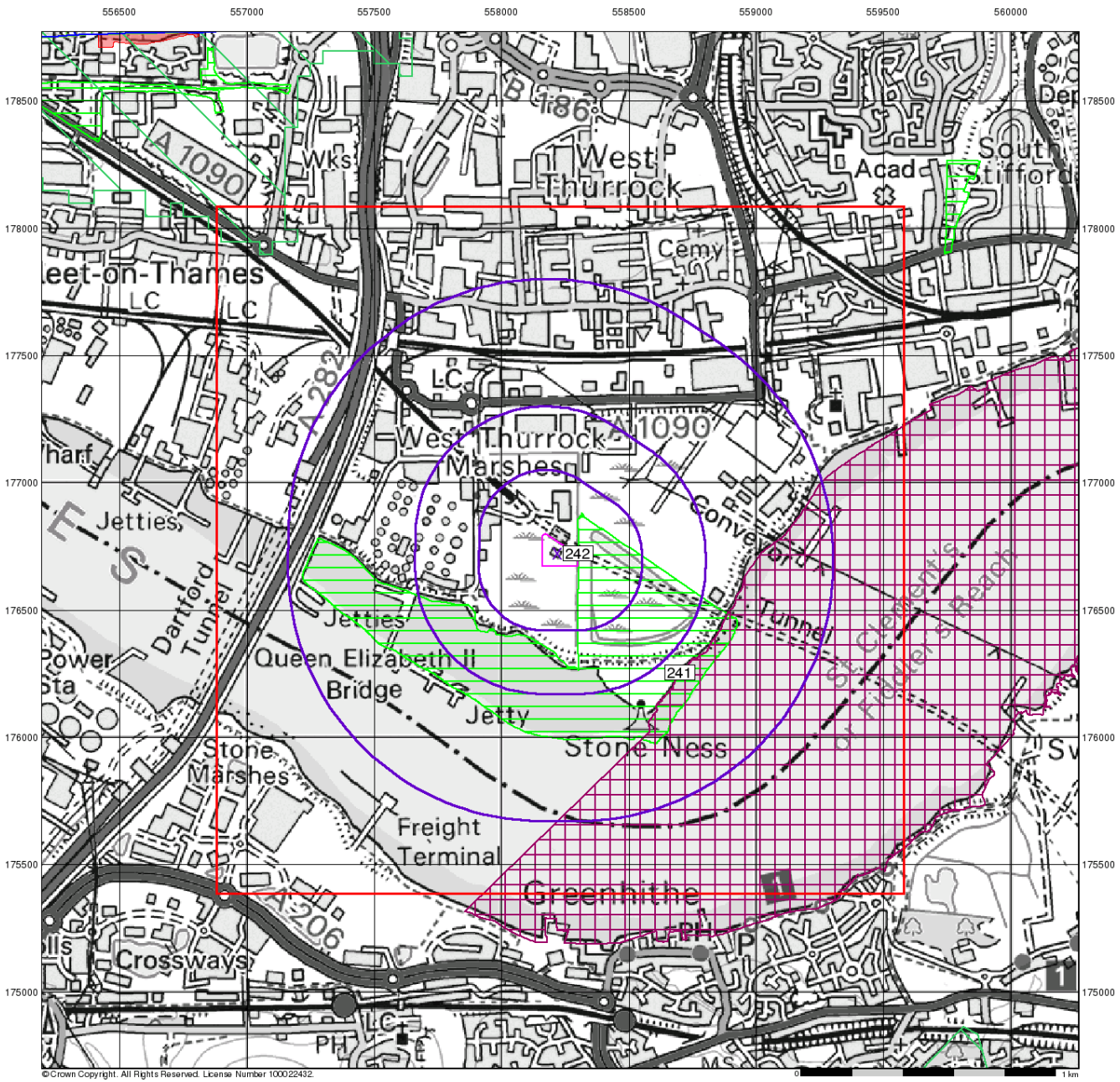

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Sensitive Land Uses

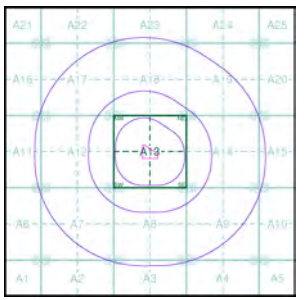
General

Specified Site | Specified Buffer(s) | Bearing Reference Point
Slice | Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A



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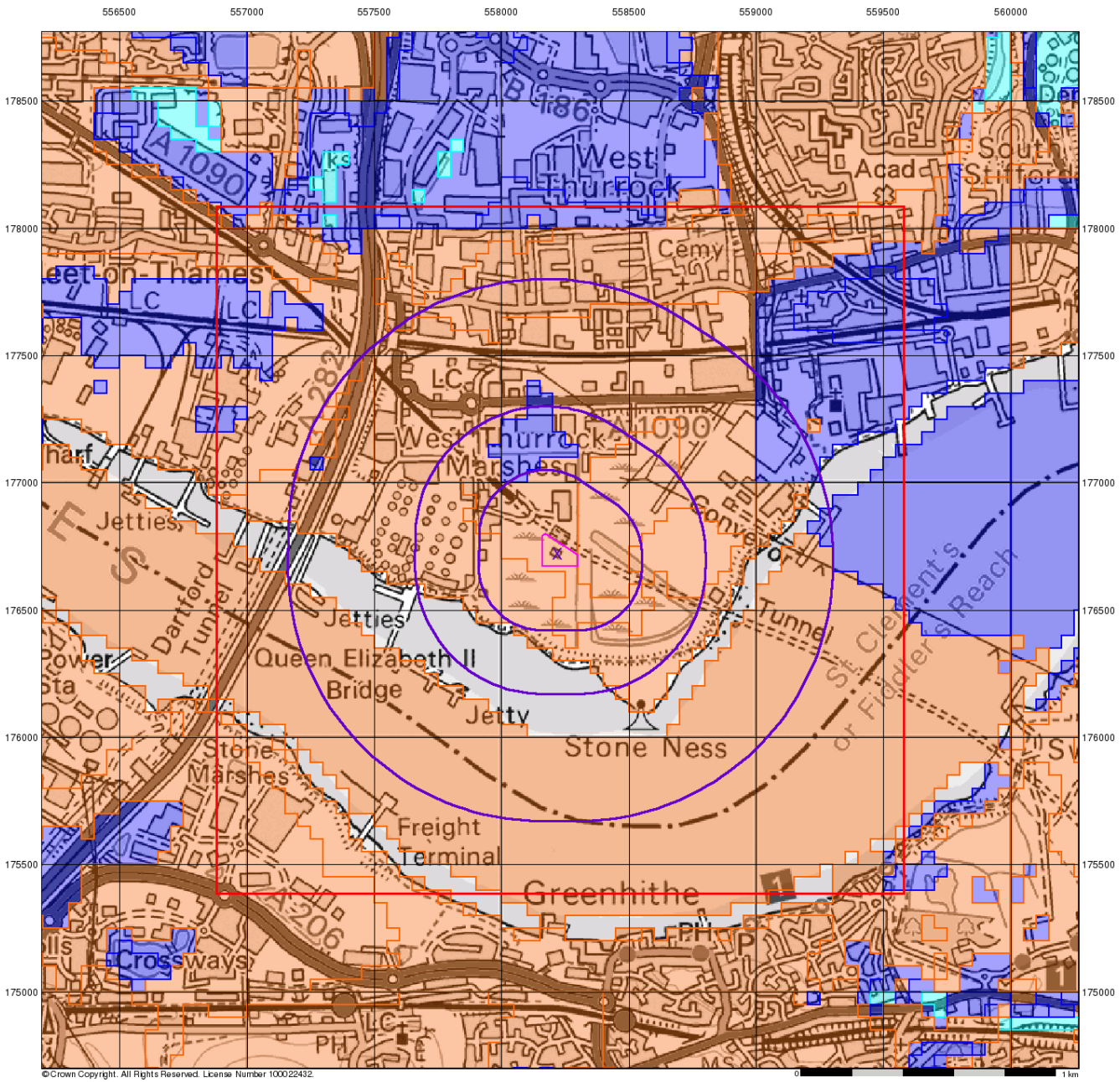

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BGS Flood GFS Data

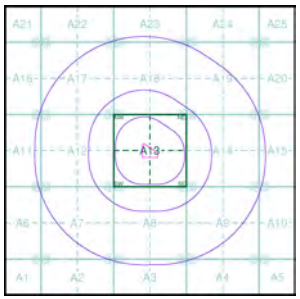
General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



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Site Details

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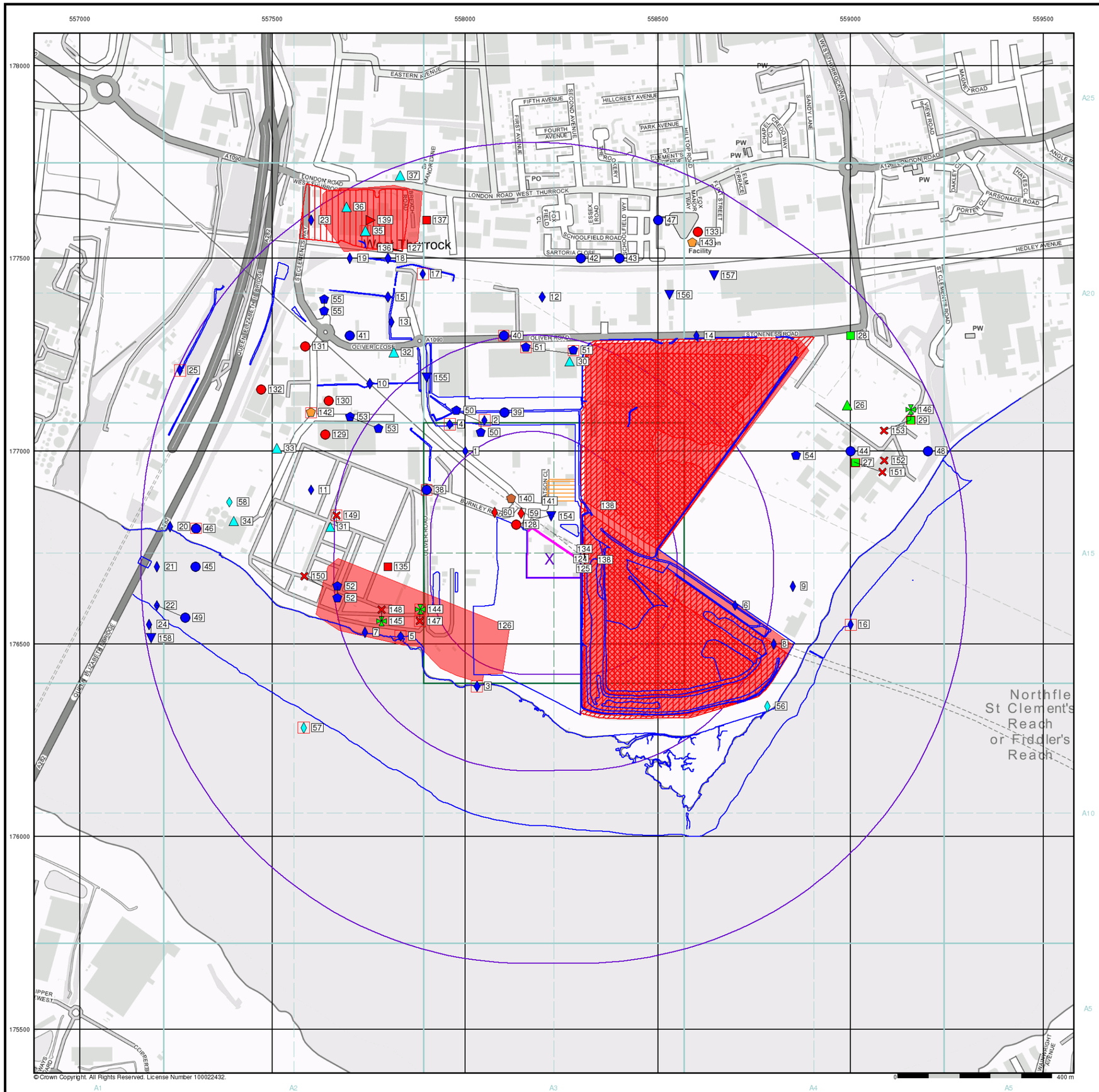

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General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

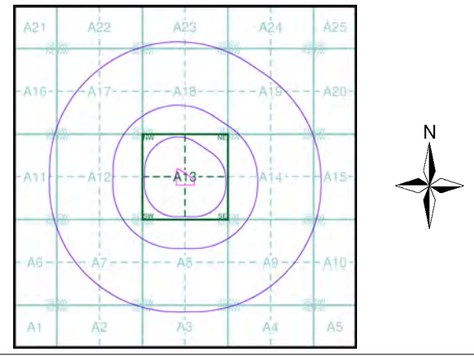
Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



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Site Details

Flexible Storage Solutions Ltd, Flexible House, Watson Close, GRAYS, RM20 3EF

Landmark INFORMATION GROUP

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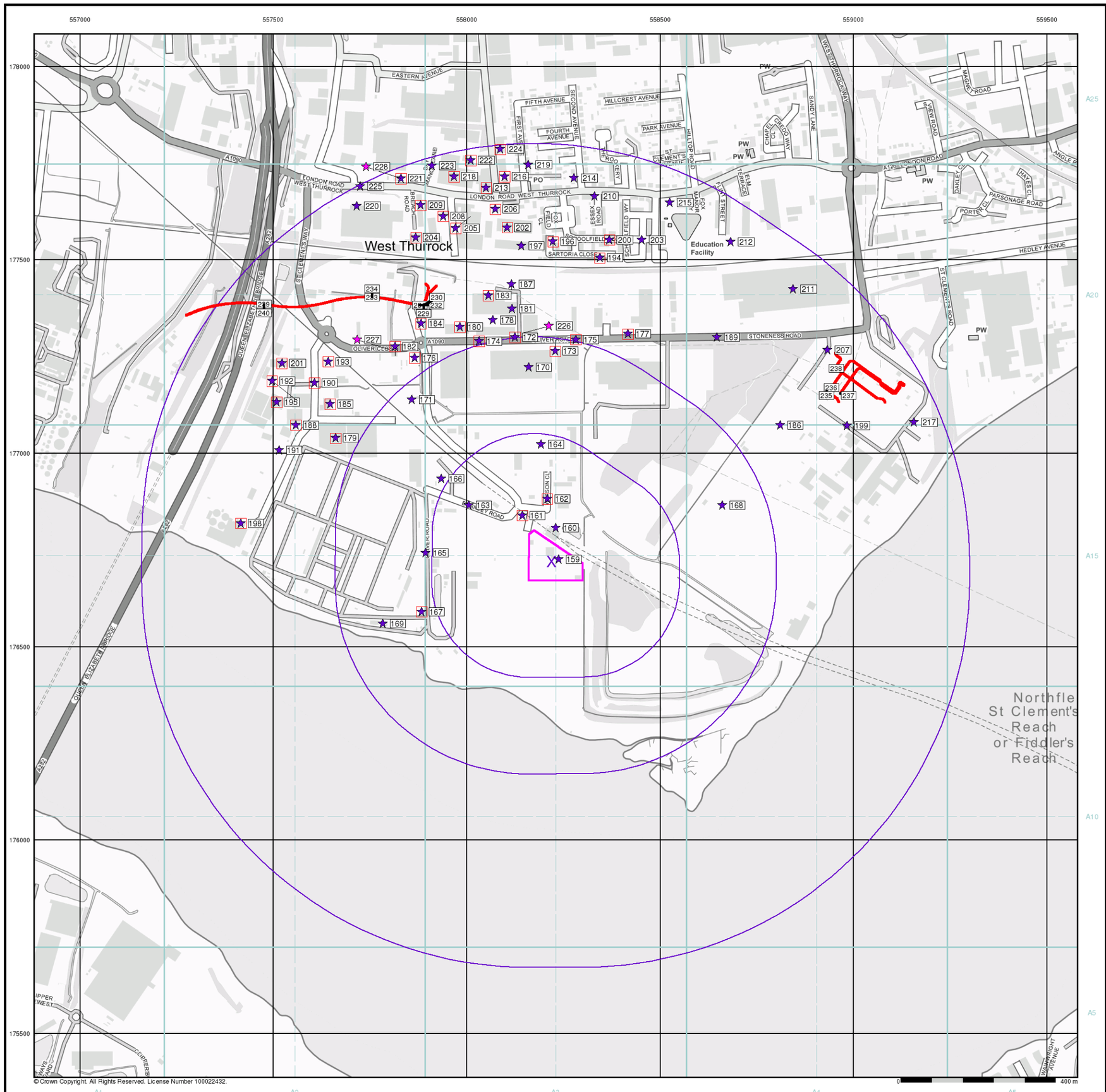

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Industrial Land Use Map

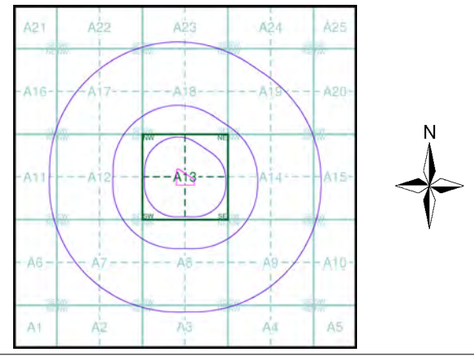
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

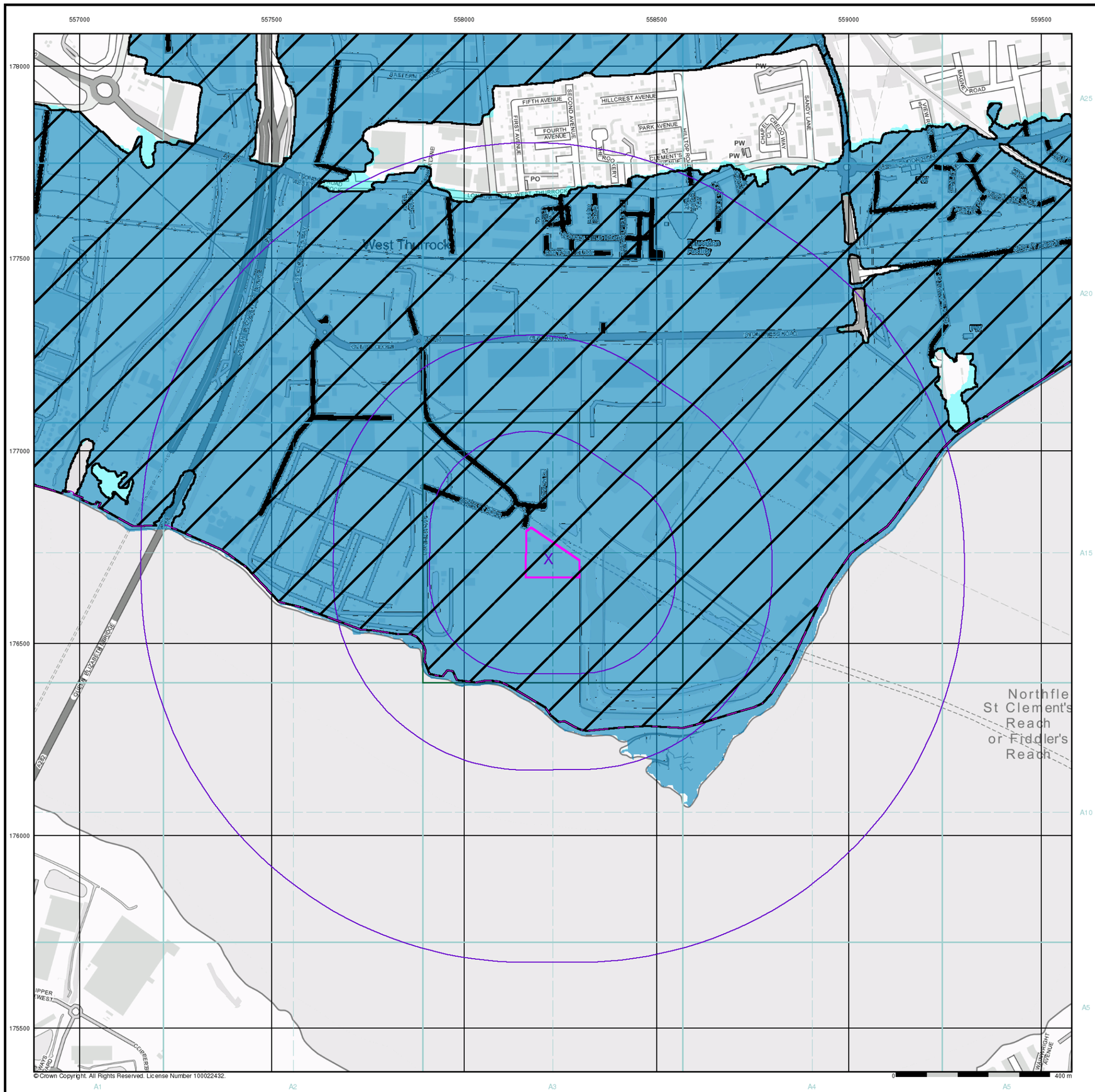
Order Number:	291108793_1_1
Customer Ref:	5148
National Grid Reference:	558220, 176720
Slice:	A
Site Area (Ha):	1.28
Search Buffer (m):	1000

Site Details

Flexible Storage Solutions Ltd, Flexible House, Watson Close, GRAYS, RM20 3EF

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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LANDMARK INFORMATION GROUP®

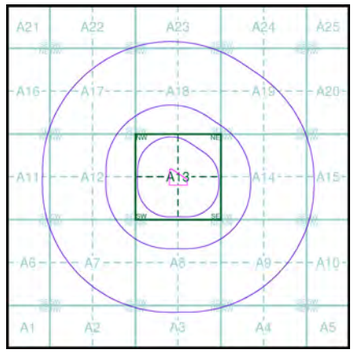
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

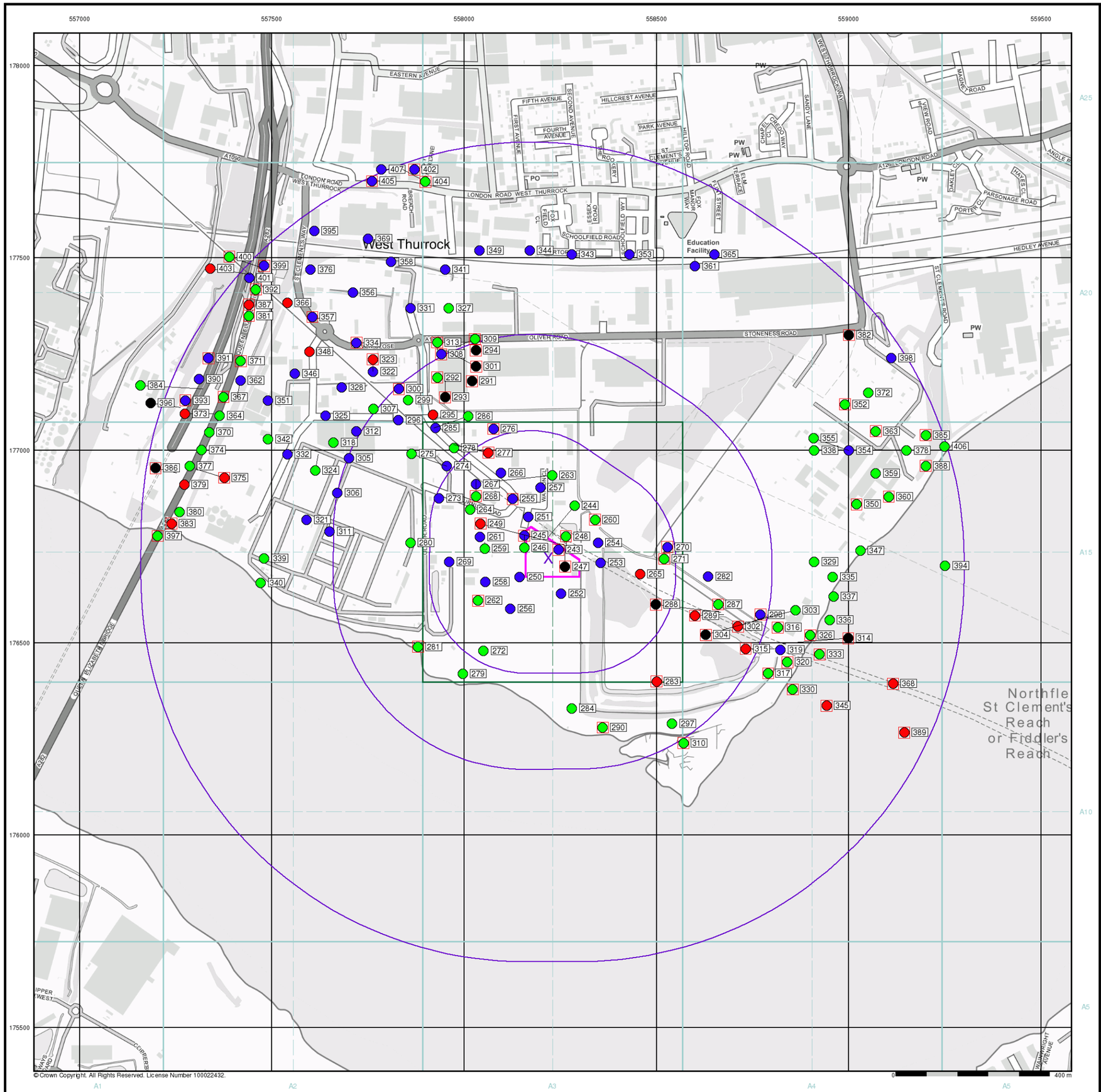
Order Number:	291108793_1_1
Customer Ref:	5148
National Grid Reference:	558220, 176720
Slice:	A
Site Area (Ha):	1.28
Search Buffer (m):	1000

Site Details

Flexible Storage Solutions Ltd, Flexible House, Watson Close, GRAYS, RM20 3EF

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Envirocheck®
LANDMARK INFORMATION GROUP®

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

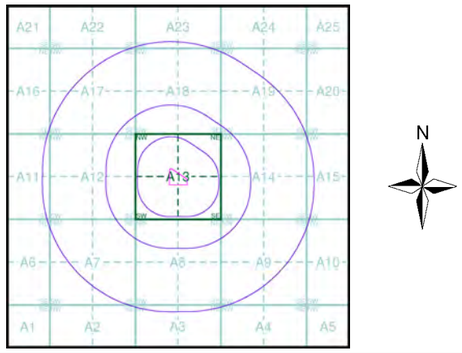
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



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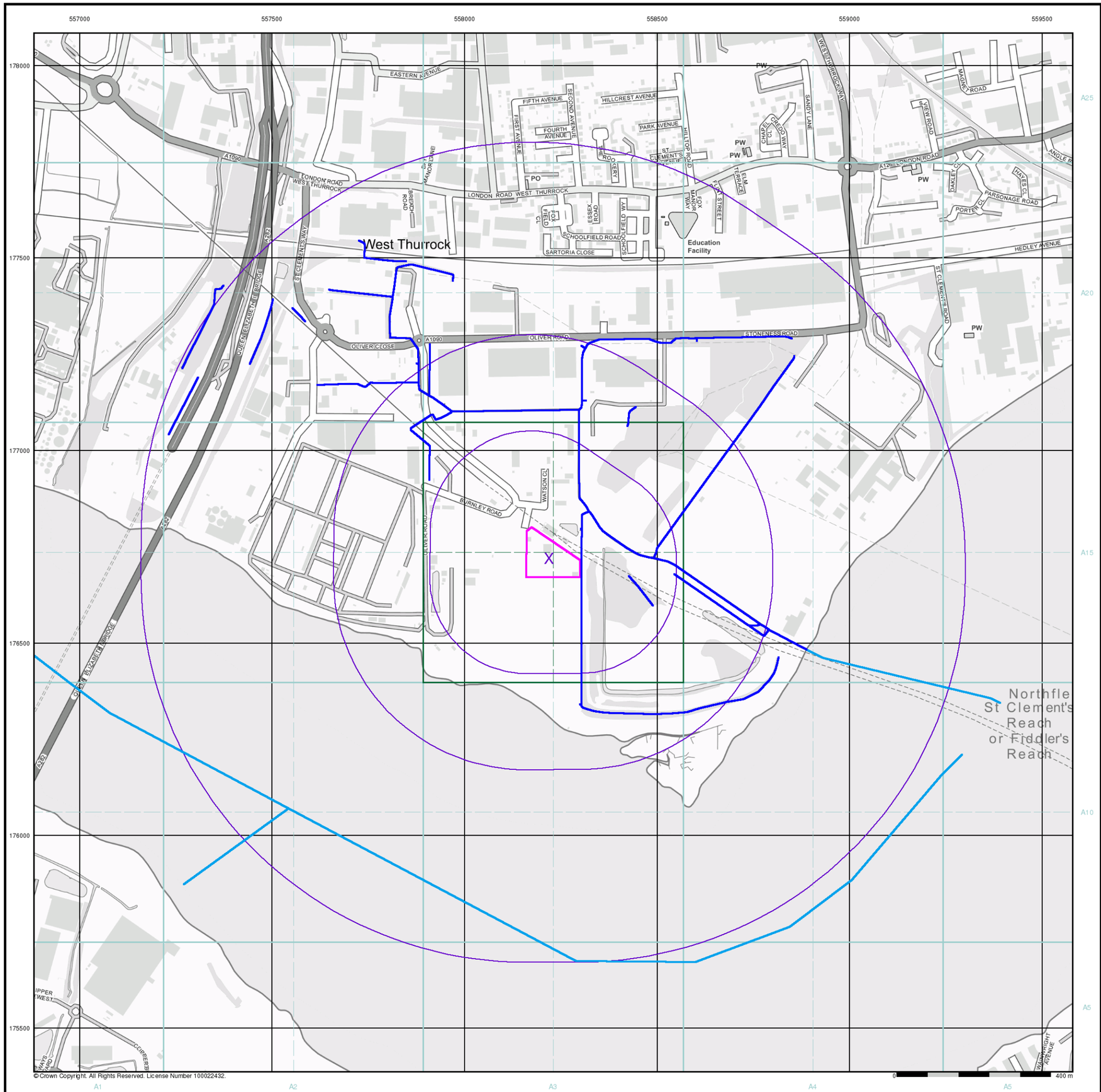

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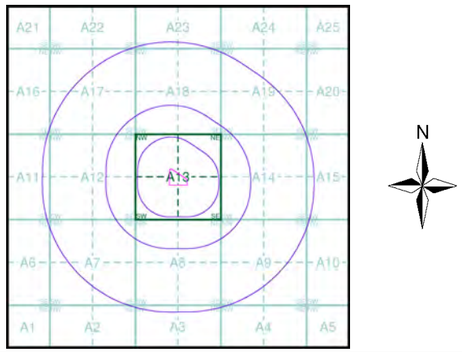
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

OS Water Network Data

- Canal
- Reservoir
- Foreshore
- Marsh
- Tidal River
- Inland River
- Drain
- Other
- Lake
- Transfer
- Lock Or Flight Of Locks
- Sea

OS Water Network Map - Slice A



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National Grid Reference:	558220, 176720
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APPENDIX 2

Phase II Site Investigation Report

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

West Thurrock, RM20 3EF

Tank and Container Storage Logistics Ltd.

Development at Riverside Industrial Park, West Thurrock

PHASE 2 GEOENVIRONMENTAL ASSESSMENT

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Document Reference: 5148-CAU-XX-XX-RP-O-0301.S1-P1

March 2023

Caulmert
engineering environmental planning

APPROVAL RECORD

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Client:	Tank and Container Storage Logistics Ltd.
Project Title:	Development at Riverside Industrial Park, West Thurrock
Document Title:	PHASE 2 GEOENVIRONMENTAL ASSESSMENT
Document Ref:	5148-CAU-XX-XX-RP-O-0301.S1-P1
Report Status:	Initial
Project Manager:	**Neil Arbon**
Caulmert Limited:	Glyndwr Innovations Ltd, St Asaph Business Park, St Asaph, LL17 0JD

Author	Cezary Salwa Geotechnical Engineer	**Date**	23/03/2023
Reviewer	David Kitching Associate Principal Engineer	**Date**	23/03/2023
Approved	David Kitching Associate Principal Engineer	**Date**	24/03/2023

Revision Log			
Revision	**Description of Change**	**Approved**	**Effective Date**

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PHASE 2 GEOENVIRONMENTAL ASSESSMENT

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Appendix 1 Southern Testing Factual Site Investigation Report

- *Appendix A* *Site Plans and Exploratory Hole Logs*
- *Appendix B* *Field Sampling and In-Situ Test Methods and Results*
- *Appendix C* *Geotechnical Laboratory Test Methods and Results*
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- *Appendix F* *Photographs*

Appendix 2 Indicative Cross Sections

Appendix 3 In-Situ and Laboratory Strength Test Results vs Depth

1.0 INTRODUCTION

1.1 Summary

1.1.1 Further to the recommendations outlined in Phase 1 Geo-Environmental Report (Ref: Caulmert 5148-CAU-XX-XX-RP-O-0300 , March 2022), Caulmert Ltd were commissioned by Tank and Container Storage Logistics Ltd ("the client") to undertake a Phase 2 Geoenvironmental Assessment to support a planning application and detail design for the redevelopment of a parcel of land located at Riverside Industrial Park, West Thurrock, Essex, RM20 3EF ("the site"). A site location plan is provided as Figure 1 and Figure 2 and an indicative development layout is presented Figure 3, see over.

1.1.2 The site covers an area of 1.28Ha and is currently used as an HGV depot and a storage facility. We understand the site is being considered for redevelopment as a HGV tanker cleaning facility, which will include the installation of an RDF incinerator, tank wash, steaming pods, chemical waste transfer station and office accommodation.

1.2 Limitations of this Study

1.2.1 This report is solely for the use of the Client and should not be relied upon by third parties without prior written consent from Caulmert.

1.2.2 Information used within this report has been gathered from data sets compiled by third party organisations and purchased on behalf of the Client. The validity and accuracy of this third-party information is outside the control of Caulmert.

1.2.3 Interpretation and recommendations contained within this report should not be assumed valid for adjacent areas of land or alternative land uses. They are based upon the proposed layout provided to Caulmert at the time of compiling this report.

1.3 Objectives of Report

1.3.1 The objective of this report is to complete an assessment of potential environmental and geotechnical liabilities associated with the proposed redevelopment of the site.

1.4 Previous Works

1.4.1 A desktop study was previously undertaken by Southwest Environmental Limited in the western part of the site (Ref: S15-229/DS, dated May 2015).

1.4.2 As part of this development Caulmert Ltd were commissioned by Tank and Container Storage Logistics Ltd to undertake a Phase 1 Geoenvironmental Appraisal of the site, March 2022 (Ref: 5148-CAU-XX-XX-RP-O-0300).

1.4.3 The salient points relevant to this report are discussed in Section 3, but the full abovementioned reports should be referred to for more detail.

1.5 Scope of Report

1.5.1 The scope of works consists of the following:

- An assessment of ground conditions given the site's planned development, its construction phase and the foundation requirements.
- Identification of any significant environmental or geotechnical constraints to the development of the site.
- Review and confirmation of ground conditions recorded previous reports.
- Formulation of a ground and groundwater model.
- Geotechnical assessment outlining recommendations for substructure design.
- Investigate potential contamination sources identified in previous reports.
- Updating the preliminary conceptual site model (CSM) identifying potential sources, pathways and receptors of contaminants from the previous Phase 1 Geoenvironmental Appraisal and current ground investigation data.
- Recommendations for further investigations (as necessary).

2.0 SITE DESCRIPTION AND LOCATION PLANS.

2.1.1 The site is located on the south-eastern edge of Riverside Industrial Park, approximately 1.2km south of West Thurrock and approximately 500m north of the River Thames. The site is centred at National Grid Reference: 558220, 176720.

2.1.2 The site is roughly triangular in shape and occupies an area of 1.28Ha. The site is accessed from the north from Watson Close. It currently comprises two areas of commercial land. The western section of the site comprises a lorry park, with associated offices, workshops, above ground fuel tanks and parking areas. The eastern and the southern sections of the site comprise a shipping containers storage facility with associated offices and car parking areas.

2.1.3 The boundaries of the site are defined by HS1 and an associated compound to the north and West Thurrock Marshes to the east, west and south. The wider area consists of a large oil storage depot to the west, chemical industry to the east, industrial commercial buildings and printers to the north and the River Thames to the south.

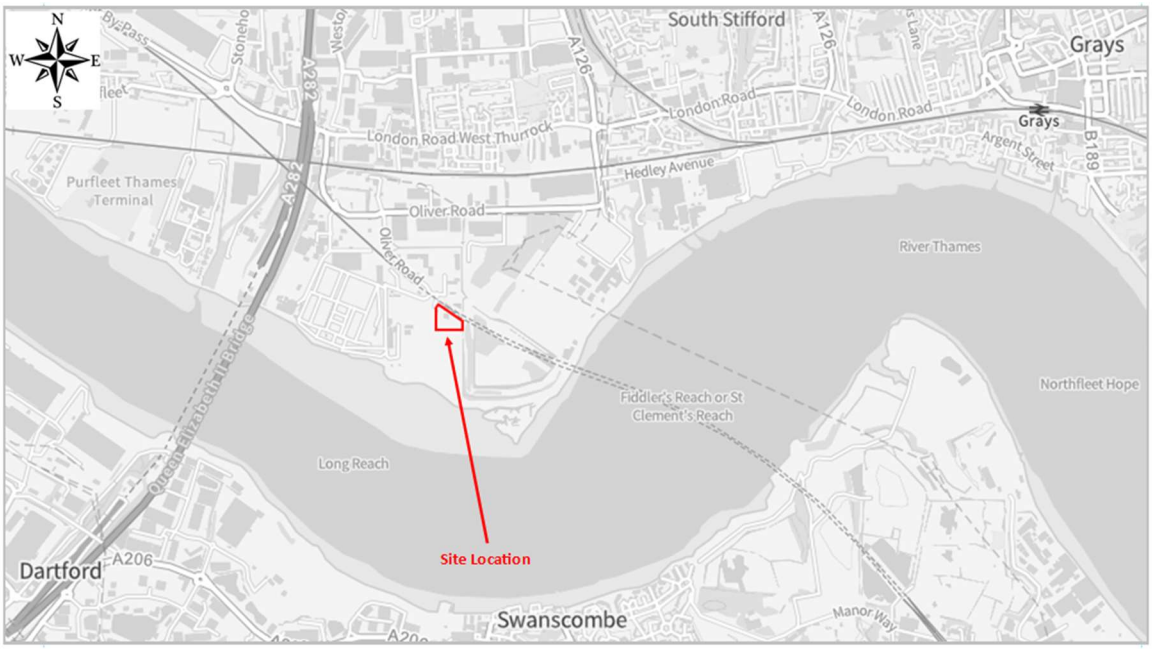


Figure 1: Site Location Plan

Figure 2: Site Location – satellite image.

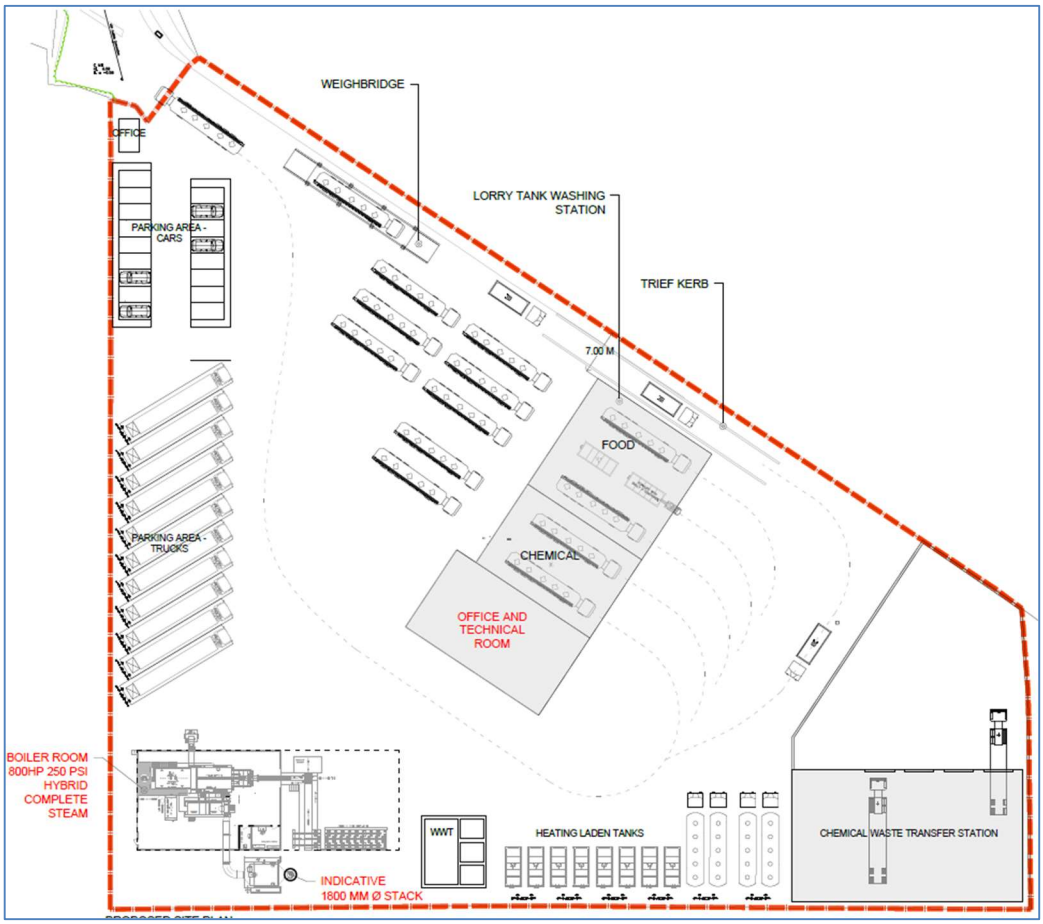


Figure 3: Proposed Site Layout – Option B.

Table 1: Site Details.

Site Details	
Address	Riverside Industrial Park, West Thurrock, Essex, RM20 3EF
National Grid Reference	Easting: 558220, Northing: 176720
Local Authority	Thurrock Council
Status	Commercial land
Site Area	1.28Ha
Current use	An HGV depot and a storage facility
Surrounding Area	East and South: undeveloped open land
	West: undeveloped open land, beyond which is a commercial/industrial area
	North: a HS1 control building and a series of commercial/industrial units
Topography	The site relatively flat and level. On a regional scale the area slopes gently towards the south and the River Thames.
Proposed Use	Redevelopment of a HGV tanker cleaning facility

2.2 Published Geology

2.2.1 The British Geological Survey (BGS) online geological maps (1:50,000) indicates that the site is directly underlain by Made Ground where pre-existing land surface has been raised through artificial deposits. These Made Ground deposits are underlain by Alluvium consisting of soft to firm clays, silts and sands with compressible silty clay and peats. A stronger, desiccated surface zone may be present.

2.2.2 The Alluvium is underlain by the Taplow Gravel Member comprising sand and gravel, locally with lenses of silt, clay, or peat and generally rests with a sharp base on bedrock.

2.2.3 The bedrock geology is that of the Turonian Age to Campanian Age, Lewes Nodular Chalk Formation, Seaford Chalk Formation and the Newhaven Chalk Formation (undifferentiated).

2.2.4 Borehole data is available via the BGS 'GeoIndex' viewer. The relevant borehole data from the surrounding area is summarised in Table 2 below.

Table 2: Historical BGS Borehole Data.

Borehole Ref	Distance from site (m. approx.)	Geology
TQ57NE1167	<10m to the northeast	**0-1.1m**- MADE GROUND gravel/sand/silt containing ash, clinker and brick. **1.5-3.6m**- soft CLAY alluvium. **3.6-6.11m**- PEAT
TQ57NE1303	<10m to the northeast	**0-1.5m**- MADE GROUND gravel/sand/cobbles containing fuel ash, brick, and concrete. **1.5-3.0m** -soft CLAY alluvium. **3.0-6.4m**-PEAT and soft clayey Peat. **6.4-10.6m**- very soft organic CLAY. **10.6-16.4m**- medium dense gravelly SAND **16.4-25.0m**-Chalk.
TQ57NE1290	20m to the north	**0-1.7m**- MADE GROUND sandy silt cobbles containing brick, and concrete. **1.7-2.45m** -soft CLAY alluvium. **2.45-6.7m**-PEAT and soft CLAY. **6.7-10.1m**- very soft CLAY
TQ57NE1166	40m south	**0-1.1m**- MADE GROUND clay with wood, metal, brick and sheeting.

3.0 PREVIOUS WORKS

3.1 A desktop study by Southwest Environmental Limited

3.1.1 A desktop study was previously undertaken by Southwest Environmental Limited in the western part of the site which was GB Oils Site at the time (Ref: S15-229/DS, dated May 2015).

3.1.2 The desk study concludes that:

- There is a high potential for compressive ground stability.
- Current and future site users would unlikely be impacted by ground quality on site, the impermeable surfacing greatly reduces potential exposure from direct pathways.
- Buildings on site are modular and so indirect pathways such as ground gas are not likely to impact on occupants, provided that drainage is in good order.
- There were a number of small industrial units on site for a period of years and the site appeared to have various stockpiles.
- There is imported fill on site to presumably raise ground levels, the nature of this fill is unknown.

3.2 Previous Phase 1 Geo-Environmental Report (Caulmert)

3.2.1 As part of this development a desk study was previously undertaken by Caulmert (report number 5148-CAU-XX-XX-RP-O-0300) dated March 2022. The findings of the desk study are summarised below, but the full report should be referred for more detail.

- The site history is summarised below:
    - The map extract dated 1867 shows the site to be within a managed wetland area. The site and wider area remain as marshland up until the 1977.
    - In 1987 the site has been developed and split into 2 sections. The eastern section contains a small building.
    - The 1992 map shows the site to be split into two sections the east section contains three buildings labelled ‘works’ and the western section contains multiple buildings which are unnamed.
    - The 1993 map extract has labelled the site buildings as being ‘works’.
    - By the 2022 the channel tunnel rail link had been constructed which runs underground approximately 10m north of the northern site boundary.
- Potentially contaminated Made Ground associated with land raising and development of the site poses potential risk within the site boundary to soils, groundwater, and surface waters.
- Potentially contamination associated with site spillages pose potential risk within the site boundary to soils, groundwater, and surface waters.
- Potentially contamination associated with surrounding industrial land uses pose a potential risk within the site boundary to soils and groundwater beneath the site.
- Historic landfill sites (within 30m of site boundary) pose a risk within the site boundary in terms of gas migration and potential contaminated leachate.
- The superficial deposits have been classified as a ‘High Vulnerability Secondary Aquifer’ and the chalk bedrock has been classified as a Principal Aquifer of high vulnerability, which have been stated by the Environment Agency as being “areas able to easily transmit pollution to groundwater.

- The site is in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). No radon protective measures are necessary in the construction of new dwellings or extensions.
- The site is likely to be underlain by a thick sequence of week, compressible silts, clays, organic clays and peats. It is therefore anticipated that shallow standard foundations are unlikely to be suitable for all but the lightest of structures and piled foundations or ground improvement techniques are likely to be required for new structures.
- In order to make a quantitative assessment of the potential risks and possible remedial measures, the Desk Study recommended that a Phase 2 Investigation is carried out in accordance with BS 10175: 2011+A2:2017 and combined with a geotechnical investigation in accordance with BS 5930:2015+A1:2020 to assist with the proposed redevelopment design with the objective to determine the following:
    - prove geological succession, presence, depth and thickness of any Made Ground and depth to bedrock,
    - determine Ground Gas concentrations and flow rates to allow appropriate protection measures to be assessed and incorporated into any sub-structural designs,
    - determine Groundwater levels and groundwater regime,
    - determine indicative geotechnical parameters required for design purposes.

3.2.2 The Stage 1 Preliminary UXO Risk Assessment by Brimstone (ref. PRA-22-1701) dated 10.02.2022 is included in Appendix 2 of the Phase 1 Geo-Environmental Report by Caulmert.

3.2.3 The Brimstone report concludes that:

- Although West Thurrock was never the subject of a large-scale concentrated air raid, it did experience numerous small and medium-scale attacks, largely due to its vulnerable position close to Luftwaffe flight paths in and out of London. Furthermore, an identified target, Tilbury Docks, was situated approximately 4km east. Consequently, the district experienced an elevated bombing density.
- As well as targeted raids, the Site was also likely vulnerable to 'tip and run' raids, when bomber crews jettisoned any remaining bombs over targets of opportunity, such as railway infrastructure to the east of the Site. NB: such incidents were commonplace throughout south-east England.
- Due to the ground cover on Site, any UXB strike could have easily occurred unobserved and remained undetected, possibly immediately becoming obscured within marshland. This ground cover also indicates that the site would not have been frequently accessed.
- As deep intrusions are planned, the project could potentially be exposed to encountering a large HE UXB.
- No evidence of significant military activity specifically on site has been found, however, the local area was heavily fortified with anti-invasion defences.
- At this stage, the possibility of anti-invasion defence measures or training exercises affecting the Site cannot be ruled out.
- It is quite possible that an unexploded British AA shell struck the Site during WWII and penetrated to a shallow depth. Any such UXO incident could have been overlooked and remained in-situ, lost in marshy conditions.

3.2.4 The Brimstone report states a Stage 2 Detailed Risk Assessment is recommended to elucidate the risk to the proposed works.

4.0 SITE WORKS

4.1 General

4.1.1 The site works were carried out by Southern Testing Ltd following the procedures based on BS 5930:2015+A1:2020 – Code of Practice for Site Investigations and BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites. The soils and rocks encountered have been described in accordance with BS5930:2015+A1:2020 and BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018.

4.1.2 The site works were undertaken by Southern Testing Limited on between the 21 November 2022 and the 8 December 2022.

4.1.3 The Factual Site Investigation Report, ref: J15309 Southern Testing Ltd, is presented in Appendix 1.

4.1.4 A total of thirteen exploratory holes were formed at the site, inclusive of nine continuous tube sample boreholes and four cable percussion boreholes. Exploratory holes were located to provide general site coverage and in proximity of proposed structures where utilities and site access allowed.

4.1.5 An exploratory hole location plan and the logs by Southern Testing Ltd are provided in Appendix A of the Factual Site Investigation Report by Southern Testing (Appendix 1 of this report).

4.2 Methodology

4.2.1 Prior to commencement of the intrusive investigative works, the available service drawings were consulted to check for the presence of buried services at the proposed exploratory hole locations.

4.2.2 An Unexploded Ordnance (UXO) risk assessment was carried out by Brimstone Site Investigation Ltd. The assessment concluded that UXO posed a moderate risk to the proposed works. During the course of the site works an EOD (Explosive Ordnance Disposal) engineer was in attendance for all drilling activities.

4.2.3 Prior to breaking ground at each exploratory hole location, the location was scanned using a CAT and Genny by a suitably trained engineer (Southern Testing Ltd).

4.2.4 The continuous tube sample boreholes, WLS01 to WLS09, were put down using a Premier Compact rig to maximum depths of between 1.6mbgl (below ground level) and 5mbgl. Boreholes were advanced using a plastic lined steel tube sampling system, driven into the ground by a top drive percussive hammer. A near continuous 87mm – 67mm diameter core sample was recovered of the sampled materials for future examination and sub-sampling.

4.2.5 Environmental samples were taken from depths between 0.2mbgl and 0.3mbgl down to depths of between 1m and 2m, followed by small disturbed samples down to the base of shallow boreholes for future laboratory inspection and testing. Standard penetration tests (SPTs) were taken at 1.0m intervals down to depths between 1mbgl and 5mbgl.

4.2.6 On completion of the boring, the shallow boreholes WLS04, WLS05, WLS07, WLS08 and WLS09 were utilised for the installation of a 50mm diameter slotted uPVC standpipe from depths of between 1.5m and 4m up to between 0.5m and 1m below existing ground level. From depths of between 0.5m and 1m up to ground level a plain pipe was added. The slotted section of the standpipe was surrounded with pea gravel, while expansive bentonite clay was added around the plain pipe and below the slotted section to seal the borehole. The standpipe was finished with a stopcock cover, which was then concreted flush with ground level.

4.2.7 Boreholes BH01 to BH04 were drilled utilising a standard cable percussion rig, at a diameter of 200mm down to a depth of 15mbgl, and at a diameter of 150mm down to a maximum depth of 24mbgl in BH01, BH02, BH03, and down to 20mbgl in BH03. Metal casing was extended to the base of the boreholes, to avoid the collapse of the loose deposits within the upper part of the boreholes and seal out groundwater inflows. Small disturbed samples (D), bulk samples (B) and undisturbed tube samples (U100s) were collected at regular intervals throughout the borehole for future laboratory inspection and testing. Environmental samples (ES) were taken down to depths of between 1.5mbgl and 2.8mbgl. Standard penetration tests (SPTs) were taken at regular intervals down to the base of the boreholes at depth of 20mbgl and 24mbgl.

4.2.8 On completion of the boring each borehole was utilised for the installation of a 50mm diameter slotted uPVC standpipe from the base of the boreholes (20mbgl and 24mbgl) up to depths between 8mbgl and 11mbgl m below existing ground level. From depths of between 8mbgl and 11mbgl up to ground level a plain pipe was added. The slotted section of the standpipe was surrounded with pea gravel, while expansive bentonite clay was added around the plain pipe and below the slotted section to seal the borehole. The standpipe was finished with a stopcock cover, which was then concreted flush with ground level.

4.2.9 Three return groundwater and ground gas monitoring visits were undertaken between December 2022 and January 2023, with ground water samples recovered from the deeper cable percussive boreholes, during the second visit.

4.3 Laboratory Analysis

4.3.1 Geotechnical laboratory testing of soils was carried out by Southern Testing Ltd and Chemical laboratory testing of the soils and water was carried out by i2 Analytical (mercury content in water samples tested by DETS), laboratories accredited by UKAS, working where possible to MCERTS and / or ISO 17025 accreditation. Chain of custody documentation was completed and is retained by Caulmert. Summaries of locations, strata and scheduling for soil chemical analyses, and soil geotechnical testing are provided below:

Table 3: Summary of Soil Chemical Testing.

Strata	Sample ref	Depth (m bgl)	Laboratory testing
Made Ground	BH01ES	0.20	Asbestos
	BH01ES	1.50	Metals/OM/PAH/TPH
	BH02ES	0.30	Asbestos/Metals/OM/PAH/TPH
	BH02ES	1.00	Metals/OM/PAH/TPH
	BH03ES	0.30	Asbestos
	BH04ES	0.25	Asbestos/Metals/OM/PAH/TPH
	WLS01ES	0.20	Asbestos/Metals/OM/PAH/TPH
	WLS01ES	0.60	Metals/OM/PAH
	WLS02ES	0.30	Asbestos
	WLS02ES	0.70	Asbestos/Metals/OM/PAH/TPH
	WLS02ES	1.20	Metals/OM/PAH
	WLS03ES	0.40	Asbestos/Metals/OM/PAH/TPH
	WLS03ES	1.50	Metals/OM/PAH/TPH
	WLS04ES	0.30	Asbestos/Metals/OM/PAH/TPH
	WLS04ES	0.70	Metals/OM/PAH
	WLS05ES	0.30	Asbestos/Metals/OM/PAH/TPH
	WLS05ES	1.20	Metals/OM/PAH
	WLS06ES	0.20	Asbestos
	WLS06ES	0.80	Asbestos/Metals/OM/PAH/TPH
	WLS07ES	0.30	Asbestos/Metals/OM/PAH/TPH
	WLS07ES	0.90	Asbestos/Metals/OM/PAH
	WLS08ES	0.20	Asbestos
	WLS08ES	0.80	Metals/OM/PAH/TPH
	WLS08ES	0.40	Asbestos/Metals/OM/PAH/TPH
Alluvium - clay	BH03ES	1.50	Asbestos/Metals/OM/PAH/TPH

Asbestos – asbestos screen

Metals – general metals/inorganics suite

OC – soil organic matter

PAH – soil PAHs suite

TPH – soil TPHs suite

4.3.2 Four groundwater samples (BH01-BH04) were recovered and scheduled for General Water Suite, Aluminium, Mercury, Nitrate, Water Hardness, BOD& COD, Priority PAH's Suite, TPH Water Suite, Phenol, VOC's and SVOC's.

Table 4: Summary of Soil Geotechnical Testing.

Strata	Sample ref	Depth (m bgl)	Laboratory testing
Alluvium - clay	BH01B	5.00	PSD/Plasticity Index/MC
	BH01U	7.50	Consolidation Test / Hand Vane
	BH02B	1.30	pH&SO_4
	BH02B	2.10	PSD/Plasticity Index/MC/OC
	BH02U	2.50	Consolidation Test / Hand Vane
	BH02U	4.50	UU Triaxial / Hand Vane
	BH02D	5.00	Plasticity Index/MC
	BH02U	7.50	Hand Vane
	BH02D	8.00	Plasticity Index/MC
	BH03B	1.50	pH&SO_4
	BH03B	7.00	Plasticity Index/MC
	WLS01D	1.50	PSD/Plasticity Index/MC/OC
	WLS01D	2.00	pH&SO_4
	WLS02D	1.50	pH&SO_4
	WLS02D	2.00	PSD/Plasticity Index/MC/OC
	WLS03D	2.00	pH&SO_4
	WLS03D	2.70	OC
	WLS04D	1.5	pH&SO_4 / OC
	WLS04D	3.7	PSD/Plasticity Index/MC
	WLS05D	2.1	pH&SO_4
	WLS06D	1.7	pH&SO_4
	WLS07D	1.8	OC
	WLS07D	2.5	Plasticity Index/MC/ pH&SO_4
	WLS09D	1.90	Plasticity Index/MC/ pH&SO_4
Alluvium - peat	BH01B	4.00	pH&SO_4 / OC
	BH01U	4.50	Consolidation Test / Hand Vane
	BH03B	9.00	pH&SO_4 / OC
	BH04B	2.80	Plasticity Index/MC/ pH&SO_4
	BH04U	3.50	Consolidation Test / Hand Vane
	BH04D	4.00	pH&SO_4 / OC
	BH04D	5.50	PSD/Plasticity Index/MC
	BH04U	6.00	UU Triaxial / Hand Vane
	WLS06D	2.50	OC
Alluvium - sand	WLS08D	1.50	pH&SO_4
Sand – Taplow Gravel Member	BH04B	8.00	PSD

PSD – particle size distribution (wet) - BS EN ISO 17892-4

Plasticity Index – 1 point - BS 1377-2:5.3

MC – moisture content - BS EN ISO 17892-1

OC – organic content loss in ignition

4.3.3 The geotechnical laboratory test results are provided in Appendix C of the Factual Site Investigation Report (Appendix 1 of this report) and the chemical laboratory test results are included in Appendix D of the Factual Site Investigation Report (Appendix 1 of this report).

4.3.4 No visual or olfactory evidence of contamination was reported during the site works.

5.0 GROUND CONDITIONS

5.1 General

5.1.1 In general, the ground conditions encountered during the ground investigation reflected those detailed within the published geology, comprising of Made Ground underlain by Alluvium including alternating layers of clay and peat. The Alluvium is underlain by sand and gravel of the Taplow Gravel Member resting on bedrock of chalk.

5.1.2 A summary of the ground conditions encountered during this site investigation is presented in Table 4. A copy of the continuous tube sample boreholes and the cable percussion boreholes along with photographs is included in Appendix A – Factual Site Investigation Report (Appendix 1 of this report). Schematic cross sections are included in Appendix 2.

Table 5: Summary of Ground Conditions.

Hole ID	Made Ground (m bgl)	Alluvium (mbgl)			Taplow Gravel Member (mbgl)		Bedrock (mbgl)
		Sand/silt	*Clay*	*Peat*	*Sand*	*Gravel*	Chalk
WLS01	**0-1.40**		**1.40-2.00**				
			1.40-2.00				
WLS02	**0-1.40**		**1.40-4.00**				
			1.40-3.50	*3.50-4.00*			
WLS03	**0-1.90**		**1.90-4.00**				
			1.90-2.50	*2.50-4.00*			
WLS04	**0-0.80**		**0.80-4.00**				
			0.80-2.10 *3.20-4.00*	*2.10-3.20*			
WLS05	**0-2.00**		**2.00-3.00**				
			2.00-2.50	*2.50-3.00*			
WLS06	**0-1.20**		**1.20-5.00**				
			1.20-2.40	*2.40-5.00*			
WLS07	**0-1.00**		**1.00-5.00**				
		1.00-1.70	*1.70-3.40*	*3.40-5.00*			
WLS08	**0-1.45**		**1.45-1.60**				
		1.45-1.60					
WLS09	**0-1.60**		**1.60-4.00**				
			1.60-4.00				
BH01	**0-2.70**		**2.70-9.00**		**9.00-16.30**		**16.30-24.00**
			2.70-3.00 *4.90-8.80*	*3.00-4.90* *8.80-9.00*	*9.00-10.70*	*10.70-16.30*	
BH02	**0-1.30**		**1.30-11.10**		**11.10-16.60**		**16.60-24.00**
			1.30-5.30 *6.90-11.10*	*5.30-6.90*	*11.10-13.40*	*13.40-16.60*	
BH03	**0-1.50**		**1.50-10.00**		**10.00-16.40**		**16.40-20.00**
			1.50-4.20 *6.50-8.00*	*4.20-6.50* *8.00-10.00*	*10.00-13.00* *14.80-16.00*	*13.00-14.80* *16.00-16.40*	
BH04	**0-2.00**		**2.00-7.30**		**7.30-18.00**		**18.00-24.00**
			2.00-3.00 6.60-7.30	3.00-6.60	7.30-16.00	16.00-18.00	

5.2 Summary of Ground Conditions

Made Ground - Hardstanding

5.2.1 Hardstanding was encountered at each exploratory hole from ground level to depths of between 0.06mbgl and 0.6mbgl. Represented in western part of the site by concrete with 20mm aggregate and asphalt in the eastern section of the site. Locally asphalt and concrete is interbedded by granular Made Ground; sand and gravel.

Made Ground

5.2.2 Made Ground was encountered at each exploratory hole beneath the hardstanding from between 0.06m and 0.6m down to depths of between 0.80mbgl and 2.7mbgl.

5.2.3 Granular Made Ground is represented in general by slightly sandy to very sandy gravel, clayey gravel, gravel, slightly clayey to clayey gravelly to very gravelly sand, or gravelly sand. Gravel is limestone, brick, flint, cement, concrete and occasional wood, clinker, and rare ash and plastic.

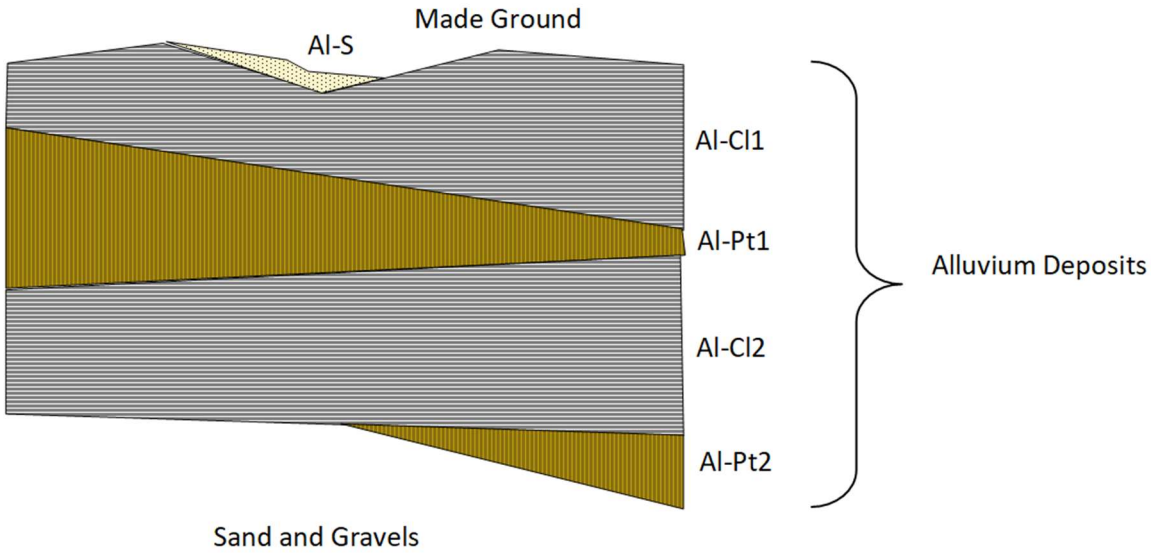
5.2.4 Locally, interbedded Cohesive Made Ground was observed in WSL05 between 1.7mbgl and 2mbgl.

5.2.5 A layer of chalk gravel was observed mainly at the base of Made Ground in all exploratory holes from depths of between 0.3mbgl and 1.6mbgl down to depths of between 0.8mbgl and 2.1mbgl, except in WLS07 and WLS08. Represented by white to pale grey silty locally clayey fine to coarse subangular to angular gravel of chalk with occasional brick and flint and appears to represent a former hardstanding surface.

Alluvium

5.2.6 Alluvium was encountered at each exploratory hole below Made Ground from depths of between 0.8mbgl and 2.7mbgl down to the base of continuous tube sample boreholes (WLS01-WLS09) at depths of between 1.6mbgl and 5mbgl. The base of alluvium was confirmed in cable percussion boreholes (BH01-BH04) at depths of between 7.3mbgl and 11.1mbgl.

5.2.7 The Alluvium deposits are represented mainly by interbedded very soft to soft clay and peat strata, and locally with a thin layer of sand at the top of the strata. See Figure 4 below.



Al-S: Alluvium Sand/Silt
Al-Cl1 and A-Cl2: Alluvium Clay
Al-Pt1 and Al-Pt2: Alluvium Peat

Figure 4: Schematic representation of the Alluvium Deposits.

5.2.8 Those layers are discussed below.

- *Alluvium – Sand/Silt*

5.2.9 The granular alluvium comprising silty or clayey sand with occasional well cemented porous sandstone gravel was encountered locally in WLS07 and WLS08 from 1mbgl and 1.45mbgl down to depths of 1.7mbgl and 1.6mbgl respectively, the latter being the base of the borehole. This stratum could relate to one of the former tidal channels.

- *Alluvium - Clay*

5.2.10 The alluvium clay deposits were encountered below the Made Ground, locally below the granular alluvium WLS07 and WLS08, as two strata and probably reflect a sea level rise. The clay strata (upper Al-Cl1 and lower Al-Cl2) are separated by peat deposits (see Figure 4 and cross sections in Appendix 2)

5.2.11 The upper layer of clay Al-Cl1 was encountered in each test location (except WLS08 due to obstruction at 1.6mbgl) from depths of between 0.8mbgl and 2.7mbgl down to depths of between 2mbgl (base in WLS01) and 5.3mbgl.

5.2.12 The lower layer of clay Al-Cl2 was encountered in five locations (WLS04, BH01, BH02, BH03 and BH04) from depths of between 3.2mbgl and 6.9mbgl down to depths of 4mbgl (base of the WLS04) and 11.1mbgl.

5.2.13 The alluvium clay deposits are represented by soft to firm, locally very soft, bluish grey, pale grey to dark grey, locally mottled black/brown, locally silty clay, organic, may contain occasionally wood, fibrous peat, organic matter, and strong organic odour.

5.2.14 Particle Size Distribution tests showed the samples to comprise of between 64% and 89% fines (<63µm) material, with sand fractions between 11% and 23% and gravel fractions between 0% and 8%. These results indicate slightly sandy, locally slightly gravelly, clay.

5.2.15 Moisture content tests yielded values ranging from 40% to 177%, nine of the eleven samples were classified of Extremely High Plasticity, and two samples of Very High Plasticity, which is typical of marine and estuarine deposited clays.

5.2.16 Atterberg Limit tests showed modified plasticity index results in nine of eleven samples of between 40% and 101%, indicating High Volume Change Potential, and two samples indicating Medium Volume Change Potential, 30% and 36%.

5.2.17 From the results of in-situ and laboratory testing, it can be summarised that the Alluvium Clay is cohesive soil of high compressibility.

Table 6: Summary of the Alluvium Clay classification tests results.

Sample ID	BH01B	BH02B	BH02D	BH02D	BH03B	BH04B	WLS01D	WLS02	WLS04	WLS07	WLS09
Depth(m):	5.00	2.10	5.00	8.00	7.00	2.80	1.50	2.00	3.70	2.50	1.90
Sieve 0.425 mm	76	94	100	100	100	86	98	100	92	65	100
L_L (%)	90	110	111	154	96	82	86	95	113	119	91
L_P (%)	37	40	44	53	30	47	32	30	37	64	33
PI (%)	53	70	67	101	66	35	54	65	76	55	58
Moisture(%)	133.0	95.0	89.0	114.0	77.0	86.0	41.0	46.0	102.0	177.0	45.0
Modified PI'	40	66	67	101	66	30	53	65	70	36	58
Consistency Index I_c	-0.8	0.2	0.3	0.4	0.3	-0.1	0.8	0.8	0.1	-1.1	0.8
Liquidity Index I_L	1.8	0.8	0.7	0.6	0.7	1.1	0.2	0.2	0.9	2.1	0.2
Compression index C_c	0.7	0.9	0.9	1.3	0.8	0.6	0.7	0.8	0.9	1.0	0.7
Gravel content	8	1					0		2		
Sand content	28	17					11		23		
Fines content	64	82					89		75		
USCS	CE	CE	CE/ME		CE	MV	CV	CE	CE	ME	CE

5.2.18 Standard Penetration Tests carried out within the Alluvium Clay during the site investigation typically recorded values from N=0 to N=4 (higher values of N=7, N=8 and N=9 were recorded locally possibly due to presence of wood). Based on the tentative relationship cu = f1x (kPa) proposed by Stroud & Butler, where f1 = 4.5 for clay where the plasticity index varies from very high to extremely high the range of undrained strength varies between 0kPa and 18kPa.Such results are indicative of very soft to soft, and extremely low to very low strength clay.

5.2.19 Quick undrained triaxial compression tests carried out on two undisturbed samples of the Alluvium Clay from the borehole BH01 at 7.5mbgl and BH02 at 4.5mbgl yielded undrained shear strengths of 24kPa and 27kPa. These results again indicate soft, low strength clay.

5.2.20 Measurements on the triaxial test specimens yielded bulk density values of 13.7kN/m^3 and 14kN/m^3, these values are typical for unconsolidated estuarine and marine muds.

5.2.21 Hand Vane Tests performed in laboratory on selected undisturbed samples provided values of between 17kPa and 40kPa.

5.2.22 A plot of the estimated Undrained Shear Strength from SPT N-values combined, hand vane test results, and with the quick undrained triaxial test results against depth, including Alluvium, is presented in Appendix 3 and shows a slight increase in strength with depth.

5.2.23 The summary of the SPT N values for the Alluvium is presented in Figure 4.

5.2.24 A single (1No.) oedometer consolidation test carried out on an undisturbed sample from borehole BH02 at a depth of 2.5m yielded values for the coefficient of volume compressibility, m_v of 2.104m^2/MN and 0.14 m^2/MN for the applied pressure ranges of from 24kPa to 391kPa. Such m_v values are indicative of very high to high compressibility clay (highly organic alluvial clay) and very high to high compressibility estuarine clay.

- *Alluvium - Peat*

5.2.25 The alluvium peat deposits were encountered as two strata (upper Al-Pt1 and lower Al-Pt2) separated by clay deposits (see Figure 4 and cross sections in Appendix 2) and are likely to represent a period of sea level fall.

5.2.26 The upper layer of peat Al-Pt1 was encountered in each exploratory hole (except WLS01 and WLS08 where obstructions were encountered, and WLS09 which terminates at 4mbgl, and peat is not encountered) from depths of between 2.1mbgl and 5.3mbgl down to depths of between 3mbgl (base in WLS05) and 6.9mbgl.

5.2.27 The lower layer of peat Al-Pt2 was encountered in two locations, BH01 and BH03, from depths of 8mbgl and 8.8mbgl down to depths of 9mbgl and 10mbgl.

5.2.28 The peat strata are represented by very soft to soft dark brown, greyish brown or reddish brown fibrous slightly sandy peat with an organic odour, locally strong organic odour.

5.2.29 Particle Size Distribution test on sample showed the tested soil to comprise 10% fines (<63µm), 28% of sand size particles and 62% of gravel size particles; the sample was described by the laboratory as *very soft black fibrous peat with abundant intact organic fragments*.

5.2.30 Moisture content test on one sample yielded a value of 362%.

5.2.31 Standard Penetration Tests carried out within the peat deposits during the site investigation typically recorded values from N=0 to N=4; very soft to soft (one higher values of N=5, firm soil was recorded locally).

5.2.32 Due to the abundant presence of sand/gravel sized organic particles the quick undrained triaxial compression tests could not be carried out on the retrieved sample.

5.2.33 Hand Vane Tests performed in laboratory on selected undisturbed samples provided values of 19kPa, 20kPa and 44kPa.

5.2.34 A plot of the estimated Undrained Shear Strength derived from SPT N-values combined with hand vane test results against depth, including Alluvium clay and peat, is presented in Appendix 3 and shows a slight increase in strength with depth.

5.2.35 The summary of the SPT N values for the Alluvium, including peat, is presented in Figure 5.

5.2.36 Two (2No.) oedometer consolidation tests carried out on undisturbed samples (BH01 at 4.5mbgl and BH04 at 3.5mbgl) yielded values for the coefficient of volume compressibility, m_v of 5.417m^2/MN and 5.196m^2/MN to 0.924m^2/MN and 0.863m^2/MN for the applied pressure

ranges of from 24kPa to 391kPa. Such m_v values are indicative of very high compressibility peat.

5.2.37 Measurements on the oedometer test specimens yielded bulk density values of 10.4kN/m^3 and 10.5kN/m^3, and the reported dry density values were 1.9kN/m^3 and 2.9kN/m^3. These values are typical for peat deposits.

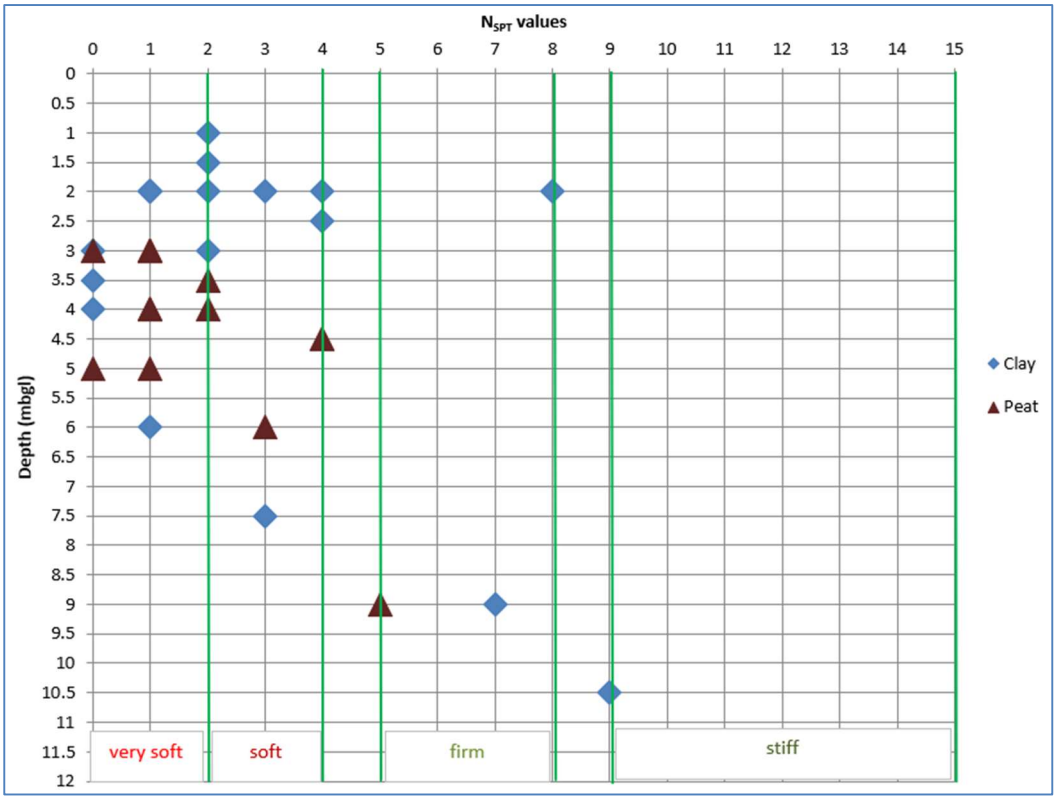


Figure 5: N SPT values for Alluvium; clay and peat.

Taplow Gravel Member

5.2.38 The granular terrace deposits were only confirmed in deeper cable percussion boreholes, BH01 to BH04, and encountered at depths of between 7.3mbgl and 11.1mbgl down to depths 16.3mbgl and 18mbgl. Represented in general by an upper layer of sand and a lower layer of gravel. A lens of sand within the lower gravel was observed in BH03. Gravel with occasional cobbles was observed in BH03 and BH04 near the base of the stratum.

5.2.39 Standard Penetration Tests carried out within the granular deposits recorded values of between 0 and 40; very loose sand was recorded in BH04 from 7.5mbgl to 11mbgl, loose sand was recorded in BH04 at 12mbgl and in BH03 from 10.5mbgl to 12.5mbgl, and loose gravel in BH01 at 10.5mbgl. Typically, the rest of the deposits is medium dense becoming locally very dense with depth.

5.2.40 There is a general increase in relative density with depth and the different layers are discussed in more detail below.

- *Upper Taplow Gravel Member – Sand*

5.2.41 The Upper Taplow Gravel member typically comprised sand recorded in each cable percussive borehole from depths of between 7.3mbgl and 11.1mbgl down to depths of between 10.7mbgl and 16mbgl. A lens of sand was also encountered within the Lower Taplow Gravel Member in BH03 from 14.8mbgl to 16mbgl.

5.2.42 The sand deposits were generally represented by from very loose to medium dense greenish grey, greyish brown, slightly gravelly to gravelly sand. Gravel is fine to medium angular to subrounded flint. Very loose and loose sand recorded in boreholes may be a result of blowing sands below groundwater level.

5.2.43 Particle Size Distribution test carried out on one sample of very loose sand (BH04 at 8m) showed the soil to comprise 10% fines (<63µm), 89% of sand and 1% of gravel.

- *Lower Taplow Gravel Member – Gravel*

5.2.44 The Lower Taplow Gravel Member typically comprised gravel deposits recorded in each cable percussive borehole from depths of between 10.7mbgl and 16mbgl down to depths of between 16.3mbgl and 18mbgl with the abovementioned lens of sand in BH03.

5.2.45 The gravel deposits were generally represented by medium dense, locally loose, and locally becoming very dense with depth, grey to dark grey or brown sandy to very sandy fine to coarse, angular to rounded gravel of flint with occasional cobbles to the base. Gravel of chalk was observed locally to the base of the deposit. Loose gravel recorded in boreholes may be a result of blowing granular deposits below groundwater level.

Bedrock – Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation.

5.2.46 The chalk deposits were encountered in each deep cable percussion borehole BH01-BH04 underlying the alluvium deposits from depths of between 16.3mbgl and 18mbgl down to the base of boreholes at 20mbgl and 24mbgl (see cross sections in Appendix 2).

5.2.47 The bedrock chalk deposits have a weathered profile and are represented by generally Grade II to Grade V/Grade VI chalk recovered as weak to very weak, white to off-white subrounded to subangular gravel with frequent fine to coarse gravel of subangular flint, locally with flint bands or cobbles of flint. In BH04 it is described 95% of gravel of flint and 5% of gravel of chalk.

5.2.48 Standard Penetration Tests carried out within the chalk deposits recorded values of between 8 and refusal (50). There is a general increase in strength/relative density with depth as the chalk deposits become less weathered.

5.2.49 The summary of the SPT N values for all strata is presented in Appendix 3, and N SPT for chalk is presented in Figure 6.

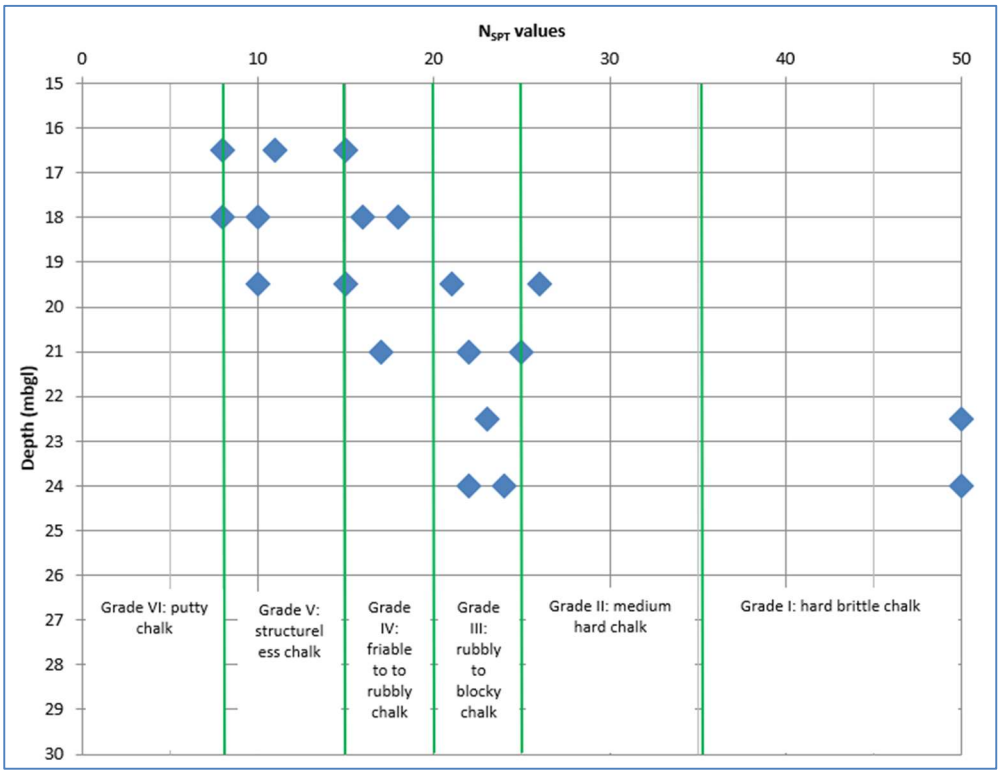


Figure 6: N SPT values for chalk.

Groundwater

5.2.50 During the intrusive ground investigation between 21.11.2022 and 8.12.2022 the groundwater was encountered in all deeper cable percussive boreholes (BH01-BH04) and in seven out of nine continuous tube sample boreholes (WLS01, WLS02, WLS04, WLS05, WLS06 and WLS07). Standing groundwater levels were recorded at depths of between 0.5mbgl and 3.22mbgl.

5.2.51 Groundwater monitoring wells were installed in five continuous tube sample boreholes (WLS04, WLS05, WLS07, WLS08 and WLS09) and in all deeper cable percussive boreholes (BH01-BH04) with groundwater levels being measured between 06.12.2022 and 12.01.2023. Standing groundwater levels were recorded at depths of between 0.6mbgl and > 2mbgl (WLS05 dry during two site visits).

5.2.52 The details of groundwater levels during the intrusive ground investigation are included within the exploratory hole logs in Appendix A of the Appendix 1 of this report, and the details of groundwater levels during each of the monitoring visits are included in Appendix E (Appendix 1 of this report), all measurements are summarised in table 7 below.

Table 7: Summary of groundwater levels.

Hole ID	Drilling (mbgl)		Groundwater monitoring (mbgl)			
	Strike	Standing	06.12.22	19.12.22	04.01.23	12.01.23
BH01	9.00	*5.80**	N/A	N/A	1.56	1.75
BH02	N/A	0.80	N/A	1.19	0.95	1.64
BH03	9.6	0.90	N/A	1.46	1.26	1.95
BH04	1.50	1.10	1.11	1.20	0.94	1.84
WLS01	N/A	1.30	N/A	N/A	N/A	N/A
WLS02	N/A	0.97	N/A	N/A	N/A	N/A
WLS03	N/A	1.17	N/A	N/A	N/A	N/A
WLS04	N/A	0.50	N/A	0.60	0.67	0.61
WLS05	N/A	1.10	dry	dry	1.18	1.05
WLS06	N/A	3.22	N/A	N/A	N/A	N/A
WLS07	N/A	1.59	1.18	1.18	1.12	1.10
WLS08	N/A	N/A	1.05	1.04	1.02	0.90
WLS09	N/A	N/A	0.95	0.94	0.94	0.84

* - *groundwater level measured after 20 minutes*

Contamination Indicators

5.2.53 No visual or olfactory contamination indicators were reported during the ground investigation. Made Ground was encountered in all exploratory holes comprising predominantly gravelly sand with fragments of brick, concrete, clinker, wood, plastic, ash, and masonry (see Appendix 1 – Factual Site Investigation Report).

6.0 CONTAMINATION ANALYSIS

6.1 Soil Chemical Analysis

6.1.1 The complete soil analytical data is presented in Appendix D – Factual Site Investigation Report (Appendix 1 of this report). (analytical report number: 22-13407). The results of the analyses are compared to human health critical values (CVs) for initial screening purposes. Given the proposed industrial future use of the site, CVs adopted for a commercial / industrial land use have been adopted, primarily from the LQM / CIEH Suitable for Use Levels (S4ULs)1 have been utilised. These are derived for a sandy loam soil; reference is initially made to the S4ULs derived for a soil with 1% soil organic matter (commercial) as a conservative assumption for screening purposes.

6.1.2 The DEFRA published Category 4 Screening Level (C4SL) for lead in soils under commercial land-use has been utilised to allow an initial screening for risk to human health. This is intended to demonstrate that land is not Contaminated Land as defined under Part IIA of the Environmental Protection Act. The adoption of the C4SL in a planning scenario has not been universally accepted, however in the absence of other generic screening criteria for lead following the withdrawal of the SGV by the EA it is considered appropriate to utilise the screening criterion.

6.1.3 Where published human health critical values are unavailable or inappropriate (because the substance does not significantly affect human health, but might influence other receptors), then other commonly used screening values are referred to, as noted below.

6.1.4 Given the low/moderate sensitivity of any future development, and in the absence of any formal screening criteria the limit of detection (<0.001%) has been adopted as a screening value for asbestos.

6.1.5 The assessment criteria are intended for use for screening purposes only. Exceedances indicate that either more specific detailed site-specific risk assessment is required to better quantify risks to human health, or that remediation or mitigation is required to reduce risks by breaking the source-pathway-target relationship between solid phase contaminants and receptors.

6.1.6 The results are summarised below:

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Table 8: Summary of chemical analysis.

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil Standard Adopted and Concentration (mg/kg or indicated)	Exceedances
Asbestos	20	**Detected**	NAD	**Chrysotile BH01 at 0.2m <0.001%, Chrysotile WLS01 at 0.2m 0.001%**
Arsenic	20	1.3-53	S4UL 640	None
Cadmium	20	<0.2-0.9	S4UL 190	None
Chromium (total)	20	1.6-46	S4UL 8,600	None
Chromium (VI)	20	<1.8	S4UL 330	None
Copper	20	2-67	S4UL 68,000	None
Lead	20	2-700	C4SL 1,100	None
Mercury (inorganic)	20	<0.3-4.3	S4UL 58	None
Nickel	20	1.3-39	S4UL 980	None
Zinc	20	2-170	S4UL 730,000	None
Naphthalene	20	<0.05-0.2	S4UL 190	None
Acenaphthylene	20	<0.05-0.2	S4UL 84,000	None
Acenaphthene	20	<0.05-1.7	S4UL 83,000	None
Fluorene	20	<0.05-1.3	S4UL 63,000	None
Phenanthrene	20	<0.05-11	S4UL 22,000	None
Anthracene	20	<0.05-3.4	S4UL 520,000	None
Fluoranthene	20	<0.05-13	S4UL 23,000	None
Pyrene	20	<0.05-11	S4UL 54,000	None
Benzo(a)anthracene	20	<0.05-5.9	S4UL 170	None
Chrysene	20	<0.05-5.1	S4UL 350	None
Benzo(a)pyrene	20	<0.05-5.1	S4UL 35	None
Indeno(123cd)pyrene	20	<0.05-2	S4UL 500	None
Dibenzo(ah)anthracene	20	<0.05-0.6	S4UL 3.5	None
Benzo(ghi)perylene	20	<0.05-2	S4UL 3,900	None
Benzo(b)fluoranthene	20	<0.05-5.4	S4UL 44	None
Benzo(k)fluoranthene	20	<0.05-2	S4UL 1,200	None
Benzene	20	<0.005	S4UL 27	None
Toluene	20	<0.005	S4UL 56,000	None
Ethylbenzene	20	<0.005	5700	None
m/p-xylene	20	<0.005	S4UL 5,900	None
o-xylene	20	<0.005	S4UL 6,600	None
Aliphatic >C5-C6	20	<0.001	S4UL 3,200	None
Aliphatic >C6-C8	20	<0.001	S4UL 7,800	None
Aliphatic >C8-C10	20	<0.001	S4UL 2,000	None
Aliphatic >C10-C12	20	<1-3.2	S4UL 9,700	None
Aliphatic >C12-C16	20	<2-37	S4UL 59,000	None

Contaminant	Number of Samples	Range of Concentrations (mg/kg or indicated)	Soil Standard Adopted and Concentration (mg/kg or indicated)	Exceedances
Aliphatic >C16-C21	20	<8-77	S4UL 1,600,000	None
Aliphatic >C21-C35	20	<8-250	S4UL 1,600,000	None
Aromatic >C5-C7	20	<0.001	S4UL 26,000	None
Aromatic >C7-C8	20	<0.001	S4UL 56,000	None
Aromatic >C8-C10	20	<0.001	S4UL 3,500	None
Aromatic >C10-C12	20	<1	S4UL 16,000	None
Aromatic >C12-C16	20	<2-8.2	S4UL 36,000	None
Aromatic >C16-C21	20	<10-42	S4UL 28,000	None
Aromatic >C21-C35	20	<10-260	S4UL 28,000	None

Notes to table:

NAD: No asbestos detected

S4UL: LQM/CIEH Suitable for Use Levels (S4ULs), commercial land use, (at 1% SOM, 6% SOM for metals). Copyright Land Quality Management Ltd. Reproduced with permission publication number S4UL 3102. All rights reserved.

C4SL: Category 4 Screening Levels published by CL:AIRE (C4SLs); 'residential with homegrown produce land use' (at 1% SOM)

6.1.7 Concentrations of all contaminants were below adopted standards and concentrations.

6.1.8 Chrysotile fibres were detected in BH01 at 0.2mbgl and in WLS01 at 0.2mbgl the consequent asbestos quantification recorded values of <0.001%, below the limit of detection, in BH01 at 0.2mbgl and 0.001% in WLS01 at 0.2mbgl.

6.2 Ground Gas Monitoring

6.2.1 The risks associated with the ground gases methane (CH_4) and carbon dioxide (CO_2) are assessed using BS 8485:2015+A1:2019 and guidelines from CIRIA 665.

6.2.2 Three rounds of ground gas monitoring were carried out within all installed boreholes (BH01-BH04, and WLS01, WLS02, WLS04, WLS05, WLS06 and WLS07). Monitoring was undertaken between 6 September 2022 to 12 January 2023.

6.2.3 A summary of the recent gas monitoring data is present in the table below, copies of monitoring records are provided in Appendix E of the Factual Site Investigation Report – Appendix 1 of this report.

6.2.4 Methane was not typically recorded above monitoring detection limits (0.1% v/v) except WLS07 where the maximum recorded concentration was 74.8% v/v whilst concentrations of carbon dioxide were generally low, varying below the limit of detection up to the values of between 0.3% and 1.9% v/v.

6.2.5 Depleted oxygen (<15%) was limited to within WLS07 (1.9%) and WSL04 (14.9%) recorded during the monitoring period.

6.2.6 In general, the measured steady values were below the limit of detection of 0.1l/hr in all installed boreholes, except BH04 with one negative value of -0.3l/h on one occasion. High peak values were recorded in WLS07(38.7l/hr – 800l/hr) and in BH04 (50l/hr) however in both instances these fell to zero on all occasions. It is noted that during the round of monitoring

within WS07 and BH04 the groundwater levels were between 0.94mbgl and 1.18mbgl. It is possible that the initial peak flow is attributed to the 'piston-effect' caused by the build-up of pressure in the standpipe due to a rise in groundwater level and is not reflective of a true ground gas flow.

6.2.7 Flow rates are therefore considered to be a result of groundwater movement within the standpipe rather than actual gas flow and are consequently omitted from the assessment, however for a precautionary assessment the sustained flow of 0.3 l/hr has been used.

6.2.8 Guidance published by CIRIA ("Assessing risk posed by hazardous ground gases to buildings", CIRIA C665, 2007), CIEH ("The Local Authority Guide to Ground Gas", CIEH, 2008) and BS8485:2007 ("Code of Practice for the Characterisation and Remediation of Ground Gas in Affected Developments") has been referred to in determining potential risks posed by ground gases. Screening assessment criteria of 1% methane, 5% carbon dioxide and 0.07 l/hr gas screening value have been referred to initially. The gas screening value (GSV) is the product of gas concentration and flow. A summary of the ground gas monitoring results is provided in the table below:

Table 9: Summary of Ground Gas Results.

Well	No. visits	Max CH_4 (%)	Max CO_2 (%)	Max Flow (l/hr)	CH_4 GSV (l/hr)*	CO_2 GSV (l/hr)*	CIRIA Classification
WSL04	3	***<0.1***	***<0.1***	**<0.1**	<0.07	<0.07	CS1
WSL05	3	*<0.1*	*1.4*	**<0.1**	<0.07	<0.07	CS1
WSL07	3	*74.8*	*1.9*	**0.3**	0.224	<0.07	CS2
WSL08	3	<0.1	*1.3*	**<0.1**	<0.07	<0.07	CS1
WSL09	3	<0.1	0.7	**<0.1**	<0.07	<0.07	CS1
BH01	3	<0.1	0.3	**<0.1**	<0.07	<0.07	CS1
BH02	3	<0.1	<0.1	**<0.1**	<0.07	<0.07	CS1
BH03	3	<0.1	<0.1	**<0.1**	<0.07	<0.07	CS1
BH04	3	<0.1	<0.1	**0.03**	<0.07	<0.07	CS1

GSV – Gas Screening Value (=maximum concentration x maximum gas flow over monitoring period)
* *calculated using peak concentration and steady state flow*
** *precautionary flow value of 0.3 l/hr*

6.2.9 Gas Screening values (GSVs) calculated as the product of peak concentration and steady flow were low (<0.07 l/hr) resulting in a Characteristic Situation of CS1 (very low risk) with exception of WSL07 where the concentration of methane exceeded the 1% threshold resulting in CIRIA CS2 (low risk).

6.2.10 The values of WLS07 are typical for soils with high peat or organic soil content and "typical" Made Ground (*CIRIA Report 659).*

6.2.11 Using the worst-case scenario of the gas monitoring results and considering the site is underlain by *typical* Made Ground, peat and locally organic clay the site is classified as Characteristic Situation CS2 – low risk and basic ground gas protection measures will be required.

6.2.12 BS 8485:2015+A1:2019 Table 4 indicates that a score of 2.5 points for a "Type C" building (commercial) is required for a site classified as CS2.

6.2.13 This may be achieved by a combination of ground gas protection measures, the scores of which total at least this number of points is required from Section 7 of BS 8485:2015+A1:2019. This could be achieved by the use of:

- Gas resistant membrane, meeting the criteria set out in BS 8485:2015. - 2.0 points
- Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement) - 0.5 point.

6.2.14 The validation of the gas protection measures should be undertaken in accordance with CIRIA C735, and it is recommended that a validation plan is produced, outlining the validation requirements, which will be dependent on the competences of the installer.

6.3 Groundwater

6.3.1 The European Water Framework Directive (2000/60/EC) (WFD) and its daughter Directives establish a consolidated way of controlling water quality. The Environment Agency (July 2008)

has issued a revised Groundwater Protection Policy (known as GP3). The UK Government has set out a timetable for the adoption of the WFD which formalises the way in which the quality of surface water and groundwater are to be assessed. This is set out in 'The River Basin Districts Typology, Standards and Groundwater threshold values (Water Framework Directive) (England and Wales) Directions' 2009.

6.3.2 A groundwater body is defined as groundwater in an aquifer capable of supporting an abstraction of $10m^3$/day or 50 people over a sustained period under the WFD. Groundwater bodies are a strategic resource, even if there is no current abstraction. Lesser amounts of groundwater in an aquifer are not considered as receptors in their own right but may still be pathways to other receptors such as surface water bodies or aquatic ecosystems.

6.3.3 The risks to groundwater and surface water from contaminants on-site have been assessed according to the remedial targets methodology (RTM) prescribed by the Environment Agency (2006). Pollutant inputs from contaminated land sites are considered as passive inputs under the WFD and, as such, are regulated under the Agency's 'limit' pollution objective. Acceptable water quality targets are defined for protection of human health (based on drinking water standards (DWS)) and for protection of aquatic ecosystems (environmental quality standards (EQS)).

6.3.4 Where more than one water quality target is available it is important to apply the one relevant to the critical receptor. The DWS apply to groundwater or to surface water used for abstraction and the EQS apply to surface water where the aquatic ecosystem is the receptor. EQS are available for inland surface waters (freshwater) and other surface waters (transitional and marine). Where the most appropriate water quality target cannot be determined with certainty, the lowest one is adopted in line with the precautionary principle.

6.3.5 Note that in some instances the reporting limit (or detection limit) quoted by the laboratory may be greater than the water quality target that it is being assessed against. Where this is the case, it is not thought that these determinants are a significant risk to controlled waters.

6.3.6 With respect to hydrocarbons in water, the Water Supply Regulations 1989 and the Private Water Supply Regulations 1991 both contained a prescribed concentration of 10µg/l for "dissolved or emulsified hydrocarbons (after extraction with petroleum ether); mineral oils". This was removed when these Regulations were updated in 2000 (consolidated 2007) and 2009, respectively.

6.3.7 There is no clear UK policy on hydrocarbon contamination of controlled waters. This is probably partly because analyses for 'petroleum hydrocarbons' are fraught with complications concerning false positives, the results being method dependent and not restricted to petroleum products.

6.3.8 In the absence of definitive guidance on petroleum hydrocarbons in water it is suggested to extend the use of DWS by calculating screening criteria for the speciated TPH fractions. This provides a rational, transparent and risk-based approach using established scientific principles, rather than simply adopting a withdrawn standard.

6.3.9 The site data are compared with the water quality targets in Table 10.

Table 10: Summary of Groundwater Below Source Assessment (from Groundwater Analyses) – Petroleum Hydrocarbons

Chemical of Potential Concern (µg/l)	Water Quality Target (µg/l)	Basis of Water Quality Target	Modified Water Quality Target (C bands) (µg/l)	No. Samples Tested	Range of Concentrations (µg/l)	No. Samples Exceeding Modified Target
Aliphatic >C5-C6	17500	DWS - WHO methodology	n/a	4	<1	0
Aliphatic >C6-C8	17500	DWS - WHO methodology	n/a	4	<1	0
Aliphatic >C8-C10	350	DWS - WHO methodology	n/a	4	<1	0
Aliphatic >C10-C12	350	DWS - WHO methodology	n/a	4	<10	0
Aliphatic >C12-C16	350	DWS - WHO methodology	n/a	4	<10	0
Aliphatic >C16-C21	7000	DWS - WHO methodology	n/a	4	<10	0
Aliphatic >C21-C35	700	DWS - WHO methodology	n/a	4	<10	0
Aromatic >C5-C7	700	DWS - WHO methodology	n/a	4	<1	0
Aromatic >C7-C8	140	DWS - WHO methodology	n/a	4	<1	0
Aromatic >C8-C10	140	DWS - WHO methodology	n/a	4	<1	0
Aromatic >C10-C12	140	DWS - WHO methodology	n/a	4	<10	0
Aromatic >C12-C16	105	DWS - WHO methodology	n/a	4	<10	0
Aromatic >C16-C21	105	DWS - WHO methodology	n/a	4	<10	0
Benzene	1	UK/EU DWS	n/a	4	<1	0
Toluene	700	WHO (2004) DWS	n/a	4	<1	0
Ethylbenzene	300	WHO (2004) DWS	n/a	4	<1	0
Xylene	500	WHO (2004) DWS	n/a	4	<1	0

6.3.10 Concentrations of contaminants were below the limit of detection.

6.3.11 The concentrations of VOCs and SVOCs have been reported below the limit of detection.

7.0 GEOTECHNICAL ENGINEERING CONCLUSIONS

7.1 Geotechnical Categorization of the Proposed Development

7.1.1 Eurocode 7, Section 2 advocates the use of geotechnical categorization of the proposed structure(s) to establish the design requirements. Initial categorisation can be made before site investigation and can be used to define the scope and extent of geotechnical investigation required. For the purposes of this investigation, the proposed structures have been classed as follows:

- Geotechnical Category 2.

7.2 Site Excavation

7.2.1 There are several services crossing the western and central part of the site including surface water sewers, foul sewers and pumping main.

7.2.2 Excavation in close proximity to services (sewers) will need to ensure that the excavation walls are stable or appropriately battered to a safe angle, where these are to be kept live. Temporary slope stability works may be required in any deep excavations.

7.2.3 No relic structures or obstructions were recorded other than concrete hardstanding. The borehole WLS08 refused at 1.6mbgl which might indicate an obstruction. The borehole WLS01 was terminated at 2mbgl due to positive magnetometer reading from EOD engineer.

7.2.4 Conventional hydraulic plant should be satisfactory for excavating service trenches within Made Ground and the natural soils.

7.2.5 A pneumatic breaker will be required to help break out the hardstanding across the site.

7.2.6 In line with HSE guidelines all excavations requiring personnel access should be adequately supported to avoid the risk of collapse. Excavations within the cohesive materials are likely to remain stable in the short term.

7.2.7 Groundwater is expected to be encountered at depths greater than about 0.5mbgl and dewatering will be required. Conventional pumping from sumps should be satisfactory in order to maintain a dry excavation.

7.2.8 It would be prudent to carry out all ground works in the late summer or autumn when groundwater levels and flows are usually at their lowest.

7.3 Drainage

7.3.1 The alluvial soils below the site comprised mainly peat and clay and silt and such materials are likely to exhibit very poor to negligible infiltration rates. The permeability assessment in oedometric tests gave results in the order of 10^{-8}m/s to 10^{-10}m/s. The samples were highly or completely saturated.

7.4 Foundation Solutions

7.4.1 It is understood the site is being considered for redevelopment as a HGV tanker cleaning facility, which will include the installation of an RDF incinerator, tank wash, steaming pods, chemical waste transfer station and office accommodation.

7.4.2 Although no loadings are known at this stage it is anticipated that loadings will be light to moderate.

7.4.3 The Made Ground, and alluvial deposits, peat and clay, are considered unsuitable as a bearing stratum due to its variability, and potential for unacceptable total and differential settlement under applied foundation loadings.

7.4.4 However, for loads up to 40kN/m^2 where settlement is not critical, rafts or reinforced strip footings may be considered.

7.4.5 A piled solution would transmit the superstructural loads down through the Made Ground, and Alluvium, into the granular Terrace Deposits and socketing into the bedrock – Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation at depth to obtain end bearing and shaft adhesion support.

7.4.6 The advice of a specialist piling contractor should be obtained to determine the most appropriate pile type and its design. Given the presence of groundwater in the gravels, /care will need to be taken to avoid the occurrence of necking of bored cast in place piles. A CFA type pile may be considered most appropriate on this site to ensure a suitable socket into the chalk bedrock.

7.5 Floor Slabs

7.5.1 It is anticipated that ground bearing floor slabs can be adopted following the demolition, grubbing out of hardstanding and below ground structures and appropriate back filling of any resultant voids. Followed by proof rolling of the formation layers and removal of any loose or soft spots, which should be replaced with an engineered fill, in accordance with a suitable Specification.

7.5.2 Prior to the placement of the founding materials and the construction of the ground bearing floor slab, the sub-formation and formation will need to be inspected and checked by a geotechnical engineer to ensure the ground conditions are as expected. This is likely to include sufficient appropriate testing, carried out in accordance with the DMRB IAN 73/06, to confirm the ground conditions at time of construction are consistent with the previous design parameters derived from this ground investigation.

7.5.3 If low bearing and soft strata are identified at the formation, this should be reported to the Geotechnical Engineer immediately and remedial actions agreed.

7.6 Roads and Pavements

7.6.1 It is considered unlikely a CBR of 5% will be achievable over the majority of the site.

7.6.2 Where the CBR is found to be less than 2.5%, the sub-grade may be unsuitable for both the trafficking of site plant and as support for a permanent foundation, without improvement works being undertaken. Improvement works should be carried out in accordance with DMRB IAN 73/06 Rev 1 Chapter 5. In summary, consideration may be given to the following potential remedial techniques: excavation and re-engineering (possibly a cement or lime binder) or replacement of weaker soils; the inclusion of geosynthetic reinforcement within the unbound layers of the capping and sub-grade.

7.6.3 Any loose or soft spots should be removed and replaced with an engineered fill, in accordance with a suitable Specification. The formation level will also need to be protected during inclement weather from deterioration.

7.6.4 Prior to the placement of the founding materials and the construction of the road pavement, the sub-formation and formation will need to be inspected and checked in accordance with a suitable Specification to ensure the ground conditions are as expected. All testing should be carried out in accordance with DMRB IAN 73/06 and confirm that the ground conditions at time of construction are consistent with the previous design parameters.

7.7 Earthworks

7.7.1 Due to the generally flat-lying nature of the site, significant earthworks are not anticipated. However, surplus spoil will arise from excavations for foundations. These arisings could be used, if required, for any landscape mounds, subject to the chemical validation testing to ensure their geo-environmental suitability.

7.8 Sulphates and pH

7.8.1 Fifteen samples were tested for pH and sulphate content (2:1 water soluble extraction). The testing results can be seen in Table 11 below:

Table 11: Assessment of Aggressive Chemical Environment for Concrete.

	Results Range
pH (units)	6.7 - 9.0
Water soluble sulphate (SO_4) (mg/l)	35.3 - 1510

7.8.2 The results have been compared to the guidance contained in BRE Special Digest 1, Concrete in aggressive ground, 2005. Based on brownfield conditions and a mobile groundwater regime in the range of proposed foundations, the site is classed as follows:

Table 12: Assessment of Concrete Classification.

Design Sulphate class	DS-2
ACEC Class	AC-2

7.8.3 Concrete below ground must comply with the requirements of Parts D to F of Special Digest 1, as appropriate.

7.8.4 The samples (15 samples) were also tested for chloride concentration, nitrates and magnesium concentrations. The chloride concentrations varied between 18mg/l and 10 000 mg/l, the magnesium concentrations varied between 12mg/kg and 820mg/kg. The concentrations of nitrates were below the limit of detection of 2mg/l.

7.9 Water Supply Pipes

7.9.1 Permeation and accelerated deterioration of pipe material can occur due to chemical reactions between the pipe and contaminants in the ground in which it is laid. This can lead to premature failures resulting in leakage and loss of water quality.

7.9.2 Water supply pipes should be specified and laid in accordance with the regional water supply company's specifications. However, no organic or volatile contaminants have been identified and it is anticipated that standard water pipes can be utilised.

7.10 Organic Content

7.10.1 Ten samples were tested for organic content (loss on ignition). The organic content in clay varied between 4.4% (high) to 8.6% (very high). The samples retrieved from peat were between 14.6% to 53.2% (very high organic content).

8.0 REVISED CONCEPTUAL SITE MODEL AND RISK ASSESSMENT

8.1 Methodology

8.1.1 Information from the current site investigation has been used to refine the likely source-pathway-target relationships identified in the preliminary Conceptual Site Model (CSM). Tier 1 risk assessment has been undertaken by comparison of contaminant concentrations in soils to generic screening criteria. These are values appropriate to the intended residential end-use of the site and indicate whether potentially unacceptable risks to receptors are likely to exist, requiring either more detailed site-specific risk assessment or remediation to break the potential contaminant linkage.

8.2 Contamination Sources

On-site Sources

8.2.1 The potential for soil contamination sources on the site was limited to the presence of Made Ground associated with the historical development and current activities on the site including ground gas emanating from Made Ground, and gases and groundwater contamination from potential vehicle spillages.

8.2.2 There is potential for presence of asbestos deemed to be associated with building waste of the skip transfer station

Off-site Sources

8.2.3 Potential sources of contamination in the immediate site surroundings comprise ground gas emanating from landfill materials associated with seven of the landfill sites situated within 500m of the site boundary, the closest of which is just 9m from the site boundary, mobile contaminants associated with materials within landfills, and mobile contaminants from surface runoff from potentially contaminating industry within the surrounding area.

Ground Gas

8.2.4 On site sources of ground gas were identified as historic landfills. Ground gas monitoring has reported negligible concentrations of methane (<0.1%) with exception of one location (WSL07) which consistently recorded methane above the 1% threshold. Generally, low concentrations (<5%) of carbon dioxide were recorded.

8.2.5 Ground gas monitoring implies that the majority of the site would be classified as CIRIA CS1 designation meaning that gas protection measures would not normally be required, however due to the elevated methane in WS07 the site is increased to CIRIA CS2.

8.3 Potential Targets

8.3.1 The principal vulnerable receptors, during the construction and operational phases of development of the site will be:

- construction workforce;
- future site users;

- on-site building structures and infrastructure (buildings; roadways; services).
- in ground services and construction materials;
- neighbouring commercial properties, and,
- Controlled Waters including surface waters (tidal channels and the River Thames and Groundwater (Principal bedrock aquifer and the superficial deposits Secondary A Aquifer).

8.4 Human Health Risk Assessment

8.4.1 Concentrations of all contaminants were below analytical detection levels, and no further action is required.

8.4.2 Chrysotile fibres were detected in BH01 at 0.2mbgl and in WLS01 at 0.2mbgl the subsequent asbestos quantification recorded values of <0.001%, below the limit of detection, in BH01 at 0.2mbgl and 0.001% in WLS01 at 0.2mbgl. The risk posed by the recorded asbestos is negligible and does not require any remedial action however it does suggest that further pockets of asbestos containing materials may be present within the shallow Made ground which is yet to be identified. It is recommended that vigilance is maintained through all future re-development works and site workers are notified of the potential risk in site inductions and toolbox talks.

8.5 Ground Gas Risk Assessment

8.5.1 The site is currently assessed as CIRIA CS2 based on monitoring data which means that basic gas protection measures should be adopted, although this is largely a precautionary measure adopted to provide comfort that any possible future changes to the gassing regime of the adjacent landfills will not pose any risk.

8.6 Property Risk Assessment (Contamination)

8.6.1 The proposed development of the site is anticipated to include a HGV tanker cleaning facility, the installation of an RDF incinerator, tank wash, steaming pods, chemical waste transfer station and office accommodation. Concrete classification risk assessment based on concentrations of soluble sulphate within the natural soils indicated design sulphate class (DC) of DS-2 and an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-2.

8.6.2 A risk assessment to determine likely impacts from ground contamination on water supply pipes has not been completed, however no significant volatiles have been identified and protected pipeline materials are not likely to be required.

8.7 Controlled Waters Risk Assessment

8.7.1 No diffuse sources of soil contamination were identified, and no point sources of groundwater pollution are anticipated.

8.7.2 Concentrations of petroleum hydrocarbons were below the limit of detection.

8.7.3 The concentrations of VOCs and SVOCs have been reported below the limit of detection.

8.7.4 No further action is required with respect to groundwater.

8.8 Conceptual Site Model

8.8.1 The revised CSM is summarised below:

Table 13: Summary of Potential Pollutant Linkages (Revised Conceptual Site Model).

Source	Pollutant / Hazard	Receptors	Pathways to Receptor	Associated Hazard [Potential severity]	Likelihood of Occurrence	Potential Risk
On-site Made Ground - relic foundations, asbestos, demolition rubble	PAH, Heavy metals, Sulphate, Asbestos.	Construction workers Future Site Occupiers	Contact, ingestion, inhalation	Effect on human health [Low-Severe]	No contamination sources identified. The risk posed by asbestos is negligible however further pockets of asbestos containing materials may be present which yet has not been identified.	Low Low
		New in ground services and construction materials.	Direct contact	Degradation [Slight]	No volatiles or hydrocarbons identified	Low
		Controlled Waters Groundwater	Leaching via ground water	Pollution of controlled waters [Slight]	Presence of mobile contaminants below adopted standards and concentrations.	Low
On-site Surface Spillages	Petroleum Hydrocarbons and PAHs.	Construction workers Future Site Occupiers	Contact, ingestion, inhalation	Effect on human health [Low-Severe]	No contaminants identified	Low Low
		New in ground services and construction materials.	Direct contact	Degradation [Slight]	No contaminants identified	Low
		Controlled Waters Groundwater	Leaching via ground water	Pollution of controlled waters [Slight]	Presence of mobile contaminants below adopted standards and concentrations.	Low

Source	Pollutant / Hazard	Receptors	Pathways to Receptor	Associated Hazard [Potential severity]	Likelihood of Occurrence	Potential Risk
On-site: Ground Gas from Made Ground.	Ground Gas.	Future Site Occupiers	Migration through soils or groundwater to indoor air.	Asphyxiation or explosion [Severe]	Made Ground comprises inert type materials with low gas generation potential. Elevated methane to the east of the site (WLS07) Installation of appropriate ground gas protection measures will mitigate any risk.	Low to medium
		Buildings		Explosion [Severe]		Low to medium
Offsite Ground Gas migrating from historic landfill sites	Ground Gas	Future Site Occupiers	Migration through soils or groundwater. Migration through service trenches, pipework to indoor air.	Asphyxiation or explosion [Severe]	The site is currently assessed as CIRIA CS2	Low
		Buildings		Explosion [Severe]	BS 8485:2015+A1:2019 score points: Gas resistant membrane- 2.0 points Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement) - 0.5 point.	Low
Offsite sources – Historic Landfills.	Leachate migration through ground of inorganic/organic contaminants.	Construction workers Future Site Users	Direct contact, inhalation, ingestion	Effect on human health [Moderate to Low]	Contaminants below the adopted standards and concentrations. Following re-development, the site is likely to be covered by hard surfacing thus minimising risk to future site users.	Negligible to Low
		New in ground services and construction materials.	Direct contact	Degradation [Slight]	Any potential risks can be mitigated by use of appropriate construction materials/ and chemical resistant supply pipes.	Low
		Controlled Waters Groundwater	Leaching via ground water	Pollution of controlled waters [Slight]	Presence of mobile contaminants below adopted standards and concentrations.	Medium

Source	Pollutant / Hazard	Receptors	Pathways to Receptor	Associated Hazard [Potential severity]	Likelihood of Occurrence	Potential Risk
Offsite sources – Surrounding Industrial Facilities .	Spillages and leaks may have resulted in migration through ground of inorganic/organic contaminants.	Construction workers Future Site Users	Direct contact, inhalation, ingestion	Effect on human health [Moderate to Low]	Any risks can be mitigated by appropriate site management during construction stage. Following re-development, the site is likely to be covered by hard surfacing thus minimising risk to future site users.	Negligible to Low
		New in ground services and construction materials.	Direct contact	Degradation [Slight]	Any potential risks can be mitigated by use of appropriate construction materials/ and chemical resistant supply pipes.	Low
					Presence of mobile contaminants below adopted standards and concentrations.	Low

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 Summary of Findings

9.1.1 The findings from the intrusive ground investigation undertaken by Southern Testing have concluded the following.

9.1.2 In general, the ground conditions encountered during the ground investigation reflected those detailed within the published geology, comprising Made Ground underlain by Alluvium comprising alternating layers of clay and peat. The Alluvium is underlain by sand and gravel of the Taplow Gravel Member resting on bedrock of chalk.

9.1.3 Mainly granular Made Ground extends to depths of between 0.8mbgl and 2.7bglm.

9.1.4 The Alluvium deposits are represented mainly by interbedded clay and peat strata, and locally with a thin layer of sand. The base of alluvium was confirmed in cable percussion boreholes (BH01-BH04) at depths of between 7.3mbgl and 11.1mbgl.

9.1.5 The alluvial clay strata are defined as unconsolidated, very soft to soft, extremely low to very low strength, of medium to high volume change potential, and of high to very high compressibility clay. The clay strata were encountered to a maximum depth of 11.1mbgl.

9.1.6 The peat strata are very soft to soft, low density, of very high compressibility soils. The peat strata were encountered to a maximum depth of 10mbgl.

9.1.7 The granular deposits of the Taplow Gravel Member were encountered down to depths of between 16.3mbgl and 18mbgl comprising upper layer of sand underlain by lower layer of gravel. The granular deposits were generally medium dense locally becoming very dense with depth, however, locally are reported to be of very loose to loose relative density which may be related to blowing sand below groundwater level. There is a general increase in relative density with depth.

9.1.8 The bedrock comprises chalk deposits, generally Grade II to Grade V/Grade VI chalk recovered as weak to very weak, white to off-white subrounded to subangular gravel with frequent fine to coarse gravel of subangular flint, locally with flint bands or cobbles of flint.

9.1.9 Standing groundwater levels were recorded at depths of between 0.5mbgl and 3.22mbgl.

9.1.10 No visual or olfactory contamination indicators were reported during the intrusive works. Made Ground was encountered in all exploratory holes comprising predominantly gravelly sand with fragments of brick, concrete, clinker, wood, plastic, ash, and masonry.

9.1.11 Concentrations of all soil contaminants were below adopted standards and concentrations.

9.1.12 Asbestos fibres were detected in two samples however asbestos quantification indicates the risk posed by the recorded asbestos is negligible and does not require any remedial action. However, it does suggest that further pockets of asbestos containing materials may be present which yet has not been identified.

9.1.13 Using the worst-case scenario of the gas monitoring results and considering the site is underlain by typical Made Ground, peat and locally organic clay the site is classified as Characteristic Situation CS2 – low risk and basic ground gas protection measures will be required.

9.1.14 BS 8485:2015+A1:2019 Table 4 indicates that a score of 2.5 points for a "Type C" building (commercial) is required for a site classified as CS2.

9.1.15 The site is in a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). No radon protective measures are necessary in the construction of new dwellings or extensions.

9.1.16 Concentrations of contaminants in groundwater samples were below the limit of detection.

9.1.17 The concentrations of VOCs and SVOCs have been reported below the limit of detection.

9.1.18 Conventional hydraulic plant should be satisfactory for excavating service trenches within Made Ground and the natural soils. A pneumatic breaker will be required to help break out the hardstanding across the site.

9.1.19 The Made Ground, and alluvial deposits, peat and clay, are considered unsuitable as a bearing stratum due to its variability, and potential for unacceptable total and differential settlement under applied foundation loadings.

9.1.20 However, for loads up to 40kN/m^2 where settlement is not critical, rafts or reinforced strip footings may be considered.

9.1.21 The foundations could be supported on piles founded within the bedrock of chalk. A specialist piling contractor should be contacted for advice on the most appropriate methods and for detailed design once structural loadings are known.

9.1.22 It is anticipated that ground bearing floor slabs can be adopted following the demolition and grubbing out of below hardstanding and ground structures and appropriate back filling of any resultant voids and proof rolling of the formation layers and any loose or soft spots to be removed and replaced with an engineered fill

9.1.23 It is considered unlikely a CBR of 5% will be achievable over the majority of the site. Where the CBR is found to be less than 2.5%, the sub-grade may be unsuitable for both the trafficking of site plant and as support for a permanent foundation, without improvement works being undertaken.

9.1.24 The chemical test results correspond to a Design Sulphate Class of DS-2 and Aggressive Chemical Environment for Concrete (ACEC) class AC-2.

9.2 Further Works

9.2.1 There is uncertainty regarding ground gas concentrations where Gas Screening values (GSVs) calculated for the site resulted in a Characteristic Situation of CS1 (very low risk) with

exception of WSL07 where the concentration of methane exceeded the 1% threshold resulting in CIRIA CS2 (low risk). Methane was not typically recorded above monitoring detection limits (0.1% v/v) except WLS07 where the maximum recorded concentration was 74.8% v/v.

9.2.2 Further gas monitoring could be undertaken to confirm whether the classification is correct or whether the requirement for ground gas protection measures can be removed.

9.2.3 It is recommended that a note is made within the sites health and safety file highlighting the risk of uncovering further asbestos materials and it would be prudent to ensure that dust suppression is utilised throughout the redevelopment works. All future construction staff should be notified of the potential risk during their site inductions.

9.2.4 The Unexploded Ordnance (UXO) risk assessment carried out by Brimstone Site Investigation Ltd. concluded that UXO posed a moderate risk to the proposed works. In addition to this borehole WLS01 was terminated at 2mbgl due to positive magnetometer reading from the EOD engineer. If any below ground development is proposed in this area then this should be further investigated.

9.2.5 A note should be placed on the sites health and safety file identifying the potential UXO risk and again this should be identified to all construction staff through site inductions and toolbox talks. It is recommended that Brimstone or another UXO consultancy are contacted for further advice during construction.

9.2.6 The design and installation of any piles will require the approval of HS1 (Network Rail).

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APPENDIX 1

Southern Testing Factual Report on

Ground Investigation and Laboratory Testing

Southern Testing
Environmental & Geotechnical

ST Consult
Environmental & Geotechnical

Factual Site Investigation Report

Project Name: Riverside Industrial Park

Location: West Thurrock, Essex, RM20 3EF

Client: Williams Environmental

Project ID: J15309

Report Date: 20 February 2023

Report Issue: 1

SUMMARY

The site, is located off Watson Close, in The Riverside Industrial Estate, Grays, extends to approximately 140m x 130m and currently comprises two areas of commercial land. It is proposed to redevelop the site with a new HGV storage and transport facility.

Geological records indicate the site to be underlain by Made Ground over Alluvium over Undifferentiated Lewes Nodular, Seaford and Newhaven Chalk Formations.

An Unexploded Ordnance (UXO) risk assessment, carried out by Brimstone Site Investigation Ltd. supplied to us prior to the ground investigation works being undertaken. The assessment concludes that UXO poses a Moderate risk to the proposed works. The assessment was made with specific regard to the proposed investigation works and its conclusions may not be appropriate to other activities. During the course of the site works an EOD engineer was in attendance for all drilling activities.

A single phase of intrusive investigation was carried out, comprising a series of 9 No. windowless sampler boreholes to a maximum depth of 5.0m (bgl) and 4 No. cable percussive boreholes to a maximum depth of 24.0m (bgl). There were areas of the site that were inaccessible during the fieldwork phase. It should not be assumed that the same ground conditions would apply to these inaccessible areas.

The soils encountered comprised 0.2/0.22m of Bituminous Material/concrete over Made Ground to 0.8/3.0m (bgl), over Alluvium with Peat to 2.0+/11.1m (bgl), which in turn was underlain by Sand & Gravel to 16.3/18.0m (bgl) over Chalk.

While the site works were in progress, groundwater was encountered in all four of the cable percussive boreholes (BH01-BH04) and seven of the nine windowless sampler boreholes (WLS01-WLS07), at depths between 0.5-9.6m (bgl). During the subsequent groundwater monitoring visits standing water was recorded in all of the monitoring well installations at depths between 0.6-1.95m (bgl).

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

As with any site, areas of contamination not identified during investigation works may come to light during the course of redevelopment. Accordingly, a discovery strategy must be in place during the redevelopment to ensure that any hitherto unknown contamination is identified and dealt with in an appropriate manner. Depending on the nature of any such contamination, it may prove necessary to reassess the remedial strategy for the site. The presence of contamination may affect the classification of waste soils, or the potential for their re-use.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Williams Environmental and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

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For and on behalf of Southern Testing Laboratories Limited

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A INTRODUCTION

1 Authority

Our authority for carrying out this work is contained in a Southern Testing Project Order Form, completed by Mr J Whitmore of Williams Environmental, dated 1st November 2022.

2 Location

The site is located in West Thurrock, approximately 1.0km north east of the Dartford Crossing. The approximate National Grid Reference of the site is TQ 58220 76720. The site location is indicated on Figure 1 within Appendix A.

3 Proposed Construction

It is proposed to construct a new HGV storage and transport facility.

4 Object

The object of this factual investigation was to assess the underlying soils present beneath the site, and other soil parameters relevant to the proposed development, and to assess the likely nature and extent of soil, groundwater and soil gas contamination on the site.

5 Scope

This factual report presents our exploratory hole logs, laboratory test results and monitoring data only.

A detailed UXO risk assessment, undertake by Brimstone Site Investigation Ltd. was supplied to us by Caulmert Ltd. in advance of the investigation works being undertaken. The assessment was made with specific regard to the proposed investigation works/site works and its conclusions may not be appropriate to other activities.

As with any site there may be differences in soil conditions between exploratory hole positions.

This report is not an engineering design and the figures and calculations contained in the report should be used by the Engineer, taking note that variations will apply, according to variations in design loading, in techniques used, and in site conditions. Our figures therefore should not supersede the Engineer's design.

The site investigation has been completed with reference to BS 5930 Ref [1] and BS 10175 Ref [2].

Contamination and Geotechnical issues are not considered in this report.

Waste Classification of soils has not been included within the brief for the investigation.

The findings and opinions conveyed via this investigation report are based on information obtained from a variety of sources as detailed within this report, and which Southern Testing Laboratories Ltd. believes are reliable. Nevertheless, Southern Testing Laboratories Ltd. cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

The investigation was conducted and this report has been prepared for the sole internal use and reliance of Williams Environmental and their appointed Engineers. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Southern Testing Laboratories Ltd. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill.

The recommendations contained in this report are made in respect of the particular context of the investigation as described in the report and may not be appropriate to alternative development schemes. This report should be considered in its entirety and Southern Testing Laboratories Ltd accepts no responsibility for and excludes liability in respect of any omission or alteration made by others, and any use of the report for any purpose other than that for which it was produced.

Detailed information on the proposed development, such as detailed final layout, loadings and serviceability limits was not provided. Accordingly, where geotechnical design advice is provided it is on the prescriptive basis allowed for by Eurocode 7: employing conventional and conservative design rules.

B SITE SETTING & DESCRIPTION

6 Geology

The British Geological Survey Map of the area (Sheet No. 271 - Dartford) and online mapping indicates that the site geology consists of Made Ground, over Alluvium over Undifferentiated Lewes Nodular, Seaford and Newhaven Chalk Formations.

6.1 Made Ground

General

"Fill" and "made ground" are terms, which are used interchangeably to describe material that has been placed by man. It may have been placed in a controlled or uncontrolled manner and if the latter term applies then very great variations in material type, depth and density are likely to occur. Old refuse filling often contains sulphate rich materials, heavy metals and other dangerous chemicals, and may produce methane gas.

Many fills are subject to high and variable amounts of settlement when loaded. Apart from the direct effect on foundations and floor slabs this would cause down drag on piled foundations.

The inherent variability means that areas of noxious materials may be found, although careful sampling procedures may have failed to locate them during prior investigations. It is important that a watchful eye is kept during all site works, so that any unusual materials can be spotted and removed from site or analysed as appropriate.

It is emphasised that there can be great variability in fill depth, sometimes with a vertical interface between fill and natural ground, and this can play havoc with job costings. To safeguard the integrity of a structure it is prudent to probe all foundation excavations with a suitable tool prior to placing foundation concrete. The Perth Penetrometer is a suitable tool but there are many others.

Where excavation is carried out in fill material an allowance should be made for overbreak and for shuttering for subsurface concrete structures where appropriate.

Finally BS8004:2015 warns that all made ground should be treated as suspect because of the likelihood of extreme variability. In this respect it is often useful to carry out trial pitting in addition to borings, as the larger exposed section gives a better indication of soil variability.

6.2 Alluvium

Alluvium is a geologically recent deposit found in association with watercourses. It is typically soft to firm normally consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present.

Running sand or silt may be encountered. Excavations are often unstable. Bottom heave may be encountered in clayey soils below 3 m.

It is inherently variable and rapid lateral transitions in soil type should be anticipated.

6.3 Lewes Nodular Chalk Formation

The Lewes Nodular Chalk Formation is characterised by bands of orange-stained, hard, medium to very high density chalk interbedded with soft greyer low density chalk. There are some well-developed hardgrounds noted such as the Top Rock and Chalk Rock. A number of persistent marl and flint horizons are included within this formation. Fracturing is variable, although commonly steeply inclined and curvilinear in nature. Horizons of sub-horizontal sheet flints are also present.

6.4 Seaford Chalk Formation

The Seaford Chalk Formation comprises a fairly homogeneous white chalk with regular and conspicuous flint bands. These flints are commonly laterally very continuous and traceable over large distances. Some of the flints can be very large. A few marl seams are present within the lower parts of the formation.

6.5 Newhaven Chalk Formation

The Newhaven Chalk Formation is characterised by firm white chalk with common marl seams and widely spaced flint bands, and by numerous inclined conjugate shear fractures, normally slickensided and frequently containing sheet flint. In eastern Kent an overlying secondary unit, the Margate Chalk Member, is typically homogenous with no marl seams and few flints.

7 UXO Risk Management

The possibility of unexploded ordnance (UXO) being encountered on a site falls within the category of a potentially significant risk and should be addressed as a legal duty under the Construction (Design and Management) Regulations by the Client as early as possible in a project.

The CIRIA publication C681 Ref [3] has been developed to provide a consistent framework for the management of potential risks posed by UXO during site investigation and groundwork phases of construction. The process adopts a tiered approach, divided into four distinct stages; Preliminary risk assessment, Detailed risk assessment, Risk mitigation and Implementation.

A detailed UXO risk assessment, prepared by Brimstone Site Investigation Ltd. was provided by the client.

The detailed UXO risk assessment concludes that UXO poses a Moderate Risk to the proposed works.

During the course of the site works an EOD engineer was in attendance for all drilling activities.

The assessment was made with specific regard to the proposed ground investigation works and its conclusions may not be appropriate to other activities.

8 General Site Description

The site which is roughly triangular in shape and extends to approximately 140m x 130m in size. It currently comprises two areas of commercial land. The western section of the site comprised a lorry park, with its associated offices, workshops, above ground fuel tanks and parking areas. The eastern/southern section of the site, comprised a self-storage/shipping container storage area, with its associated offices and car parking areas.

At the time of the intrusive investigation both halves of the site were covered in concrete/blacktop hardstanding. The site is bounded to the east and south by undeveloped open land. To the west of the site is similar undeveloped open land, beyond which is a commercial/industrial area. To the north of the site is a series of commercial/industrial units. A HS1 control building is present to the north of the site.

On a regional scale, the topography of the local area slopes gently down towards the south and the River Thames. The site itself is relatively flat and level.

At the time of the intrusive investigation the site and immediate surrounding area were devoid of any significant vegetation.

8.1 Site Photographs

A series of photographs showing the site and surrounding area at the time of the intrusive investigation is included in Appendix F.

C GROUND INVESTIGATION

9 Strategy and Method

The strategy adopted for the intrusive investigation comprised the following:

Activity / Method	Purpose	Max Depth Range (mbgl)	Installations / Notes
WLS01-09 Dynamic Windowless Sampling	Boreholes to investigate the shallow ground conditions within external areas. To allow SPT's and collection of samples for geotechnical and contamination testing. Installation of shallow land gas and groundwater monitoring wells.	1.6m / 5.0m	50mm gas & groundwater monitoring wells installed within WLS04, WLS05, WLS07, WLS08 & WLS09.
BH01-04 Cable Percussive	Boreholes to assess deeper ground conditions and allow SPT's and samples for geotechnical testing.	20.0m / 24.0m	200mm diameter. 50mm groundwater monitoring wells installed within BH01, BH02, BH03 & BH04.

Exploratory hole locations were specified by the Clients Engineer and are shown in Figure 2 in Appendix A.

In-situ test and sampling methods descriptions employed are given in Appendix B together with the test results.

SPT Energy Ratio certificates and a Summary Table of SPT N Values is provided within Appendix B.

The presence of buildings, shipping containers, concrete hardstanding, park vehicles and the operational needs of the onsite businesses limited / restricted the fieldwork.

10 Weather Conditions

The fieldwork was carried out between 21st November and 8th December 2022, at which time the weather varied from being overcast and wet to cold and dry.

11 Soils as Found

The soils encountered are described in detail in the attached exploratory hole logs (Appendix A), but in general comprised a covering of Blacktop/Concrete over Made Ground over Alluvium with Peat over Sand & Gravel over Chalk. A summary is given below.

Depth (m bgl)	Soil Type	Description
GL to 0.07/0.20m	Bituminous Material (BH03, WLS05, WLS06, WLS07, WLS08).	Blacktop
GL to 0.14/0.22m	Concrete (BH01, BH02, WLS01, WLS02, WLS03, WLS04, WLS09).	Concrete with 20mm flint aggregate.
0.07/0.22m to 0.8/3.0m	Made Ground	Greyish brown to dark grey, gravelly, SAND. Gravel comprises fragments of brick, concrete, clinker, wood, plastic, material, ash, masonry, wood, limestone, flint, chalk and sandstone
0.8/3.0m to 2.0+/11.1m	Alluvium with Peat.	Very soft to soft, light grey to grey, silty, organic CLAY, with frequent layers of reddish brown, fibrous, organic, PEAT, with strong organic odour.
7.3/11.1m to 16.3/18.0m	Sand & Gravel	Loose to dense, greenish grey to grey, sandy, GRAVEL. Gravel comprises fine to coarse, sub-rounded to sub-angular, flint.

Depth (m bgl)	Soil Type	Description
16.3/18.0m to 20.0+/24.0m+	Chalk	CHALK: Recovered as: Very weak to weak, white to off-white, fine to coarse, sub-rounded to sub-angular, CHALK gravel, with frequent fine to coarse, sub-angular, flint gravel.

11.1 Visual and Olfactory Evidence of Contamination

Whilst no visual or olfactory evidence of significant contamination was noted, Made Ground was encountered within all thirteen of the exploratory holes. These materials comprised predominately gravelly Sand and included fragments of brick, concrete, clinker, wood, plastic, material, ash, masonry, wood, limestone, flint, chalk and sandstone. Such soils can often contain elevated concentrations of contaminants, including heavy metals, Polyaromatic Hydrocarbons (PAHs), Petroleum Hydrocarbons, asbestos, etc. which can only be detected through laboratory analysis.

These occurrences are discussed in Section E.

12 Groundwater Occurrences

Groundwater was encountered within all four of the deeper cable percussive boreholes, the detailed of which are included within the exploratory hole logs in Appendix A and are summarised in the table below.

Hole ID	Comment	Stratum
BH01	Water strike at 9.0m (bgl), water level rose to 5.8m (bgl) after 20 minutes.	Boundary of Alluvium and Sand & Gravel.
	Standing water level at 0.9m (bgl), upon completion of drilling.	
BH02	Standing water level at 0.8m (bgl), upon completion of drilling.	
BH03	Water strike at 9.6m (bgl), water level rose to 5.0m (bgl) after 20 minutes.	Alluvium.
	Standing water level at 0.9m (bgl), upon completion of drilling.	
BH04	Water strike at 1.5m (bgl), water level rose to 1.1m (bgl), after 20 minutes.	Made Ground.
	Standing water level at 1.1m (bgl), upon completion of drilling.	

Groundwater was noted within seven out of the nine, windowless sampler boreholes, the detailed of which are included within the exploratory hole logs in Appendix A and are summarised in the table below.

Hole ID	Comment
WLS01	Standing water level at 1.3m (bgl), upon completion of drilling.
WLS02	Standing water level at 0.97m (bgl), upon completion of drilling.
WLS03	Standing water level at 1.17m (bgl), upon completion of drilling.
WLS04	Standing water level at 0.5m (bgl), upon completion of drilling.
WLS05	Standing water level at 1.1m (bgl), upon completion of drilling.
WLS06	Standing water level at 3.22m (bgl), upon completion of drilling.
WLS07	Standing water level at 1.59m (bgl), upon completion of drilling.

D GEOTECHNICAL LABORATORY TESTING

13 Geotechnical Laboratory Tests

The following geotechnical laboratory testing was carried out on selected samples in order to aid material classification and characterise soil properties as specified by the Client's engineer. The test method references and results are given in Appendix C.

Laboratory Test	Number of Samples Tested	Stratum
Atterberg Limit test & Natural Moisture Content	12	Alluvium & Peat
BRE SD1 Suite C, pH & SO_4	2 13	Made Ground Alluvium & Peat
Organic Content – Loss of Ignition	10	Alluvium & Peat
Particle Size Distribution (Wet Sieve)	6 1	Alluvium & Peat Sand & Gravel
Single Stage Unconsolidated Undrained Triaxial Test (UUT)	3	Alluvium & Peat
Hand Vane Test	7	Alluvium & Peat
Consolidation Test	3	Alluvium & Peat

14 Groundwater Levels

Whilst the intrusive investigation was in progress, standing water levels were noted within eleven of the thirteen boreholes, at depths between 0.5-3.22m (bgl).

Groundwater monitoring wells were installed within five of the windowless sampler boreholes (WLS04, WLS05, WLS07, WLS08 & WLS09) and within all four of the deeper cable percussive boreholes (BH01, BH02, BH03 & BH04), with groundwater levels being measured during the course of the monitoring visits.

The results of the groundwater measurements taken during the site works and during each of the monitoring visits undertaken to date are summarised in the table below.

Hole ID	Standing Water Level (m bgl)			
	06/12/2022	19/12/2022	04/01/2023	12/01/2023
BH01	N/A	N/A*	1.56	1.75
BH02	N/A	1.19	0.95	1.64
BH03	N/A	1.46	1.26	1.95
BH04	1.11	1.20	0.94	1.84

**One of the monitoring well covers of the deeper cable percussive boreholes (BH01) along with the surrounding area was submerged and therefore, no groundwater measurements were undertaken.*

Hole ID	Standing Water Level (m bgl)			
	06/12/2022	19/12/2022	04/01/2023	12/01/2023
WLS04	N/A	0.60	0.67	0.61
WLS05	Dry	Dry	1.18	1.05
WLS07	1.18	1.18	1.12	1.10

Hole ID	Standing Water Level (m bgl)			
	06/12/2022	19/12/2022	04/01/2023	12/01/2023
WLS08	1.05	1.04	1.02	0.90
WLS09	0.95	0.94	0.94	0.84

By way of comment, groundwater levels vary considerably from season to season and year to year, often rising close to the ground surface in wet or winter weather, and falling in periods of drought. Long-term monitoring from boreholes or standpipes is required to assess the ground water regime and this was not possible during the course of this site investigation.

E GEO-ENVIRONMENTAL LABORATORY TESTING

15 Site Investigation – Soils

15.1 Sampling Regime

The number of sample locations was limited and was partly targeted at potential sources of contamination and also intended to provide general coverage.

Access was restricted by presence of buildings, shipping containers, concrete hardstanding, park vehicles and the operational needs of the onsite businesses.

15.2 Testing

The following geo-environmental laboratory testing was carried out on selected samples as specified by the Client's engineer.

Test Suite	Number of Samples	Soil Tested
General Metals/Inorganics Suite	20	Made Ground
Asbestos Screen	17	Made Ground
Soil Organic Matter	20	Made Ground
Soil PAHs Suite	20	Made Ground
Soil TPH Suite	15	Made Ground
Asbestos Quantification	2	Made Ground

The test results are presented in full in Appendix D. A summary and discussion of the significance of the results and identified contamination sources is given below.

16 Site Investigation – Waters

16.1 Sampling Regime

A series of 3 No. groundwater monitoring visits were undertaken, between December 2022 and January 2023. As specified by the Client's Engineer groundwater samples were taken from the monitoring wells, installed within deeper cable percussive boreholes, during the second groundwater monitoring visit on 4th January 2023.

16.2 Monitoring Data

The monitoring data is presented in full in Appendix E. A summary and discussion of the results is given below.

16.3 Testing

The following laboratory testing was carried out on selected groundwater samples as specified by the Client's engineer.

Test Suite	Number of Samples	Locations Sampled
General Water Suite	4	BH01, BH02, BH03 & BH04
Aluminium	4	BH01, BH02, BH03 & BH04
Mercury (Methyl, Elemental & Inorganic)	4	BH01, BH02, BH03 & BH04
Nitrate	4	BH01, BH02, BH03 & BH04
Water Hardness	4	BH01, BH02, BH03 & BH04
Total Biochemical Oxygen (BOD)	4	BH01, BH02, BH03 & BH04
Total Chemical Oxygen (COD)	4	BH01, BH02, BH03 & BH04
Waters: Priority PAHs Suite	4	BH01, BH02, BH03 & BH04
TPH Water Suite	4	BH01, BH02, BH03 & BH04
Phenol	4	BH01, BH02, BH03 & BH04
VOCs & SVOCs	4	BH01, BH02, BH03 & BH04

The test results are presented in full in Appendix D. A summary and discussion of the significance of the results and identified contamination sources is given below.

17 Site Investigation - Gas

17.1 Monitoring Programme and Results

The Clients Engineer specified 3 No. gas readings to be taken over a period from December 2022 to January 2023. The results of the monitoring programme are given in full in Appendix F and are summarised below.

Borehole Gas Monitoring Results				
Monitoring well	BH01	BH02	BH03	BH04
Response zone / Stratum	9.0m – 24.0m Sand & Gravel and Chalk.	11.0m – 24.0m Sand & Gravel and Chalk.	10.0m – 20.0m Sand & Gravel and Chalk.	8.0m – 24.0m Sand & Gravel and Chalk.
Evidence of contamination	None	None	None	None
No. of Monitoring Events	2 No.*	3 No.	3 No.	3 No.
Methane range CH_4 (%)	0.0	0.0	0.0	0.0
Carbon dioxide range CO_2 (%)	0.0 – 0.3	0.0	0.0	0.0
Oxygen range O_2 (%)	17.8 – 20.4	20.4 – 20.6	20.4 – 20.5	20.2 – 20.5
Flow rate range l/hr	-71.9 – 0.0	0.0	0.0	-0.3 – 50
BH differential pressure range (Pa)	-1198 – 0.0	0.0	0.0	-1.0 – 500
PID measurement (ppm)	0.0 – 0.1	0.0	0.0	0.0
Water level (m bgl)	1.56 – 1.75	0.95 – 1.64	1.26 – 1.95	0.94 – 1.84
Atmospheric pressure during monitoring (mb)	1006 – 1016	1005 – 1016	1005 – 1016	1005 – 1015

**One of the monitoring well covers of the deeper cable percussive boreholes (BH01) along with the surrounding area was submerged on the initial monitoring visits (19th December 2022) and therefore, no groundwater measurements were undertaken.*

Borehole Gas Monitoring Results					
Monitoring well	WLS04	WLS05	WLS07	WLS08	WLS09
Response zone / Stratum	1.0m – 4.0m Alluvium & Peat.	1.0m – 3.0m Made Ground and Alluvium & Peat.	1.0m – 4.0m Made Ground and Alluvium & Peat.	1.0m – 1.6m Made Ground.	1.0m – 2.0m Made Ground and Alluvium & Peat.
Evidence of contamination	Made Ground	Made Ground	Made Ground	Made Ground	Made Ground
No. of Monitoring Events	3 No.	3 No.	3 No.	3 No.	3 No.
Methane range CH_4 (%)	0.0	0.0	10.1 – 74.8	0.0	-0.1 – 0.0
Carbon dioxide range CO_2 (%)	0.0	0.6 – 1.4	0.3 – 1.9	0.4 – 1.3	0.1 – 0.7
Oxygen range O_2 (%)	14.9 – 21.0	15.4 – 19.7	1.9 – 16.7	19.8 – 20.1	20.2 – 20.5
Flow rate range l/hr	0.0 – 6.0	0.0 – 3.0	38.7 – 800	0.0	0.0 – 3.5
BH differential pressure range (Pa)	0.0 – 35.0	0.0 – 5.0	479 – 550	0.0	0.0 – 6.0
PID measurement (ppm)	0.0 – 0.2	0.0	0.0	0.0 – 0.2	0.0
Water level (m bgl)	0.60 – 0.67	1.05 - Dry	1.10 – 1.18	0.9 – 1.04	0.84 – 0.94
Atmospheric pressure during monitoring (mb)	1005 - 1016	1006 - 1016	1006 -1016	1006 - 1016	1006 -1016

REFERENCES

[1] BSI Standards, “BS 5930 Code of practice for ground investigations,” 2015.

[2] BSI Standards, “BS10175 Investigation of potentially contaminated sites – Code of practice,” 2013.

[3] CIRIA, “C681 Unexploded Ordnanace (UXO) A guide for the construction industry,” 2009.

[4] BSI Standards, “BS 3882:2015 Specification for Topsoil,” 2015.

[5] CIRIA, “C574 Engineering in Chalk,” 2002.

[6] R. N. Mortimore, Logging the Chalk, 2014.

[7] BSI Standards, “BS EN ISO 22476-3:2005+A1:2011 Geotechnical investigation and testing. Field testing. Standard penetration test,” 2011.

[8] BSI Standards, “BS EN ISO 22475-1:2006 Geotechnical investigation and testing. Sampling methods and groundwater measurements. Technical principles for execution.,” 2006.

[9] BSI Standards, “BS ISO 18400-100:2017 Soil quality. Sampling. Guidance on the selection of sampling standards,” 2017.

[10] BSI Standards, “BS ISO 18400-101:2017 Soil quality. Sampling. Framework for the preparation and application of a sampling plan,” 2017.

[11] BSI Standards, “BS ISO 18400-103:2017 Soil quality. Sampling. Safety,” 2017.

[12] BSI Standards, “BS ISO 18400-105:2017 Soil quality. Sampling. Packaging, transport, storage and preservation of samples,” 2017.

[13] BSI Standards, “BS ISO 18400-107:2017 Soil quality. Sampling. Recording and reporting,” 2017.

Southern Testing
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APPENDIX A

Site Plans and Exploratory Hole Logs

A

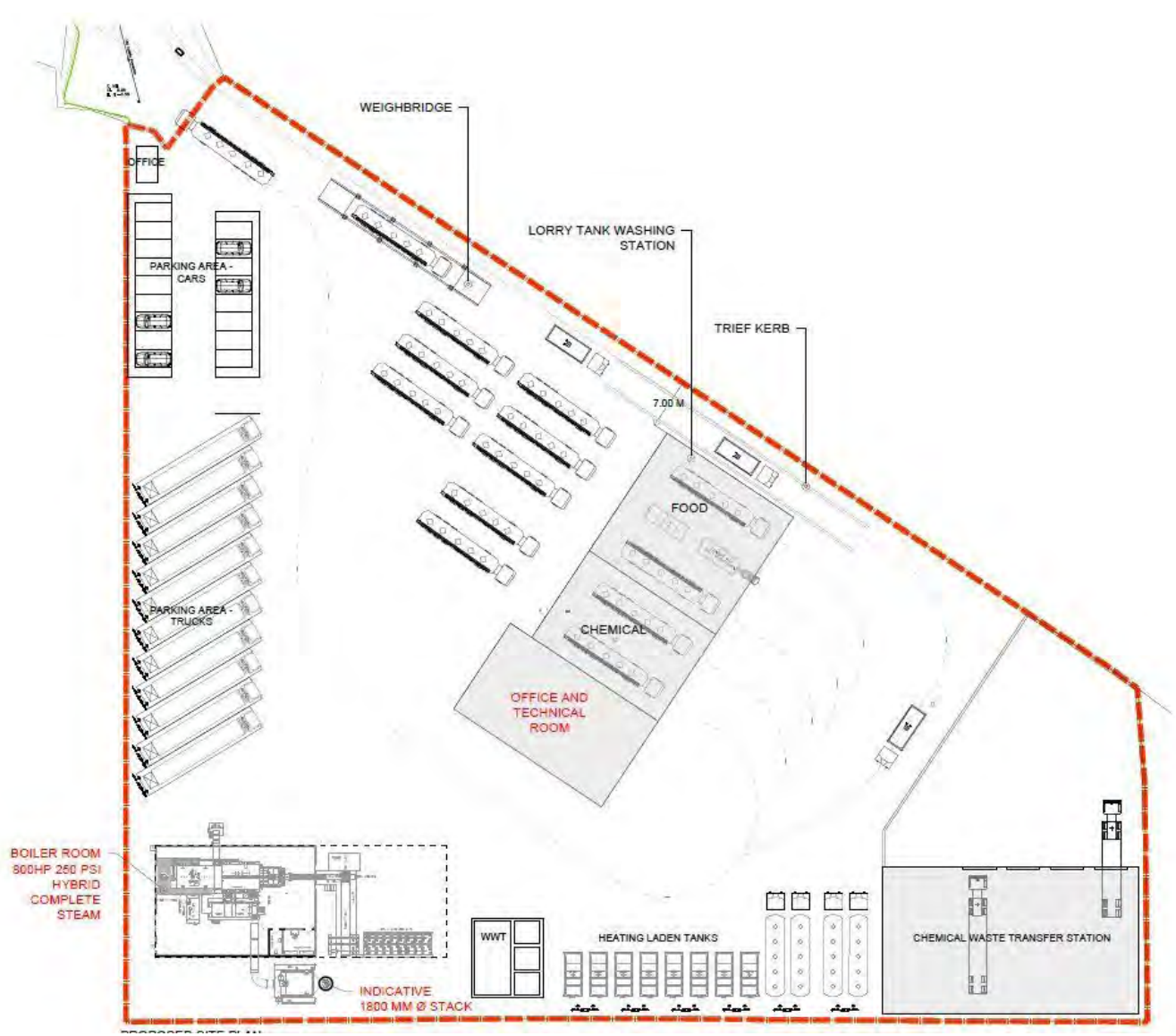
NB: Contains Ordnance Survey Data © Crown copyright and database right 2022.

Site:	Riverside Industrial Park, West Thurrock	STL: J15309	Fig No: 1
Date:	21st November 2022	Site Location Plan	

Southern Testing

Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

ST Consult

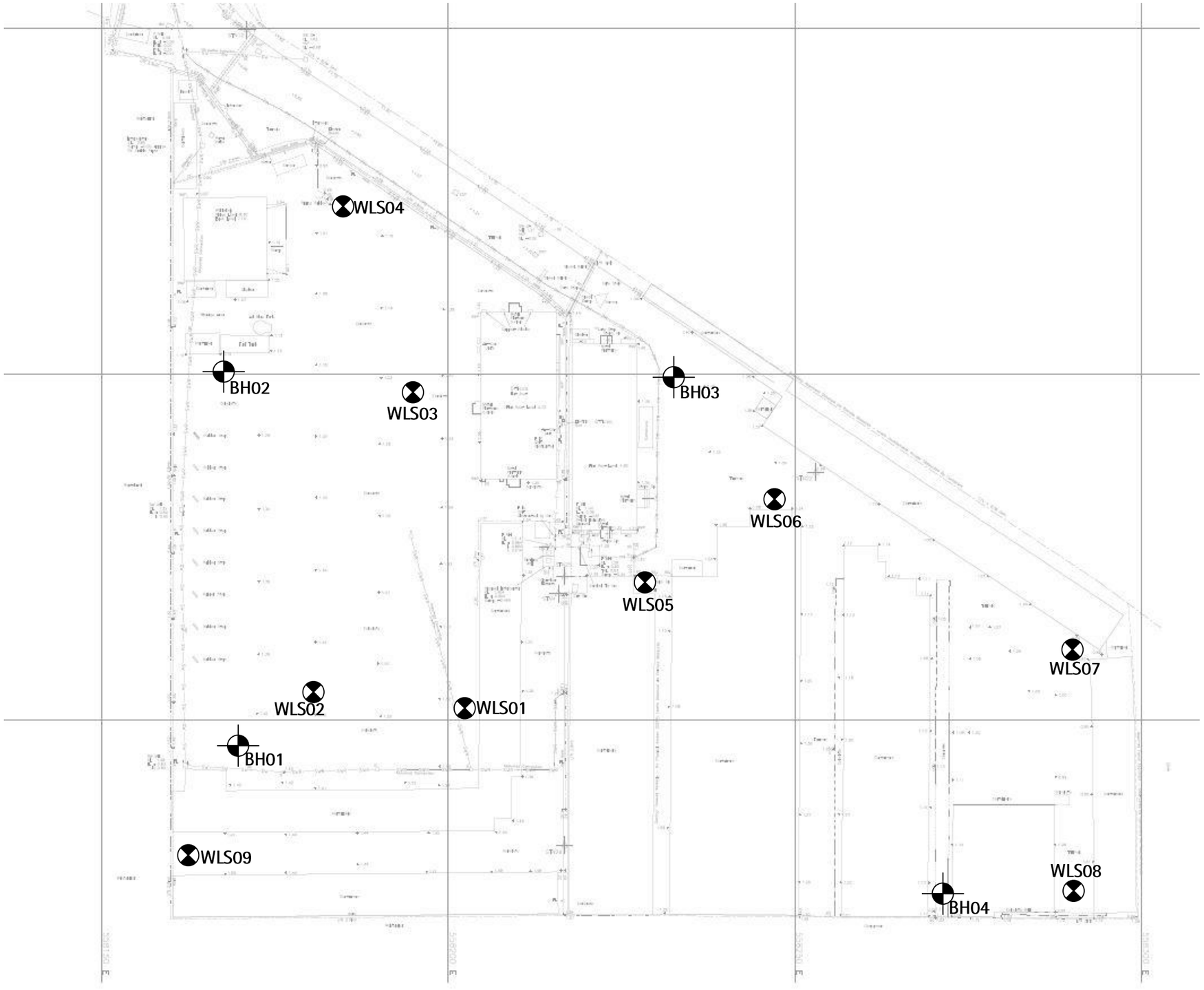


Site: Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	STL: J15309	Fig No: 2
Date: 21st November 2022	Site plan showing proposed development.	

Southern Testing

Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

ST Consult



NB: Positions of Boreholes and/or Trial Pits are only indicative unless dimensioned

Site:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	STL: J15309	Fig No: 3
Date:	21st November 2022	Site plan showing approximate exploratory hole locations.	

Southern Testing

Southern Testing: Keeble House, Stuart Way, East Grinstead, West Sussex RH19 4QA
ST Consult: Twigden Barns, Brixworth Road, Creaton, Northampton NN6 8NN

ST Consult

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS01
	21/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558202 - N 176701	1.55	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
							(0.19)		CONCRETE with 20mm flint aggregate.
		0.20	ES			0.19	1.36		Greyish brown to grey, gravelly, SAND. Gravel comprises fragments of brick, concrete and clinker. MADE GROUND
							(0.31)		
		0.60	ES			0.50	1.05		Pale brown to brown, slightly clayey, gravelly, SAND. Gravel comprises fragments of brick, clinker, wood, plastic and material. MADE GROUND
							(0.30)		
		1.00	ES SPT	N=4 (1,2/1,1,1,1)		0.80	0.75		White to pale grey, silty, medium to coarse, angular chalk GRAVEL MADE GROUND
							(0.60)		
		1.50	D ES HP	UCS(kPa)=200		1.40	0.15		Soft to firm, pale grey to dark grey, silty, CLAY.
							(0.60)		
		2.00	D HP	UCS(kPa)=130		2.00	-0.45		End of Borehole at 2.00m

Remarks:

1. Standing Water level at 1.3m (bgl), upon completion of drilling.
2. Borehole terminated at 2.0m (bgl), due to positive magnetometer reading from EOD Engineer.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS01
	21/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	2.00	WLS	21/11/2022	18/01/2023	DT & JB	RP110		SM	
1.00	0.00	HA	21/11/2022	18/01/2023	DT & JB	Hand Dug		SM	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=4 (1,2/1,1,1,1)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	2.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS02
	21/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558183 - N 176710	1.47	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
							(0.14)		COCNRETE with 20mm flint aggregate.
						0.14	1.33		Greyish brown to dark brown, sandy, GRAVEL. Gravel comprises fragments of brick, clinker, concrete, ash, limestone and flint. MADE GROUND
		0.30	ES						
							(0.66)		
		0.70	ES						
						0.80	0.67		White to pale grey, silty, fine to medium, sub-angular chalk GRAVEL. MADE GROUND
		1.00	SPT	N=7 (2,3/2,3,1,1)					
							(0.60)		
		1.20	ES						
						1.40	0.07		Soft to firm, pale grey to grey, silty, CLAY.
		1.50	D ES HP	 UCS(kPa)=130					
		2.00	D HP SPT	 UCS(kPa)=150 N=3 (1,0/1,1,0,1)					
							(2.10)		*[2.4-3.0m (bgl) - No Recovery.]*
		3.00	SPT	N=1 (1,0/1,0,0,0)					
						3.50	-2.03		Dark brown, fibrous, slightly sandy PEAT, with an organic odour.
		3.70	D						
							(0.50)		
		4.00	SPT	N=1 (1,0/0,0,0,1)		4.00	-2.53		End of Borehole at 4.00m

Remarks:

1. Standing Water level at 0.97m (bgl), upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS02
	21/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
1.00	4.00	WLS	21/11/2022	21/11/2022	DT & JB	RP110		SM	
1.00	0.00	HA	21/11/2022	21/11/2022	PG & CP	Hand Dug		SM	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=7 (2,3/2,3,1,1)	110RP75	82	
2.00	S				N=3 (1,0/1,1,0,1)	110RP75	82	
3.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
4.00	S				N=1 (1,0/0,0,0,1)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	4.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS03
	21/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558194 - N 176748	1.29	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
							(0.22)		CONCRETE with 20mm flint aggregate.
						0.22	1.06		Greyish brown to dark grey, gravelly, SAND. Gravel comprises fragments of brick, concrete and clinker. MADE GROUND
		0.40	ES				(0.28)		
						0.50	0.78		Greyish brown to brown, gravelly, SAND. Gravel comprises fragments of concrete, flint and clinker. MADE GROUND
		0.70	ES				(0.50)		
		1.00	SPT	N=14 (2,4/5,3,3,3)		1.00	0.28		White to pale grey, silty, fine to medium, sub-angular chalk GRAVEL. MADE GROUND
		1.50	ES				(0.90)		
						1.90	-0.62		Soft to firm, dark grey, silty, CLAY.
		2.00	D ES SPT	N=1 (1,0/1,0,0,0)			(0.60)		
						2.50	-1.22		Dark brown to greyish brown, fibrous, slightly sandy, PEAT.
		2.70	D						
		3.00	SPT	N=1 (1,0/1,0,0,0)					*[3.0-4.0m (bgl) - No Recovery.]*
							(1.50)		
		4.00	SPT	N=1 (1,0/1,0,0,0)		4.00	-2.72		End of Borehole at 4.00m

Remarks:

1. Standing Water level at 1.17m (bgl), upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS03
	21/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	1.00	HA	21/11/2022	21/11/2022	PG & CP	Hand Dug		SM	
1.00	4.00	WLS	21/11/2022	21/11/2022	DT & JB	RP110		SM	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=14 (2,4/5,3,3,3)	110RP75	82	
2.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
3.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
4.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	4.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS04
	21/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558183 - N 176774	1.01	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
							(0.20)		CONCRETE with 20mm flint aggregate.
						0.20	0.81		Greyish brown to pale brown, gravelly SAND. Gravel comprises fragments of brick, clinker and flint. MADE GROUND
		0.30	ES				(0.20)		
						0.40	0.61		White to pale grey, silty, fine to medium, sub-angular chalk GRAVEL. MADE GROUND
		0.70	ES				(0.40)		
						0.80	0.21		Soft to firm, dark grey, silty, CLAY.
		1.00	D ES HP SPT	UCS(kPa)=130 N=2 (1,0/0,1,0,1)					
		1.50	D				(1.30)		
		2.00	D SPT	N=1 (1,0/1,0,0,0)		2.10	-1.09		Dark brown, fibrous, slightly sandy, PEAT.
		2.50	D				(1.10)		
		3.00	D SPT	N=1 (1,0/1,0,0,0)		3.20	-2.19		Soft, grey, silty, CLAY.
		3.70	D				(0.80)		
		4.00	SPT	N=0 (1,0/0,0,0,0)		4.00	-2.99		End of Borehole at 4.00m

Remarks:

1. Standing Water level at 0.5m (bgl), upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS04
	21/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	1.00	HA	21/11/2022	21/11/2022	PG & CP	Hand Dug		SM	
1.00	4.00	WLS	21/11/2022	21/11/2022	DT & JB	RP110		SM	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=2 (1,0/0,1,0,1)	110RP75	82	
2.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
3.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
4.00	S				N=0 (1,0/0,0,0,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	1.00	4.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	1.00	50	PLAIN
1	1.00	4.00	50	SLOTTED

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	4.00	Gravel Backfill	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS05
	23/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558228 - N 176722	1.21	SM/MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
							(0.12)		BLACKTOP - 10-25mm Hardstone aggregate.
						0.12	1.09		
							(0.08)		Pale grey to grey, sandy, fine to coarse, sub-angular to sub-rounded, flint and limestone GRAVEL (Sub-base).
						0.20	1.01		
		0.30	ES				(0.25)		Greyish brown to white, gravelly SAND. Gravel comprises fragments of brick, flint and chalk. MADE GROUND
						0.45	0.76		
		0.70	ES						Greyish brown to dark grey, gravelly, SAND. Gravel comprises fragments of brick, ash, concrete and flint. MADE GROUND
							(0.85)		
		1.00	SPT	N=5 (2,1/2,1,0,2)					
		1.20	ES						
						1.30	-0.09		White to pale grey, silty, fine to medium, sub-angular chalk GRAVEL. MADE GROUND
							(0.40)		
						1.70	-0.49		Soft grey, mottled brown, and white, silty, gravelly, CLAY. Gravel comprised fine, sub-rounded to angular flint and chalk. MADE GROUND
							(0.30)		
		2.00	SPT	N=2 (1,1/0,1,1,0)		2.00	-0.79		Very soft dark grey to grey, silty, organic, CLAY.
		2.10	D						
							(0.50)		
						2.50	-1.29		Dark reddish brown, fibrous, organic, PEAT.
		2.80	D				(0.50)		
		3.00	SPT	N=1 (1,0/1,0,0,0)		3.00	-1.79		End of Borehole at 3.00m

Remarks:

1. Standing Water level at 1.1m (bgl), upon completion of drilling.
2. Borehole collapsing beyond 3.0m (bgl). borehole terminated.
3. Borehole collapsed to 1.96m (bgl), upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS05
	23/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	1.00	HA	23/11/2022	23/11/2022	PG & CP	Hand Dug		SM/MS	
1.00	5.00	WLS	23/11/2022	23/11/2022	DT & JB	RP110		SM/MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=5 (2,1/2,1,0,2)	110RP75	82	
2.00	S				N=2 (1,1/0,1,1,0)	110RP75	82	
3.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	1.00	2.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	1.00	50	PLAIN
1	1.00	2.00	50	SLOTTED

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	2.00	Gravel Backfill	
2.00	3.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS06
	23/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558259 - N 176727	1.22	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/FI	Results	Window Run					
							(0.13)		BLACKTOP	
						0.13	1.09			
		0.20	ES			0.20	(0.07) 1.02		Grey, very gravelly, medium SAND. Gravel comprises fine, angular, concrete and flint. MADE GROUND	
							(0.30)		BLACKTOP	
						0.50	0.72		Grey to black, very sandy, GRAVEL. Gravel comprises fine to coarse, sub-rounded to angular flint, brick and concrete. MADE GROUND	
							(0.30)			
		0.80	ES			0.80	0.42		Grey, sandy, GRAVEL. Gravel comprises fine to coarse, sub-rounded to angular, flint and concrete. MADE GROUND	
							(0.20)			
		1.00	SPT	N=4 (1,1/1,1,1,1)		1.00	0.22		Yellowish off-white, silty, fine to medium, angular chalk GRAVEL. MADE GROUND	1
							(0.20)			
		1.30	ES			1.20	0.02		Greenish grey, clayey, SILT.	
							(0.30)			
						1.50	-0.28		Soft, bluish grey mottled black, silty, organic, CLAY.	
		1.70	D							
		2.00	SPT	N=1 (1,0/0,1,0,0)			(0.90)			2
						2.40	-1.18		Soft, reddish brown, fibrous, organic, PEAT, with a strong odour.	
		2.50	D							
		3.00	D							3
			SPT	N=0 (1,0/0,0,0,0)						
							(2.60)			
		4.00	SPT	N=1 (1,0/1,0,0,0)						4
		4.50	D							
		5.00	SPT	N=2 (1,0/1,0,1,0)		5.00	-3.78		End of Borehole at 5.00m	5

Remarks:

1. Standing water level at 3.22m (bgl), upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS06
	23/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
1.00	0.00	HA	23/11/2022	23/11/2022	PG & CP	Hand Dug		MS	
1.00	5.00	WLS	23/11/2022	23/11/2022	DT & JB	RP110		MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=4 (1,1/1,1,1,1)	110RP75	82	
2.00	S				N=1 (1,0/0,1,0,0)	110RP75	82	
3.00	S				N=0 (1,0/0,0,0,0)	110RP75	82	
4.00	S				N=1 (1,0/1,0,0,0)	110RP75	82	
5.00	S				N=2 (1,0/1,0,1,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	5.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS07
	22/11/2022 - 23/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558291 - N 176711	0.94	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/FI	Results	Window Run					
						0.08	(0.08) 0.86		BLACKTOP with 15mm hardstone aggregate.	
		0.30	ES				(0.32)		Greyish brown to dark grey, gravelly, SAND. Gravel comprises fragments of brick, concrete, clinker and flint. MADE GROUND	
						0.40	0.54		BLACKTOP	
						0.55	(0.15) 0.39		Dark grey, clayey, very gravelly, medium to coarse SAND. Gravel comprises fragments of brick, concrete, flint and occasional wood. MADE GROUND	
		0.90	ES			0.70	(0.15) 0.24		Light grey, clayey, sandy, GRAVEL. Gravel comprises fine to coarse, sub-rounded to angular brick and flint, with frequent wood. MADE GROUND	
		1.00	SPT	N=59 (5,15/16,16,16,11)		1.00	(0.30) -0.06		Grey, clayey, medium to coarse SAND, with occasional well cemented porous sandstone gravel. MADE GROUND	1
		1.30	ES				(0.70)			
		1.80	D			1.70	-0.76		Soft to firm, bluish grey, slightly silty, CLAY, with occasional to frequent organic material and wood.	
		2.00	HP	UCS(kPa)=100			(0.40)			2
			SPT	N=8 (1,1/2,2,2,2)		2.10	-1.16		Soft, dark grey, silty, organic, CLAY, with a strong organic odour.	
		2.50	D				(1.30)			
		3.00	SPT	N=0 (1,0/0,0,0,0)						3
		3.50	D			3.40	-2.46		Reddish brown, fibrous, organic, PEAT, with a strong organic odour.	
		4.00	SPT	N=2 (1,0/1,0,1,0)			(1.60)			4
		4.50	D						*[4.5-5.0m (bgl) - Frequent fragments of wood.]*	
		5.00	SPT	N=0 (1,0/0,0,0,0)		5.00	-4.06		End of Borehole at 5.00m	5

Remarks:

1. Standing water level at 1.59m (bgl), upon completion of drilling.
2. Borehole collapsed to 4.15m (bgl) upon completion of drilling.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS07
	22/11/2022 - 23/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
1.00	0.00	HA	22/11/2022	22/11/2022	PG	Hand Dug		SM	
1.00	5.00	WLS	23/11/2022	23/11/2022	DT & JB	RP110		SM	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=59 (5,15/16,16,16,11)	110RP75	82	
2.00	S				N=8 (1,1/2,2,2,2)	110RP75	82	
3.00	S				N=0 (1,0/0,0,0,0)	110RP75	82	
4.00	S				N=2 (1,0/1,0,1,0)	110RP75	82	
5.00	S				N=0 (1,0/0,0,0,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	1.00	4.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	1.00	50	PLAIN
1	1.00	4.00	50	SLOTTED

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	4.00	Gravel Backfill	
4.00	5.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS08
	23/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558290 - N 176680	1.18	SM
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type/FI	Results	Window Run				
						0.07	(0.07)		BLACKTOP
		0.20	ES				1.11		Dark grey, sandy GRAVEL. Gravel comprises fragments of concrete and flint. MADE GROUND
						0.30	(0.23) 0.88		Dark grey, sandy, GRAVEL. Gravel comprises fragments of brick, concrete, plastic and flint. MADE GROUND
		0.80	ES				(0.80)		
		1.00	SPT	N=51 (5,8/11,11,13,16)					
						1.10	0.08		Orange brown to grey, sandy GRAVEL. Gravel comprises fragments of brick and concrete. MADE GROUND
							(0.35)		
		1.50	D			1.45	-0.27		Dark grey, medium to coarse, silty SAND, with frequent well cemented porous sandstone gravel. MADE GROUND
			ES				(0.15)		
						1.60	-0.42		End of Borehole at 1.60m

Remarks:

1. Borehole refused at 1.6m (bgl).

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS08
	23/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	1.00	HA	23/11/2022	23/11/2022	PG & CP	Hand Dug		SM	
1.00	1.60	WLS	23/11/2022	23/11/2022	DT & JB	RP110		MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=51 (5,8/11,11,13,16)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	0.60	1.60	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	0.60	50	PLAIN
1	0.60	1.60	50	SLOTTED

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	0.60	Bentonite	
0.60	1.60	Gravel Backfill	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS09
	22/11/2022 - 23/11/2022	J15309	WLS	Sheet 1 of 1

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558161 - N 176681	1.55	SM/MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Progress	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		Depth (m)	Type/FI	Results	Window Run					
							(0.19)		CONCRETE, with 20mm flint aggregate.	
						0.19	1.36		Greyish brown to dark grey, gravelly, SAND. Gravel comprises fragments of brick, concrete, clinker and flint. MADE GROUND	
		0.40	ES							
							(1.01)			
		0.90	ES							
		1.00	SPT	N=11 (2,3/5,2,2,2)						1
						1.20	0.35		White to pale grey, silty, fine to medium, sub-angular chalk GRAVEL. MADE GROUND	
							(0.40)			
		1.50	ES							
						1.60	-0.05		Soft, bluish grey, silty, organic, CLAY.	
		1.70	HP	UCS(kPa)=100						
		1.90	D							
		2.00	SPT	N=4 (2,1/1,1,1,1)						2
							(1.40)			
		2.70	D							
			HP	UCS(kPa)=100						
		3.00	SPT	N=2 (1,0/1,1,0,0)		3.00	-1.45		Very soft, bluish grey mottled brown, silty, CLAY.	3
							(1.00)			
		3.80	D							
						4.00	-2.45		End of Borehole at 4.00m	4
										5

Remarks:

1. Borehole collapsed to 1.9m (bgl), after 3.0-4.0m run.

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	WLS09
	22/11/2022 - 23/11/2022	J15309	WLS	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	1.00	HA	22/11/2022	22/11/2022	PG	Hand Dug		SM	
1.00	4.00	WLS	23/11/2022	16/02/2023	DT & JB	RP110		SM/MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks

Dynamic Sample Drill Run Information

Run No.	Top Depth (m)	Base Depth (m)	Duration	Hole Diameter (mm)	Sample Recovery (%)	Remarks

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.00	S				N=11 (2,3/5,2,2,2)	110RP75	82	
2.00	S				N=4 (2,1/1,1,1,1)	110RP75	82	
3.00	S				N=2 (1,0/1,1,0,0)	110RP75	82	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	1.00	2.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	1.00	50	PLAIN
1	1.00	2.00	50	SLOTTED

Backfill Details

Depth Top	Depth Base	Material	Remarks
0.00	1.00	Bentonite	
1.00	2.00	Gravel Backfill	
2.00	4.00	Arisings	

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:26	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH01
	23/11/2022 - 28/11/2022	J15309	CP	Sheet 1 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558177 - N 176698	1.35	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		0.20	ES		1.15	(0.20)		0.20	CONCRETE, with 20mm flint aggregate.
		0.20 - 0.30	B			(0.30)			Grey, slightly sandy, GRAVEL. Gravel comprises fine to cobble size, angular, brick, concrete and flint.
					0.85	(0.10)		0.50	MADE GROUND
					0.75			0.60	CONCRETE
		1.00 - 1.20	B			(1.00)			Dark grey, clayey, slightly sandy, GRAVEL., with a slightly organic odour. Gravel comprises fine to medium, angular, flint, concrete and wood.
		1.47	EW						
		1.50	ES		-0.25			1.60	MADE GROUND
		1.50 - 1.70	B			(0.50)			Pale grey to white, clayey, gravelly, CHALK.
		1.50	SPT (C)	N=9 (2,3/3,2,2,2)	-0.75			2.10	MADE GROUND
		2.10 - 2.30	B			(0.60)			Soft, grey, slightly gravelly, CLAY. Gravel comprises fine to medium, angular, flint, chalk and occasional wood.
		2.30	HP	UCS(kPa)=110	-1.35			2.70	MADE GROUND
		2.50	SPTLS			(0.30)			Soft, bluish grey mottled black, silty, CLAY.
			SPT (S)	N=4 (1,0/1,1,1,1)	-1.65			3.00	Soft reddish brown, fibrous, organic, PEAT, with a strong odour.
		2.70 - 3.00	B						
		3.00	HP	UCS(kPa)=20		(1.90)			
		3.50	SPTLS						
			SPT (S)	N=2 (1,0/0,1,1,0)					
		4.00 - 4.20	B						
		4.50 - 5.00	U	Ublow=4	-3.55			4.90	Very soft, light grey, organic, CLAY, with occasional fibrous organic peat.
		5.00 - 5.20	B						
		6.00	SPTLS			(2.60)			
			SPT (S)	N=1 (1,0/1,0,0,0)					
		7.50 - 7.95	U	Ublow=5	-6.15			7.50	Soft grey, organic CLAY, with frequent fragments of wood and plant material.
						(1.30)			
					-7.45			8.80	Reddish brown, fibreous PEAT.
		9.00	SPTLS		-7.65	(0.20)		9.00	Medium dense, greenish grey, gravelly, fine to medium SAND. Gravel comprises fine, angular flint.
		9.00 - 9.20	B						
		9.00	SPT (S)	N=11 (1,1/2,2,3,4)		(1.70)			

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH01
	23/11/2022 - 28/11/2022	J15309	CP	Sheet 2 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558177 - N 176698	1.35	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		Depth (m bgl)	Type	Results					
		10.10 - 10.40	B						Medium dense, greenish grey, gravelly, fine to medium SAND. Gravel comprises fine, angular flint.
		10.50	SPTLS		-9.35			10.70	
		10.50 - 10.70	B			(0.60)			Loose, dark grey, very sandy, GRAVEL. Gravel comprises fine to coarse, sub-angular to sub-rounded, flint.
		10.50	SPT (S)	N=7 (1,1/1,2,2,2)	-9.95			11.30	
		11.50 - 11.70	B						Medium dense to dense, grey, slightly sandy, GRAVEL, Gravel comprises fine to coarse, sub-angular to angular, flint.
		12.00	SPT (C)	N=12 (1,2/3,3,3,3)					
		13.00 - 13.20	B						
		13.50	SPT (C)	N=18 (2,4/5,5,4,4)		(4.70)			
		14.50 - 14.70	B						
		15.00	SPT (C)	N=35 (4,11/14,10,7,4)					
		16.00 - 16.20	B		-14.65	(0.30)		16.00	
		16.50	SPTLS		-14.95			16.30	Grey, sandy, GRAVEL. Gravel comprises fine to coarse, sub-angular to angular flint and fine, sub-angular chalk.
			SPT (S)	N=8 (2,2/2,2,2,2)					CHALK: Recovered as: White to off-white, fine to coarse, sub-rounded to sub-angular, CHALK gravel, with frequent fine to coarse, sub-angular flint gravel.
		17.50	D						
		18.00	SPTLS						
			SPT (S)	N=10 (2,2/2,2,3,3)					
		19.00	D						
		19.50	SPTLS						
			SPT (S)	N=15 (3,3/4,3,5,3)					

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH01
	23/11/2022 - 28/11/2022	J15309	CP	Sheet 3 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558177 - N 176698	1.35	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		Depth (m bgl)	Type	Results					
						(7.70)			CHALK: Recovered as: White to off-white, fine to coarse, sub-rounded to sub-angular, CHALK gravel, with frequent fine to coarse, sub-angular flint gravel.
		20.50	D						*[20.5m (bgl) - Flint band.]*
		21.00	SPTLS SPT (S)	N=25 (3,3/5,11,6,3)					
		22.00	D						
		22.50	SPTLS SPT (S)	N=50 (4,11/11,19,11,9)					
		23.50	D						
		24.00	SPTLS SPT (S)	N=22 (2,9/5,5,5,7)	-22.65			24.00	End of Borehole at 24.00m

21 22 23 24 25 26 27 28 29 30

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH01
	23/11/2022 - 28/11/2022	J15309	CP	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	24.00	CP	23/11/2022	28/11/2022	RF	Dando 2000	RF	MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
24/11/2022 08:00:00	1.20	1.00	1.2	Start of shift.
24/11/2022 16:00:00	12.00	12.00	6.5	End of shift.
25/11/2022 08:00:00	12.00	12.00	1.1	Start of shift.
25/11/2022 14:00:00	24.00	24.00	0.9	Completion of drilling.

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.50	C	1.50			N=9 (2,3/3,2,2,2)	RF1	75	
2.50	S	2.50	2.10		N=4 (1,0/1,1,1,1)	RF1	75	
3.50	S	3.50	2.80		N=2 (1,0/0,1,1,0)	RF1	75	
6.00	S	6.00	5.60		N=1 (1,0/1,0,0,0)	RF1	75	
9.00	S	9.00	5.60		N=11 (1,1/2,2,3,4)	RF1	75	
10.50	S	10.50	4.10		N=7 (1,1/1,2,2,2)	RF1	75	
12.00	C	12.00	0.10		N=12 (1,2/3,3,3,3)	RF1	75	
13.50	C	13.50	1.30		N=18 (2,4/5,5,4,4)	RF1	75	
15.00	C	15.00	1.60		N=35 (4,11/14,10,7,4)	RF1	75	
16.50	S	16.50	1.30		N=8 (2,2/2,2,2,2)	RF1	75	
18.00	S	18.00	1.30		N=10 (2,2/2,2,3,3)	RF1	75	
19.50	S	19.50	1.20		N=15 (3,3/4,3,5,3)	RF1	75	
21.00	S	21.00	0.40		N=25 (3,3/5,11,6,3)	RF1	75	
22.50	S	22.50	0.60		N=50 (4,11/11,19,11,9)	RF1	75	
24.00	S	24.00	0.90		N=22 (2,9/5,5,5,7)	RF1	75	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks
9.00	24/11/2022 12:00:00	9.00			20	5.80	

Backfill Details

Depth Top (m)	Depth Base (m)	Material	Remarks
0.00	9.00	Bentonite	
9.00	24.00	Gravel Backfill	

Chiselling Details

From (m)	To (m)	Start (Date / Time)	Duration (hh:mm)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	9.00	24.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	9.00	50	PLAIN
1	9.00	24.00	50	SLOTTED

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH02
	28/11/2022 - 30/11/2022	J15309	CP	Sheet 1 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558168 - N 176750	1.19	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		Depth (m bgl)	Type	Results					
					1.03	(0.16)		0.16	CONCRETE, with 20mm flint aggregate.
		0.30	ES		0.89	(0.14)		0.30	Very soft, grey to brown, silty organic CLAY.
		0.50 - 0.70	B		0.69	(0.20)		0.50	MADE GROUND
		0.95	EW			(0.80)			Soft grey to organic brown, mottled cream, silty, slightly gravelly, organic CLAY. Gravel comprises fine to medium, angular flint and chalk.
		1.00	ES						MADE GROUND
		1.00 - 1.20	B		-0.11			1.30	
		1.00	HP	UCS(kPa)=100		(0.50)			Pale grey to white, clayey, gravelly, CHALK.
		1.30 - 1.50	B						MADE GROUND
		1.30	HP	UCS(kPa)=100	-0.61			1.80	Soft, grey mottled black, silty, organic, CLAY.
		1.50	SPTLS			(0.60)			Very soft, grey, silty, organic, CLAY.
			SPT (S)	N=2 (1,0/0,1,0,1)	-1.21			2.40	Very soft, silty, organic, CLAY, with a strong organic odour.
		2.00	ES						
		2.10 - 2.45	B						
		2.50 - 2.95	U	Ublow=4					
		3.00	D						
			HP	UCS(kPa)=40					
		3.50	SPTLS			(2.90)			
			SPT (S)	N=0 (1,0/0,0,0,0)					
		4.00 - 4.20	B						
		4.00	HP	UCS(kPa)=50					
		4.50 - 4.95	U	Ublow=5					
		5.00	D						
			HP	UCS(kPa)=40	-4.11			5.30	Dark brown, fibreous PEAT.
		5.30 - 5.50	B						
		6.00	SPTLS			(1.60)			
			SPT (S)	N=3 (1,0/1,0,1,1)					
		6.90 - 7.20	B		-5.71			6.90	Soft, grey, silty, organic, peaty, CLAY.
		6.90	HP	UCS(kPa)=40					
		7.50 - 7.95	U	Ublow=7					
		8.00	D			(2.20)			
			HP	UCS(kPa)=50					
		8.50 - 8.70	B						
		9.00	SPTLS		-7.91			9.10	Soft, grey, silty, organic CLAY.
			SPT (S)	N=7 (0,1/0,2,3,2)					
		9.10 - 9.30	B						

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH02
	28/11/2022 - 30/11/2022	J15309	CP	Sheet 2 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558168 - N 176750	1.19	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
						(2.00)			Soft, grey, silty, organic CLAY.
		10.50	SPTLS SPT (S)	N=9 (1,1/2,2,2,3)	-9.91			11.10	
		11.50 - 11.70	B						Medium dense, greenish grey, slightly gravelly, fine to coarse, SAND. Gravel comprises fine, angular, flint.
		12.00	SPT (C)	N=16 (1,3/3,4,4,5)		(2.30)			
		13.00 - 13.20	B						
		13.50 - 13.70	B		-12.21			13.40	
		13.50	SPT (C)	N=40 (4,7/10,12,11,7)		(1.10)			Dense, grey, sandy, GRAVEL. Gravel comprises fine to medium, sub-angular to angular, flint.
		14.50 - 14.70	B		-13.31			14.50	
		15.00	SPT (C)	N=24 (14,7/5,7,6,6)		(2.10)			Medium dense, brown, slightly sandy, GRAVEL. Gravel comprises fine to coarse, sub-rounded to sub-angular, flint.
		16.50 - 16.80	B		-15.41			16.60	
		16.50	SPT (C)	N=11 (3,3/3,3,2,3)					CHALK: Recovered as: Very weak to weak, white to off-white, fine to coarse, sub-rounded, CHALK Gravel, with frequent fine to coarse, sub-angular flint gravel.
		18.00	SPTLS SPT (S)	N=8 (1,1/1,1,2,4)					
		18.50	D						
		19.50	SPTLS SPT (S)	N=21 (4,4/4,4,5,8)					

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH02
	28/11/2022 - 30/11/2022	J15309	CP	Sheet 3 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558168 - N 176750	1.19	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		Depth (m bgl)	Type	Results					
		20.50	D			(7.40)			CHALK: Recovered as: Very weak to weak, white to off-white, fine to coarse, sub-rounded, CHALK Gravel, with frequent fine to coarse, sub-angular flint gravel.
		21.00	SPTLS SPT (S)	N=22 (9,9/7,6,5,4)					
		22.00	D						
		23.50	D						
		24.00	SPTLS SPT (S)	36 (9,9/36 for 225mm)	-22.81			24.00	End of Borehole at 24.00m

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH02
	28/11/2022 - 30/11/2022	J15309	CP	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	24.00	CP	28/11/2022	30/11/2022	RF	Dando 2000	RF	MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
28/11/2022 16:00:00	10.50	10.50		End of shift.
29/11/2022 08:00:00	10.50	10.50	0.9	Start of shift.
29/11/2022 16:00:00	24.00	24.00	0.8	Completion of drilling.

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.50	S	1.50			N=2 (1,0/0,1,0,1)	RF1	75	
3.50	S	3.00			N=0 (1,0/0,0,0,0)	RF1	75	
6.00	S	6.00			N=3 (1,0/1,0,1,1)	RF1	75	
9.00	S	9.00			N=7 (0,1/0,2,3,2)	RF1	75	
10.50	S	10.00			N=9 (1,1/2,2,2,3)	RF1	75	
12.00	C	12.00	0.90		N=16 (1,3/3,4,4,5)	RF1	75	
13.50	C	13.50	1.10		N=40 (4,7/10,12,11,7)	RF1	75	
15.00	C	15.00	0.80		N=24 (14,7/5,7,6,6)	RF1	75	
16.50	C	16.50	0.90		N=11 (3,3/3,3,2,3)	RF1	75	
18.00	S	18.00	1.60		N=8 (1,1/1,1,2,4)	RF1	75	
19.50	S	19.50	0.80		N=21 (4,4/4,4,5,8)	RF1	75	
21.00	S	21.00	0.90		N=22 (9,9/7,6,5,4)	RF1	75	
24.00	S	24.00	0.80		36 (9,9/36 for 225mm)	RF1	75	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks

Backfill Details

Depth Top (m)	Depth Base (m)	Material	Remarks
0.00	11.00	Bentonite	
11.00	24.00	Gravel Backfill	

Chiselling Details

From (m)	To (m)	Start (Date / Time)	Duration (hh:mm)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	11.00	24.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	11.00	50	PLAIN
1	11.00	24.00	50	SLOTTED

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH03
	06/12/2022 - 08/12/2022	J15309	CP	Sheet 1 of 2

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558231 - N 176750	1.46	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
					1.44	(0.02)		0.03	BLACKTOP - DBM with 5mm hardstone & limestone aggregate.
		0.30	ES		1.40	(0.04)		0.06	
		0.50 - 0.70	B		1.34	(0.06)		0.12	BLACKTOP - DBM with 15mm hardstone & limestone aggregate.
					1.26	(0.08)		0.20	
					1.16	(0.10)		0.30	BLACKTOP - HRA with 10mm hardstone & limestone aggregate.
		1.00	ES		0.56	(0.60)		0.90	
		1.00 - 1.20	B			(0.60)			Greyish brown to grey, sandy, medium to coarse, sub-angular limestone (Sub-base).
		1.26	EW						
		1.50	ES		-0.04			1.50	MADE GROUND
		1.50 - 2.00	B						BLACKTOP
		1.50	HP	UCS(kPa)=240					MADE GROUND
			SPT (S)	N=17 (1,3/4,4,5,4)		(1.50)			Dark brownish black very sandy GRAVEL. Gravel is fine to medium, angular of flint, brick, concrete and masonry.
		2.50	SPT (S)	N=4 (1,0/1,1,1,1)					MADE GROUND
		3.00 - 3.20	B		-1.54			3.00	Grey to off-white very clayey GRAVEL. Gravel is fine to cobbles, angular of weathered chalk, brick and flint.
		3.00	HP	UCS(kPa)=50					MADE GROUND
		3.50 - 3.95	U	Ublow=5		(1.20)			Firm black and grey mottled silty gravelly CLAY. Gravel is fine to coarse, angular of chalk and brick.
		4.00	D						MADE GROUND
		4.00 - 4.20	B		-2.74			4.20	Soft light grey fibrous organic CLAY.
		4.00	HP	UCS(kPa)=20					Reddish brown fibrous organic PEAT. Strong organic odour.
		4.20	HP	UCS(kPa)=30					
	▼	4.50	SPTLS						
			SPT (S)	N=4 (2,1/1,1,1,1)		(2.30)			
		5.30 - 5.70	B						
		5.50	D						
		6.00 - 6.45	U	Ublow=4					
		6.50	HP	UCS(kPa)=30	-5.04			6.50	Soft light grey fibrous organic CLAY.
						(0.50)			
		7.00 - 7.20	B		-5.54			7.00	Very soft light grey with reddish brown silty peaty organic CLAY. Strong organic odour.
		7.10	HP	UCS(kPa)=30					
		7.50 - 7.95	U	Ublow=6		(1.00)			
		8.00	D		-6.54			8.00	Reddish brown fibrous organic PEAT.
			HP	UCS(kPa)=60					
		9.00	SPTLS			(2.00)			
	▽	9.00 - 9.20	B						
		9.00	HP	UCS(kPa)=30					
			SPT (S)	N=5 (1,0/1,0,2,2)					
					-8.54			10.00	

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH03
	06/12/2022 - 08/12/2022	J15309	CP	Sheet 2 of 2

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558231 - N 176750	1.46	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		10.00 - 10.20	B						Greenish grey slightly gravelly medium to coarse SAND. Gravel is fine to medium, sub-rounded to angular of flint.
		10.50	SPT (C)	N=7 (1,1/1,2,3,1)		(2.00)			
		12.00 - 12.20	B		-10.54			12.00	Grey very gravelly medium to coarse SAND. Gravel is fine to medium, sub-rounded to angular of flint.
		12.00	SPT (C)	N=9 (1,1/1,3,3,2)		(1.00)			
		13.00 - 13.20	B		-11.54			13.00	Brownish grey very sandy GRAVEL. Gravel is fine to coarse, sub-rounded to angular of flint.
		13.50	SPT (C)	N=15 (1,3/5,3,3,4)		(1.80)			
		14.80 - 15.40	B		-13.34			14.80	Grey very gravelly medium to coarse SAND. Gravel is fine to medium, rounded to angular of flint.
		15.00	SPT (C)	N=18 (1,2/4,5,5,4)		(1.20)			
		16.00 - 16.20	B		-14.54			16.00	Brownish grey sandy GRAVEL. Gravel is fine to cobbles, rounded to angular of flint.
		16.50	SPT (C)	N=15 (8,7/5,4,3,3)	-14.94	(0.40)		16.40	CHALK: Recovered as coarse to cobbles, sub-rounded to angular gravel of flint and off-white CHALK.
		17.00 - 17.30	B						
		18.00	SPTLS						
			SPT (S)	N=16 (2,3/3,4,4,5)		(3.60)			
		19.00	D						
		19.50	SPTLS						
			SPT (S)	N=26 (3,10/9,6,4,7)	-18.54			20.00	End of Borehole at 20.00m

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH03
	06/12/2022 - 08/12/2022	J15309	CP	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	20.00	CP	06/12/2022	08/12/2022	RF	Dando 2000	RF	MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	20.00	

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	20.00	

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
07/12/2022 16:00:00	15.00	15.00	5.0	End of shift.
08/12/2022 08:00:00	15.00	15.00	0.9	Start of shift.
08/12/2022 15:00:00	20.00	20.00	0.9	Completion of drilling.

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.50	S	1.50			N=17 (1,3/4,4,5,4)	RF1	75	
2.50	S	2.50			N=4 (1,0/1,1,1,1)	RF1	75	
4.50	S	4.50			N=4 (2,1/1,1,1,1)	RF1	75	
9.00	S	9.00			N=5 (1,0/1,0,2,2)	RF1	75	
10.50	C	10.50	5.10		N=7 (1,1/1,2,3,1)	RF1	75	
12.00	C	12.00	5.00		N=9 (1,1/1,3,3,2)	RF1	75	
13.50	C	13.50	5.90		N=15 (1,3/5,3,3,4)	RF1	75	
15.00	C	15.00	5.00		N=18 (1,2/4,5,5,4)	RF1	75	
16.50	C	16.50	0.90		N=15 (8,7/5,4,3,3)	RF1	75	
18.00	S	18.00	1.00		N=16 (2,3/3,4,4,5)	RF1	75	
19.50	S	19.50	0.90		N=26 (3,10/9,6,4,7)	RF1	75	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks
9.60	07/12/2022 11:00:00	9.60			20	5.00	

Backfill Details

Depth Top (m)	Depth Base (m)	Material	Remarks
0.00	10.00	Bentonite	
10.00	20.00	Gravel Backfill	

Chiselling Details

From (m)	To (m)	Start (Date / Time)	Duration (hh:mm)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	10.00	20.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	10.00	50	PLAIN
1	10.00	20.00	50	SLOTTED

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH04
	30/11/2022 - 06/12/2022	J15309	CP	Sheet 1 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558271 - N 176675	1.08	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		0.20 - 0.40	B		0.88	(0.20)		0.20	CONCRETE, with 20mm flint aggregate.
		0.25	ES			(0.58)			Light to dark grey very sandy GRAVEL. Gravel is fine to medium, angular of brick, flint, cement, concrete. Occasional liner material.
		0.80	B		0.30			0.78	MADE GROUND
	▼	0.85	ES			(0.42)			*[0.58m (bgl) - Large rebar extending into the hole. Cut out before drilling commencement.]*
		0.94	EW		-0.12			1.20	Brownish orange sandy GRAVEL. Gravel is fine to cobbles, angular of flint, brick, concrete and masonry.
	▽	1.20	ES			(0.60)			MADE GROUND
		1.20 - 1.50	B						
		1.50	SPT (C)	N=3 (0,1/0,1,1,1)	-0.72	(0.20)		1.80	
		1.80 - 2.00	B		-0.92			2.00	Dark grey slightly clayey gravelly medium to coarse SAND. Gravel is fine and and medium, sub-rounded to angular of brick, flint, masonry and concrete. Occasional plastic membrane.
		2.00	HP	UCS(kPa)=1.50		(0.80)			MADE GROUND
		2.50	SPTLS						
			SPT (S)	N=3 (0,1/0,1,1,1)	-1.72	(0.20)		2.80	
		2.80	ES		-1.92			3.00	Off-white clayey GRAVEL. Gravel is fine to coarse, angular of weak, weathered chalk.
		2.80 - 3.00	B						MADE GROUND
		2.80	HP	UCS(kPa)=60					Soft grey and black mottled silty slightly gravelly organic CLAY. Gravel is fine, angular of flint.
		3.50 - 3.95	U	Ublow=5					Soft brown and black mottled silty organic CLAY.
		4.00	D						*[2.8m (bgl) - Slight odour. ES taken.]*
		4.50	SPTLS						Reddish brown fibrous organic PEAT. Strong organic odour.
			SPT (S)	N=4 (0,1/1,1,1,1)		(3.60)			
		5.50	D						
		6.00 - 6.45	U	Ublow=6					
		6.50	D		-5.52			6.60	
			HP	UCS(kPa)=40					Very soft grey silty organic CLAY.
		6.70 - 6.90	B			(0.70)			
		7.50	SPTLS		-6.22			7.30	Loose, greenish grey slightly gravelly SAND. Gravel is fine, angular of flint.
			SPT (S)	N=3 (1,0/0,1,1,1)					
		8.00 - 8.20	B						
		9.00	SPT (S)	N=0 (0,0/0,0,0,0)		(3.20)			
		9.50 - 9.70	B						

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH04
	30/11/2022 - 06/12/2022	J15309	CP	Sheet 2 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558271 - N 176675	1.08	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing: Depth (m bgl)	Type	Results	Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		10.50 - 10.70	B		-9.42			10.50	Loose, greenish grey slightly gravelly SAND. Gravel is fine, angular of flint.
		10.50	SPT (C)	N=4 (1,1/1,1,1,1)		(1.50)			Loose, greyish brown slightly gravelly medium to coarse SAND. Gravel is fine, sub-rounded to angular of flint.
		12.00 - 12.20	B		-10.92			12.00	Loose, greenish grey slightly gravelly SAND. Gravel is fine, angular of flint.
		12.00	SPT (C)	N=9 (2,1/1,2,3,3)		(1.50)			
		13.50 - 13.70	B		-12.42			13.50	Medium dense, greyish brown slightly gravelly medium to coarse SAND. Gravel is fine, sub-rounded to angular of flint.
		13.50	SPT (C)	N=11 (1,2/2,2,4,3)		(1.50)			*[13.5m (bgl) - Gradually becomes a sandy gravel.]*
		14.50 - 14.70	B						
		15.00	SPT (C)	N=21 (1,1/3,4,7,7)	-13.92	(1.00)		15.00	Medium dense, greyish brown gravelly medium to coarse SAND. Gravel is fine to coarse, sub-rounded to angular of flint.
		16.00 - 16.20	B		-14.92			16.00	Medium dense, light brown sandy GRAVEL. Gravel is fine to cobbles, sub-rounded to angular of flint and chalk.
		16.50	SPT (C)	N=20 (1,2/3,4,6,7)		(2.00)			
		17.50 - 17.70	B						
		18.00	SPTLS		-16.92			18.00	CHALK: Recovered as coarse to cobbles, sub-rounded to angular gravel of flint and off-white CHALK.
			SPT (S)	N=18 (5,7/8,4,3,3)					
		19.00	D			(2.50)			
		19.50	SPTLS						
			SPT (S)	N=10 (2,3/3,3,1,3)					

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH04
	30/11/2022 - 06/12/2022	J15309	CP	Sheet 3 of 3

Client:	Williams Environmental	Co-ordinates:	Level (m AOD)	Logger:
		E 558271 - N 176675	1.08	MS
Project Name:	Riverside Industrial Park,	**Location:**	West Thurrock, Essex, RM20 3EF	

Well	Water Strikes	Samples and Insitu Testing			Level (m AOD)	Thickness (m)	Legend	Depth (m bgl)	Stratum Description
		Depth (m bgl)	Type	Results					
		20.50	D		-19.42			20.50	CHALK: Recovered as coarse to cobbles, sub-rounded to angular gravel of flint and off-white CHALK. *[20.3m to 20.7m (bgl) - Poor chalk sample recovery. Probable flint band.]*
		21.00	SPTLS SPT (S)	N=17 (2,1/3,3,5,6)					CHALK: Recovered as coarse to cobbles, sub-rounded to angular gravel of flint (95%) and off-white CHALK (5%).
		22.00	D			(3.50)			
		22.50	SPTLS SPT (S)	N=23 (12,10/5,7,7,4)					
		23.50	D						
		24.00	SPTLS SPT (S)	N=24 (3,4/6,8,6,4)	-22.92			24.00	End of Borehole at 24.00m

Remarks:

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

Southern Testing ST Consult	Start - End Date:	Project ID:	Hole Type:	BH04
	30/11/2022 - 06/12/2022	J15309	CP	Sheet 1 of 1

Depth Related Hole Information

Top Depth (m)	Base Depth (m)	Hole Type	Start Date	End Date	Crew	Plant Used	Contractor	Logged By	Remarks
0.00	24.00	CP	30/11/2022	06/12/2022	RF	Dando 2000	RF	MS	

Hole Diameter

Hole Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Casing Diameter

Casing Diameter (mm)	Depth to Base (m)	Remarks
200	15.00	
150	24.00	

Project Specific Time Related Remarks

Date Time Start	Date Time End	Duration	Remarks

Drilling Progress by Time

Date Time	Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks
01/12/2022 16:00:00	14.00	14.00	5.1	End of shift.
02/12/2022 08:00:00	14.00	14.00	0.9	Start of shift.
02/12/2022 16:00:00	22.00	22.00	0.6	End of shift.
06/12/2022 08:00:00	22.00	22.00	0.9	Start of shift.
06/12/2022 13:00:00	24.00	24.00	1.1	Completion of drilling.

SPT

Top Depth (m)	Test Type	Casing Depth (m)	Water Depth (m)	Self Weight Penetration (mm)	Reported Result (N Value)	Hammer Serial No.	Energy Ratio %	Remarks
1.50	C	1.50			N=3 (0,1/0,1,1,1)	RF1	75	
2.50	S	2.50	1.10		N=3 (0,1/0,1,1,1)	RF1	75	
4.50	S	4.50	3.40		N=4 (0,1/1,1,1,1)	RF1	75	
7.50	S	7.50	5.90		N=3 (1,0/0,1,1,1)	RF1	75	
9.00	S	9.00	5.00		N=0 (0,0/0,0,0,0)	RF1	75	
10.50	C	10.50	5.10		N=4 (1,1/1,1,1,1)	RF1	75	
12.00	C	12.00	5.30		N=9 (2,1/1,2,3,3)	RF1	75	
13.50	C	13.50	5.10		N=11 (1,2/2,2,4,3)	RF1	75	
15.00	C	15.00	1.20		N=21 (1,1/3,4,7,7)	RF1	75	
16.50	C	16.50	0.00		N=20 (1,2/3,4,6,7)	RF1	75	
18.00	S	18.00	0.00		N=18 (5,7/8,4,3,3)	RF1	75	
19.50	S	19.50	0.00		N=10 (2,3/3,3,1,3)	RF1	75	
21.00	S	21.00	0.00		N=17 (2,1/3,3,5,6)	RF1	75	
22.50	S	22.50	1.10		N=23 (12,10/5,7,7,4)	RF1	75	
24.00	S	24.00	1.10		N=24 (3,4/6,8,6,4)	RF1	75	

Water Strikes and Details

Depth Strike (m)	Date Time	Depth Casing (m)	Depth Sealed (m)	Remarks	Time Elapsed (mins)	Water Depth (m)	Remarks
1.50	01/12/2022 10:00:00	1.50			20	1.10	

Backfill Details

Depth Top (m)	Depth Base (m)	Material	Remarks
0.00	8.00	Bentonite	
8.00	24.00	Gravel Backfill	

Chiselling Details

From (m)	To (m)	Start (Date / Time)	Duration (hh:mm)	Remarks

Installation Details

Distance	Point Ref.	Type	Top of Response Zone (m)	Base of Response Zone (m)	Pipe Ref.
0.00	1	SP	8.00	24.00	1

Pipe Construction

Pipe Reference	Depth Top (m)	Depth Base (m)	Diameter (mm)	Pipe Type
1	0.00	8.00	50	PLAIN
1	8.00	24.00	50	SLOTTED

Status:	FINAL	Log Print Date and Time:	16/02/2023 03:18	Log Approved By:	JNR

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Key to Exploratory Hole Logs, Plans and Sections

Backfill Symbols		Pipe Symbols		Principal Soil Types		Principal Rock Types		Drilling Records	
Arisings		Plain Pipe		Topsoil		Mudstone		Water Strike	
Concrete		Slotted Pipe		Made Ground		Claystone		Depth Water Rose	
Blacktop		Piezometer		Clay		Siltstone		Total Core Recovery (%) [TCR]	
Bentonite		Piezometer Tip		Silt		Sandstone		Solid Core Recovery (%) [SCR]	
Gravel Filter		Filter Tip		Sand		Limestone		Rock Quality Index (%) RQD]	
Sand Filter		Extensometer		Gravel		Chalk		Fracture Index (fractures / m) [FI]	
		Inclinometers		Peat					

All soil and rock descriptions are in general accordance with BS5930 2015, BS EN ISO 14688-1:2002+A1:2013 and BS EN ISO 14689-1:2003. Chalk descriptions are also based on CIRIA C574 and "Logging the Chalk – R.N. Mortimer 2015". The Geology Code is only provided where a positive identification of the sample strata has been made.

Location / Method Identifiers	
BH	Borehole (undefined)
CP	Cable Percussive
RC	Rotary Core
RO	Rotary Open Hole
ODC	Rotary Odex/Symmetrix drilling cased
CP+RC	Cable Percussive to Rotary Core
SNC	Sonic
CFA	Continuous Flight Auger
FA	Flight Auger
VC	Vibro Core
WLS+RC	Windowless (Dynamic) Sampler to Rotary Core
WLS	Windowless Sampler
WS	Window Sampler
HA	Hand Auger
C	Road / Pavement Core
IP	Inspection Pit (Hand Excavation)
TP	Trial Pit (Machine Excavated)
OP	Observation Pit (Supported Excavation Hand or Machine)

In-situ Test Location / Method	
DP	Dynamic Probe
CPT	Cone Penetration Test
CBR	In-situ CBR Test
DCP	CBR using Dynamic Cone Penetrometer
CBRT	CBR using TRL Probe
PB	Plate Bearing Test
SPT (S)	Standard Penetration Test (Split Barrel Sampler)
SPT (C)	Standard Penetration Test (Solid Cone)
N	SPT Result
-/-	Blows/Penetration (mm) after seating drive
-*/-	Total Blows / Penetration (mm)
( )	Extrapolated Value
PPT	Perth Penetration (In-House Method - Equivalent N Value)
HP / UCS	Strength from Hand Penetrometer (kN/m^2)
IVN	Strength from Hand Vane ((kN/m^2) P = peak, R = residual
PID	Photo Ionisation Detector (ppm)
MEXE	Mexi-Cone CBR (%)

Samples / Test Type	
B	Bulk Sample
BLK	Block Sample
C	Core Sample
CBRS	CBR Mould Sample
D	Small Disturbed Sample
ES	Environmental Sample (Soil)
EW	Environmental Sample (Water)
GS	Environmental Sample (Gas)

Samples / Test Type	
SPTLS	Standard Penetration Test Split Barrel Sample
TW	Thin Wall Push In Sample (e.g. Shelby Sampler)
U	Undisturbed Open Drive Sample (blows to take)
UT	Thin Wall Undisturbed Open Drive Sample (blows to take)
W	Water Sample (Geotechnical)
SP	Sample from Stockpile
P	Piston Sample
AMAL	Amalgamated Sample

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APPENDIX B

Field Sampling and In-Situ Test Methods and Results

B

Soil and Rock Descriptions

All soil and rock descriptions are in general accordance with BS5930 Ref [1].

Anthropogenic soils ('made ground' or 'fill') describe materials which have been placed by man and can be divided into those composed of reworked natural soils and those composed of or containing man-made materials. 'Fill' is used to describe material placed in a controlled manner and 'made ground' is used to describe materials placed without strict engineering control.

The classification of materials such as topsoil is based on visual description only and should not be interpreted to mean that the material complies with criteria used in BS 3882 Ref [4].

Chalk descriptions are based on CIRIA C574 Ref [5] and Mortimore Ref [6].

The geology code is only provided on logs where a positive identification of the sample strata has been made.

Inspection Pit

Inspection pits are hand excavated from the surface (maximum depth 1.2 – 1.5m) using appropriate tools to locate and avoid existing buried services at exploratory hole positions. They are also regularly used as part of investigations on existing structures to expose and determine foundation detail.

Dynamic Sampling - Window or Windowless

Window sampling is carried out by driving hollow steel tubes incorporating a longitudinal access slot (window) and a cutting shoe into the ground using a percussive 'breaker'. This enables recovery of a continuous soil sample for examination and sub-sampling.

Windowless samplers are designed for taking disturbed, continuous soil samples to depths up to 10 metres (depending on ground conditions). The samplers comprise steel tubes of about 50-100mm diameter with a rigid plastic liner (no window) and are driven into the ground with a sliding hammer mounted on a tracked purpose-designed soil sampling rig. After driving and extracting the sampler from the ground, the plastic liner is extracted together with the enclosed soil sample. The sample can then either be extracted, split and sub-sampled or plastic end caps may be fitted, the tube labelled and transported for future examination and sub-sampling.

Soil samples are disturbed by the driving process with both techniques and can be regarded as being between Class 5 up to Class 3 samples at best (in favourable ground).

The major advantage of using windowless samplers is that the plastic liner greatly reduces the possibility of cross-contamination between successive samples.

An equivalent in-situ test to the Standard Penetration Test can be carried out with the windowless sampler rig.

Standard Penetration Test (SPT)

The Standard Penetration Test (SPT) is specified in BS EN ISO 22476-3 Ref [7]. In this test, an open-ended tube is driven into the ground by blows from a free-falling hammer (with specified sizes, weights and distances).

The tube is seated by driving to a penetration of 150mm, or by 25 blows, whichever occurs first. It is then driven for a maximum of a further 300mm and the number of blows is termed the penetration resistance (N). If 300mm penetration cannot be achieved in 50 blows, the test drive is terminated and penetration depth is recorded.

When testing in gravels, a conical end piece is attached to the tube. The test is then called an SPT(C).

A classification of relative density descriptions as used on borehole logs, based upon uncorrected SPT N values, is given within BS5930 Ref [1] and set out as follows:

Classification based on uncorrected SPT N Value	Term
0 - 4	Very Loose
4 - 10	Loose
10 – 30	Medium Dense
30 – 50	Dense
Over 50	Very Dense

Hand Penetrometer Test

The handheld soil penetrometer consists of a spring loaded and calibrated plunger which is forced into cohesive soil. A reading of unconfined compression strength (equal to twice cohesion) is given on a calibrated scale. The average of a set of three readings shall be recorded.

In common with other hand methods of strength assessment it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

Hand Vane Test

The hand shear vane test provides a means of determining an estimate of the undrained shear strength of the tested soil. The apparatus consists of a cruciform vane on an extensible shaft. The vane is inserted into the cohesive soil and torque applied to the shaft until the soil fails, as indicated by a constant of dropping torque, by shearing on a circumscribing cylindrical surface. The average of a set of three readings shall be recorded.

It should be noted that it does not give an accurate indication of bearing capacity in stiff or fissured soils, because of the small test area.

Disturbed Samples

Disturbed samples were taken from exploratory holes in general accordance with BS 5930 [1] and BS EN ISO 22475-1 Ref [8] as required and stored in appropriately labelled containers. Details of the type, size and depth of sample will be recorded within the exploratory hole record. Such samples can be regarded as being between Class 5 up to Class 3 quality depending upon their method of sampling.

Open-tube Samples

Open-tube samples were taken within cohesive soils in general accordance with BS 5930 [1] and BS EN ISO 22475-1 Ref [8]. Details of the type, size and depth of sample will be recorded within the exploratory hole record. The open-tube samples were sealed with wax and had end caps fitted before transport from site. Open tube samples are typically of Class 2 or Class 1 quality depending upon the soil type, sampling technique and sampler used.

Environmental Samples

Environmental samples were taken from the boreholes at regular intervals in the made ground and natural soils as indicated on the exploratory hole logs. The sampling strategy was in general accordance with BS10175 Ref [2] and BS ISO 18400 Refs [9], [10], [11], [12] & [13].

These samples were collected and stored in glass jars or plastic pots and transferred to the laboratory in cool boxes as appropriate to the proposed laboratory testing.

Monitoring Well

A groundwater and/or ground gas monitoring well consists of a perforated pipe, which is installed in the ground. The standpipe is typically 50mm nominal in diameter and is installed in a lined borehole. It is perforated from the base with a sand/gravel surround through the soil horizon of interest to an appropriate depth below ground level. Above this there is a bentonite seal with solid pipework and is provided with an end cap or a gas valve at the top as appropriate.

Gas monitoring is carried out via the gas tap. Water sampling/purging can be undertaken by removing the gas tap and bung.

The well is usually completed at the surface with a flush cast iron cover or raised lockable cover.

Groundwater Samples

Groundwater samples were taken from exploratory holes as indicated on the logs. These samples were collected in glass or teflon bottles and transferred to the laboratory in cool boxes as appropriate to the proposed laboratory testing.

Monitoring wells were purged prior to sampling, removing

Groundwater Monitoring - Interface Meter

The interface meter is used to measure the thickness of free product floating on the water surface (LNAPL) as well as dense fluids below the aqueous layer (DNAPL). A probe is lowered to the base of the borehole and the meter

detects the difference in refractive indices and conductivity between any product and water and indicates this change. The thickness of any product can be determined by calculating the difference between the two depths recorded. The meter is sensitive enough to detect a product layer down to a couple of millimetres.

Groundwater Monitoring – Dip Meter

The dip meter is used to measure standing water levels within boreholes. The probe is lowered into the borehole until the meter detects the groundwater with an audible 'beep'. The level is then read from the tape.

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APPENDIX C

Geotechnical Laboratory Test Methods and Results

C

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Atterberg and Moisture Content Summary

BS1377-2 cl.3.2, 3.3, 4.2, 4.3 & BS EN ISO 17892-1

AGS

Project Name	*Riverside Industrial Park, West Thurrock*						Project Number		*J15309*	
Client	*Caulmert Ltd*				PE	*SM*	Date Issued		*25-Jan-23*	
Location	Depth m	Sample Type	Visual Description	Comments	Natural MC %	Liquid Limit %	Plastic Limit %	Plasticity Index	Classi-fication	Passing 425 micron %
BH01	5.00	B	*Soft dark grey and grey black organic CLAY. With patches of pseudofibrous peat. With abundant intact organic fragments.*		*133*	*90*	*37*	*53*	*CVO/CEO*	*76*
BH02	2.10	B	*Soft dark grey slightly sandy organic CLAY.*		*95*	*110*	*40*	*70*	*CEO*	*94*
BH02	5.00	D	*Soft dark grey oxidised yellow grey slightly sandy CLAY. With patches of pseudofibrous peat.*		*89*	*111*	*44*	*67*	*CE*	*100*
BH02	8.00	D	*Soft grey black organic CLAY. With patches of pseudo-fibrous peat.*		*114*	*154*	*53*	*101*	*CEO*	*100*
BH03	7.00	B	*Soft dark grey slightly sandy organic CLAY.*		*77*	*96*	*30*	*66*	*CEO*	*100*
BH04	2.80	B	*Very soft dark yellow grey patched grey black sandy gravelly organic calcareous CLAY. Gravel consists of fine subangular chalk flint and intact organic fragments.*	*Sample passed through 425µm sieve*	*100*	*82*	*47*	*35*	*MVO*	*86*
BH04	5.50	D	*Very soft black fibrous and pseudofibrous PEAT. With abundant intact organic fragments.*		*362*	*435*	*287*	*148*	*MEO*	*16*
WLS01	1.50	D	*Stiff dark grey oxidised brown slightly sandy organic CLAY.*		*41*	*86*	*32*	*54*	*CVO*	*98*
WLS02	2.00	D	*Firm greenish grey and dark grey organic CLAY.*		*46*	*95*	*30*	*65*	*CEO*	*100*
WLS04	3.70	D	*Very soft dark grey slightly sandy slightly gravelly organic calcareous CLAY. Gravel consists of fine subangular chalk. With occasional intact organic fragments.*		*102*	*113*	*37*	*76*	*CEO*	*92*

Southern Testing | ST Consult

Atterberg and Moisture Content Summary

BS1377-2 cl.3.2, 3.3, 4.2, 4.3 & BS EN ISO 17892-1

AGS

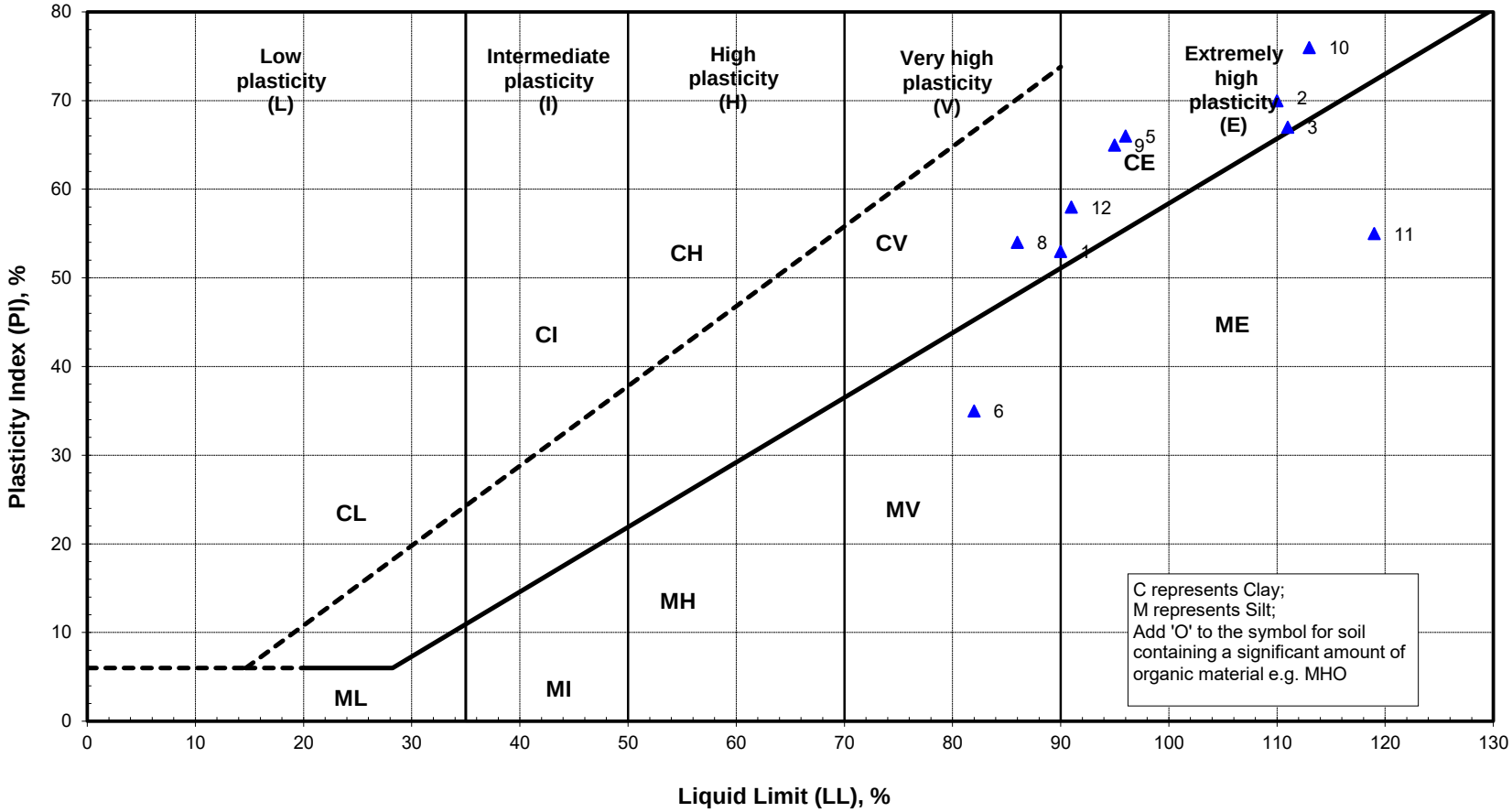
Project Name		*Riverside Industrial Park, West Thurrock*					**Project Number**		***J15309***		
Client		*Caulmert Ltd*			**PE**	*SM*	**Date Issued**		*25-Jan-23*		
Location	Depth m	Sample Type	Visual Description	Comments	Natural MC %	Liquid Limit %	Plastic Limit %	Plasticity Index	Classi-fication	Passing 425 micron %	
WLS07	2.50	D	*Firm black patched dark grey brown gravelly PEAT. Gravel consists of fine to coarse subangular masonry flint and intact organic fragments.*	*Sample passed through 425µm sieve*	*177*	*119*	*64*	*55*	*MEO*	*65*	
WLS09	1.90	D	*Stiff dark grey mottled black oxidised brown organic CLAY.*		*45*	*91*	*33*	*58*	*CEO*	*100*	

Plasticity Chart for Atterberg Limit Tests

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	*J15309*
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Key

No.	TH No.	Depth
1	BH01	5.00
2	BH02	2.10
3	BH02	5.00
4	BH02	8.00
5	BH03	7.00
6	BH04	2.80
7	BH04	5.50
8	WLS01	1.50
9	WLS02	2.00
10	WLS04	3.70
11	WLS07	2.50
12	WLS09	1.90



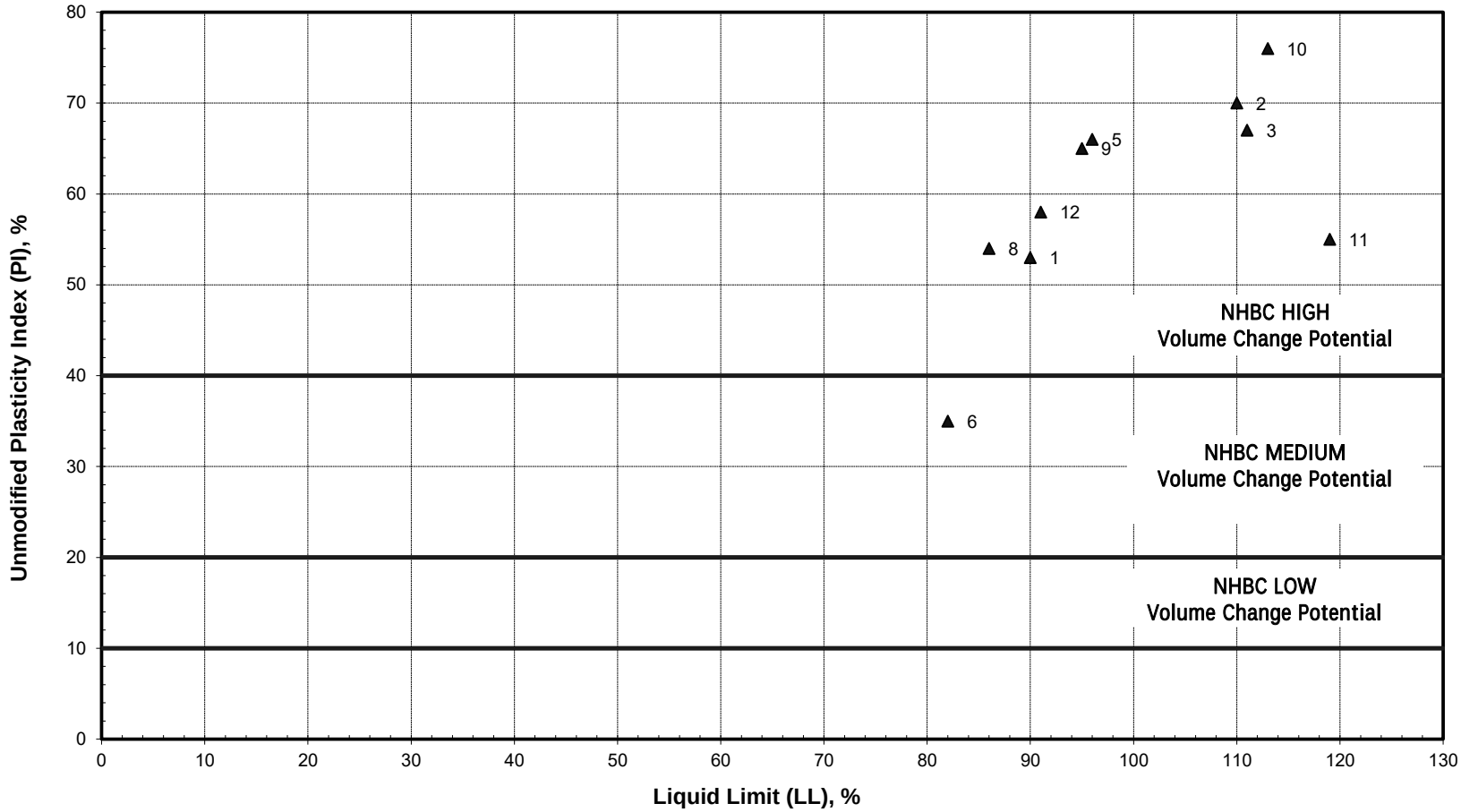
Liquid Limit		**Plastic Limit**		**Plasticity Index**	
Maximum Value	435	Maximum Value	287	Maximum Value	148
Minimum Value	82	Minimum Value	30	Minimum Value	35
Average Value	132	Average Value	61	Average Value	71

NHBC Classification for Volume Change Potential

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	*J15309*
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Key

No.	TH No.	Depth
1	BH01	5.00
2	BH02	2.10
3	BH02	5.00
4	BH02	8.00
5	BH03	7.00
6	BH04	2.80
7	BH04	5.50
8	WLS01	1.50
9	WLS02	2.00
10	WLS04	3.70
11	WLS07	2.50
12	WLS09	1.90



Liquid Limit		**Plastic Limit**		**Unmodified Plasticity Index**	
Maximum Value	435	Maximum Value	287	Maximum Value	148
Minimum Value	82	Minimum Value	30	Minimum Value	35
Average Value	132	Average Value	61	Average Value	71

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PARTICLE SIZE DISTRIBUTION REPORT

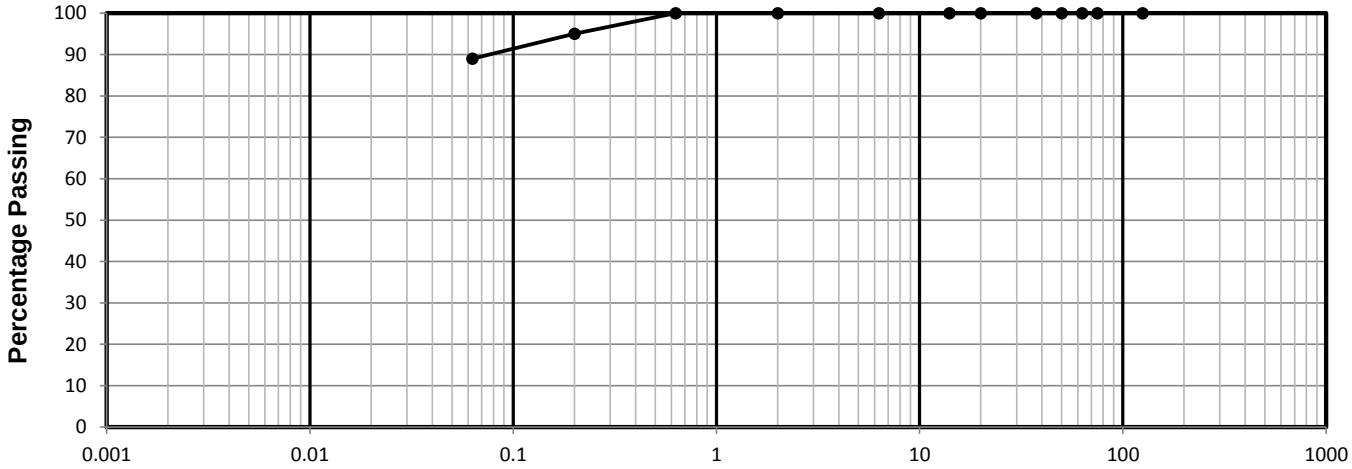
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	100
2mm	100
630µm	100
200µm	95
63µm	89

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	89			11			0			0

Visual Description of Sample:

Stiff dark grey oxidised brown slightly sandy organic CLAY.

Comments:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	**N/A**

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	WLS01
Depth (m)	1.50
Sample Type	D

Tested By	STL Lab
Checked By	Timon

Southern Testing | ST Consult

PARTICLE SIZE DISTRIBUTION REPORT

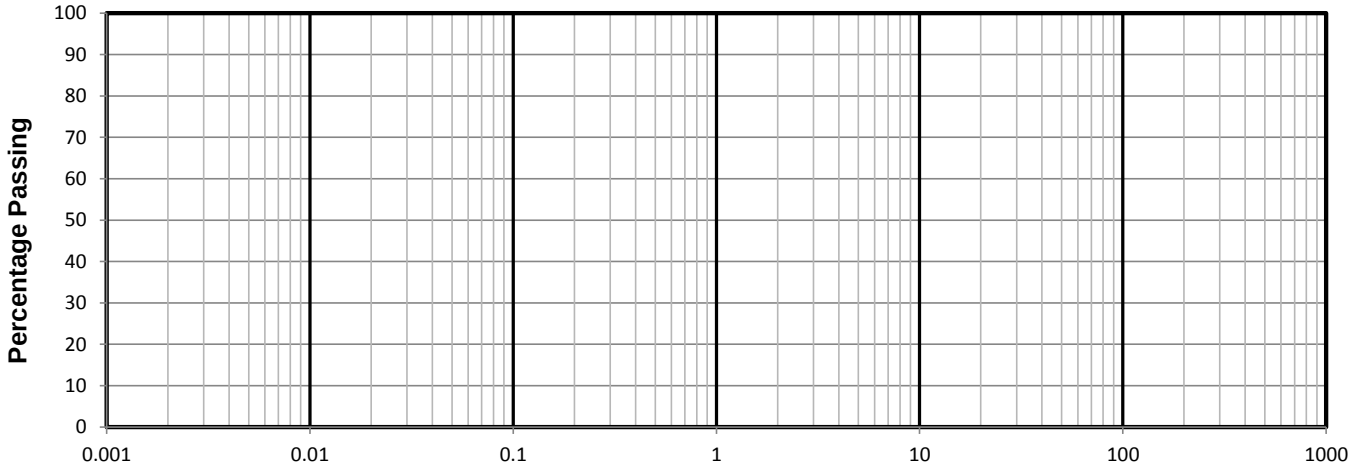
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			

Visual Description of Sample:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	

Comments:
Grading: Insufficient Sample.

Test Methods:
Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	WLS02
Depth (m)	2.00
Sample Type	D

Tested By	STL Lab
Checked By	Timon

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PARTICLE SIZE DISTRIBUTION REPORT

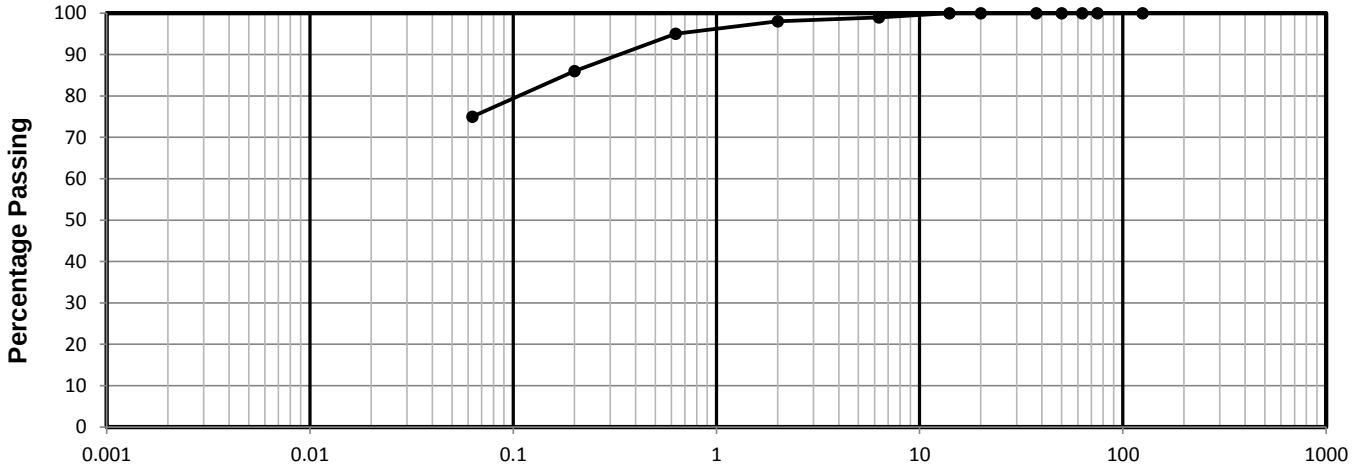
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	99
2mm	98
630µm	95
200µm	86
63µm	75

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	75			23			2			0

Visual Description of Sample:

Very soft dark grey slightly sandy slightly gravelly organic calcareous CLAY. Gravel consists of fine subangular chalk. With occasional intact organic fragments.

Comments:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	**N/A**

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	WLS04
Depth (m)	3.70
Sample Type	D

Tested By	STL Lab
Checked By	Timon

Southern Testing | ST Consult

PARTICLE SIZE DISTRIBUTION REPORT

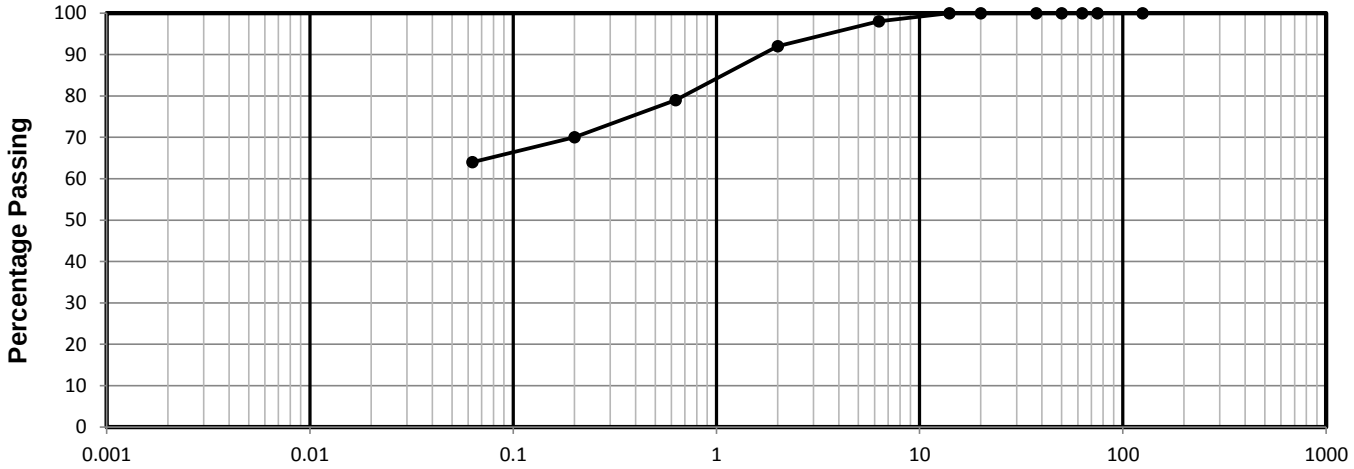
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	98
2mm	92
630µm	79
200µm	70
63µm	64

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	64			28			8			0

Visual Description of Sample:

Soft dark grey and grey black organic CLAY. With patches of pseudofibrous peat. With abundant intact organic fragments.

Comments:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	**N/A**

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	BH01
Depth (m)	5.00
Sample Type	B

Tested By	STL Lab
Checked By	Timon

Southern Testing | ST Consult

PARTICLE SIZE DISTRIBUTION REPORT

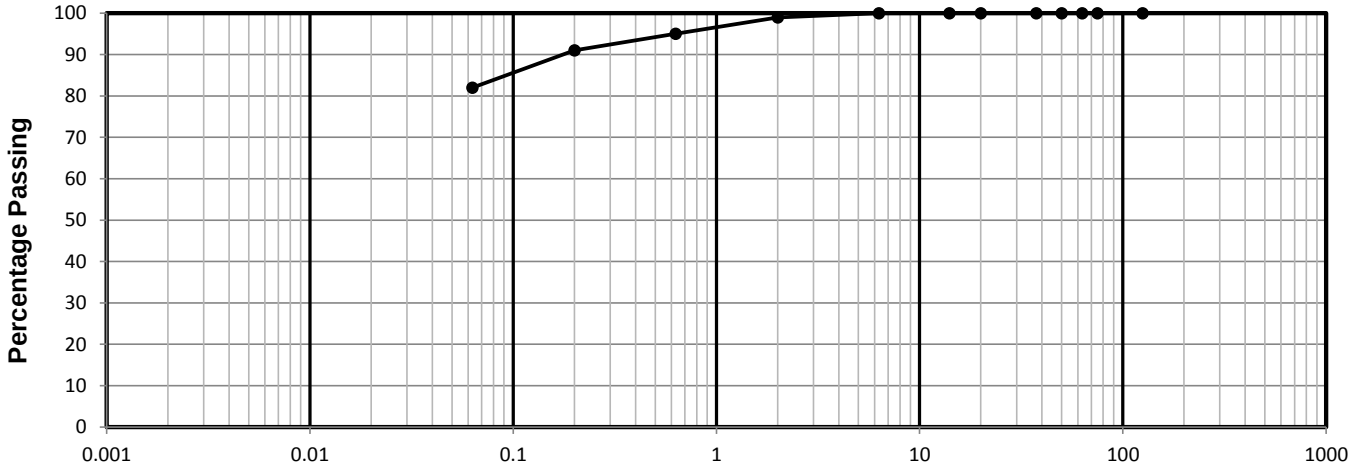
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	100
2mm	99
630µm	95
200µm	91
63µm	82

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	82			17			1			0

Visual Description of Sample:

Soft dark grey slightly sandy organic CLAY.

Comments:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	**N/A**

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	BH02
Depth (m)	2.10
Sample Type	B

Tested By	STL Lab
Checked By	Timon

Southern Testing | ST Consult

PARTICLE SIZE DISTRIBUTION REPORT

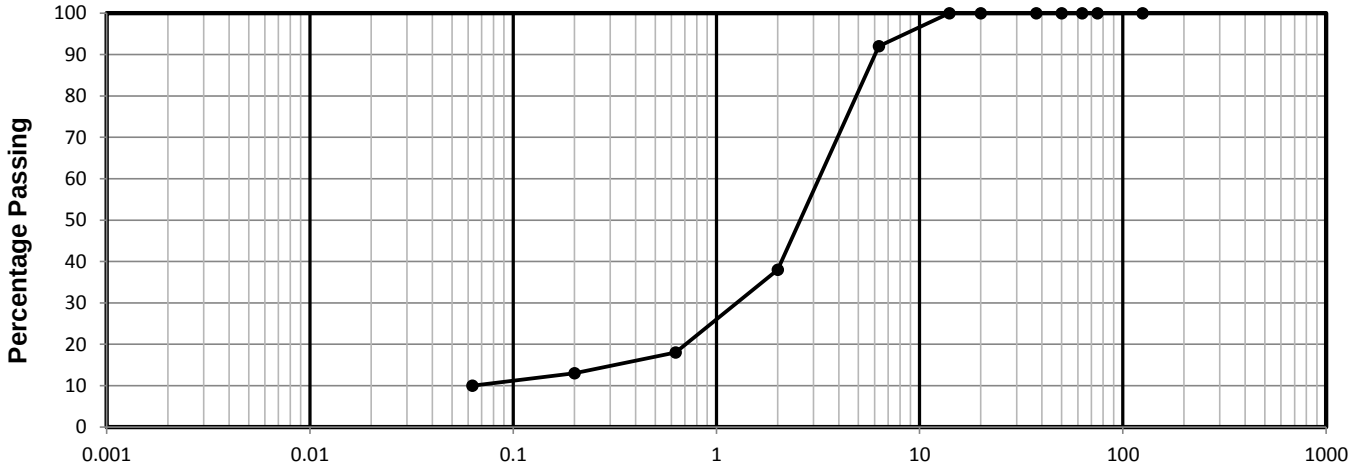
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	92
2mm	38
630µm	18
200µm	13
63µm	10

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	10			28			62			0

Visual Description of Sample:

Very soft black fibrous and pseudofibrous PEAT. With abundant intact organic fragments.

Particle Density (Assumed) Mg/m³	**N/A**

Coefficient of Uniformity	**N/A**

Location	BH04
Depth (m)	5.50
Sample Type	D

Comments:

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Tested By	STL Lab
Checked By	Timon

Southern Testing | ST Consult

PARTICLE SIZE DISTRIBUTION REPORT

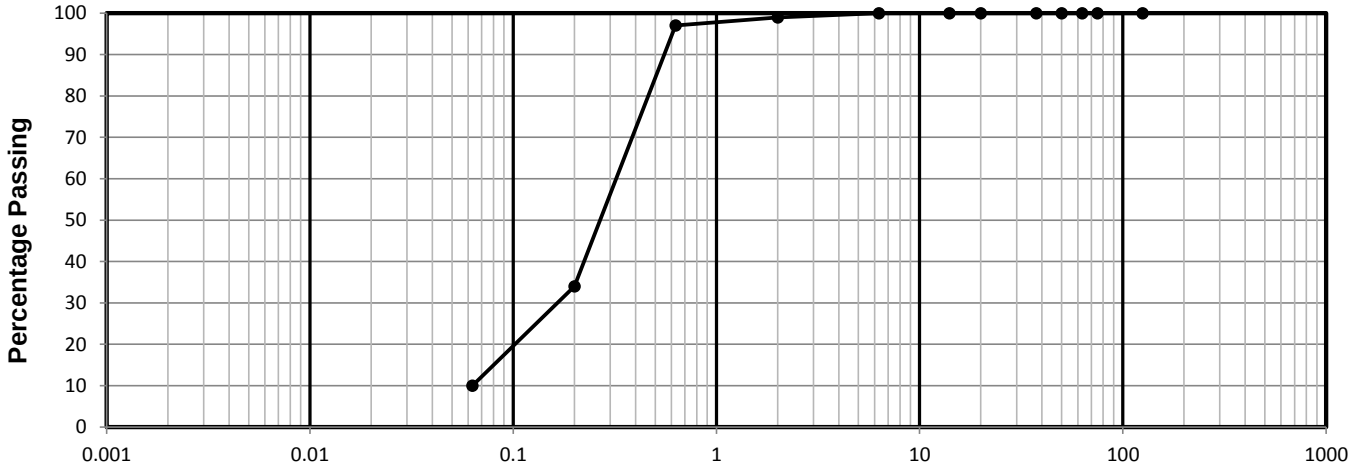
To BS1377-2 cl. 9.2-9.5

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			**Project Number**	***J15309***
Client Name	*Caulmert Ltd*	**PE**	*SM*	**Date Issued**	*25-Jan-23*

Particle Size	% Passing
125mm	100
75mm	100
63mm	100
50mm	100
37.5mm	100
20mm	100
14mm	100
6.3mm	100
2mm	99
630µm	97
200µm	34
63µm	10

Particle Size Distribution Chart



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES
	SILT			SAND			GRAVEL			
	10			89			1			0

Visual Description of Sample:

Dark grey clayey/silty organic fine and medium SAND.

Comments:

Particle Density (Assumed) Mg/m³	**N/A**
Coefficient of Uniformity	**N/A**

Test Methods:

Wet & Dry Grading BS1377-2
cl.9.2 & 9.3 & BS EN ISO 17892-4

Location	BH04
Depth (m)	8.00
Sample Type	B

Tested By	STL Lab
Checked By	Timon

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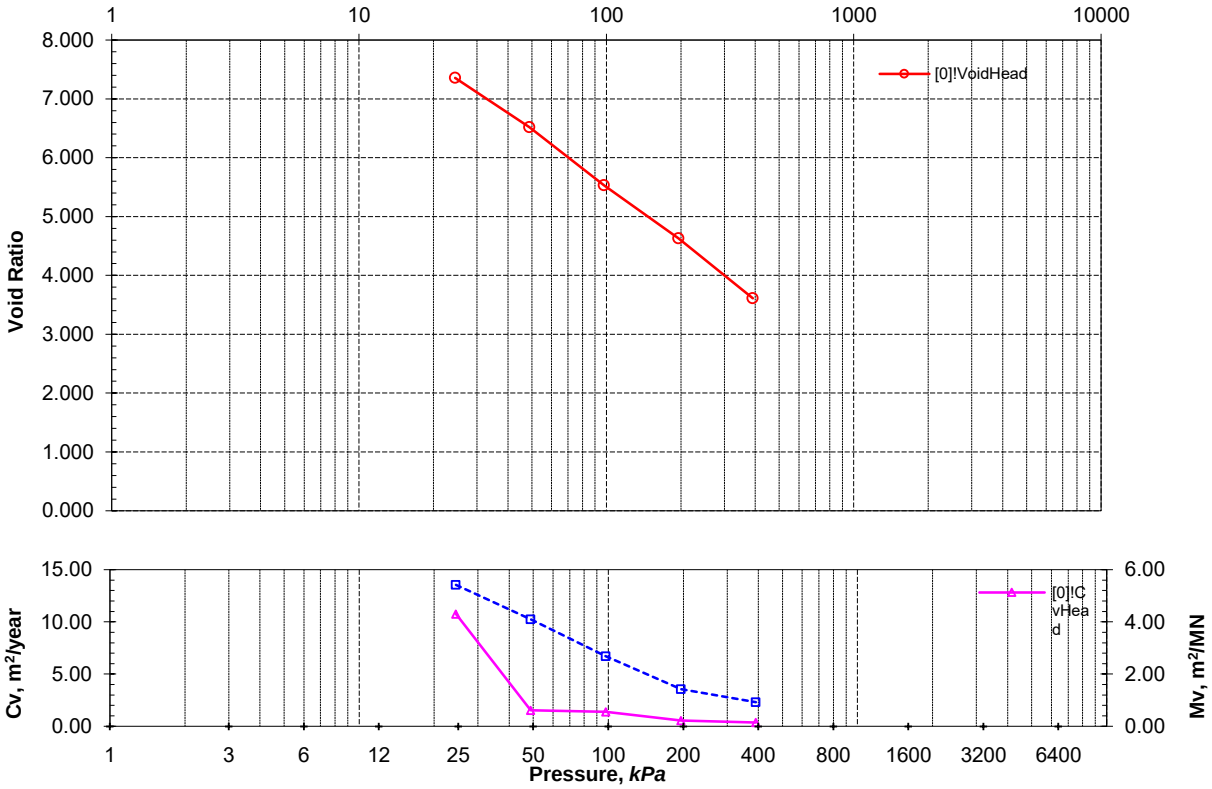
Oedometer Consolidation Test

to BS 1377-5:1990 cl.3

Location ID	***BH01***
Sample Depth m:	***4.50***
Sample Type:	*Undisturbed*

Visual description:

Very soft black fibrous PEAT. With abundant intact organic fragments.



Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Volume Compressibility m_v, m^2/MN	Coefficient of Consolidation c_v, $m^2/year$
0	19.00	8.632	/	/
24	16.48	7.356	5.417	10.8
49	14.84	6.521	4.100	1.5
98	12.89	5.534	2.684	1.4
196	11.10	4.627	1.419	0.56
391	9.10	3.611	0.924	0.36

* c_v *calculated by Log-time method ; # sample swelled.*

BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.0*
Moisture Content (initial), %	*468.5*
Bulk Density, Mg/m^3	*1.07*
Dry Density, Mg/m^3	*0.19*
Void Ratio (initial)	*8.632*
Degree of Saturation, %	*99.3*
Particle Density (measured)	*1.83*

AFTER TEST	
Sample Height (final), *mm*	*9.1*
Moisture Content (final), %	*210.6*
Void Ratio (final)	*3.611*

Comments:

Remoulded by hand.

Client: *Caulmert Ltd*	**Checked:** TG	**Proj No:** J15309
Project Name: *Riverside Industrial Park, West Thurrock, Grays,*	**Date:** 16-Jan-23	

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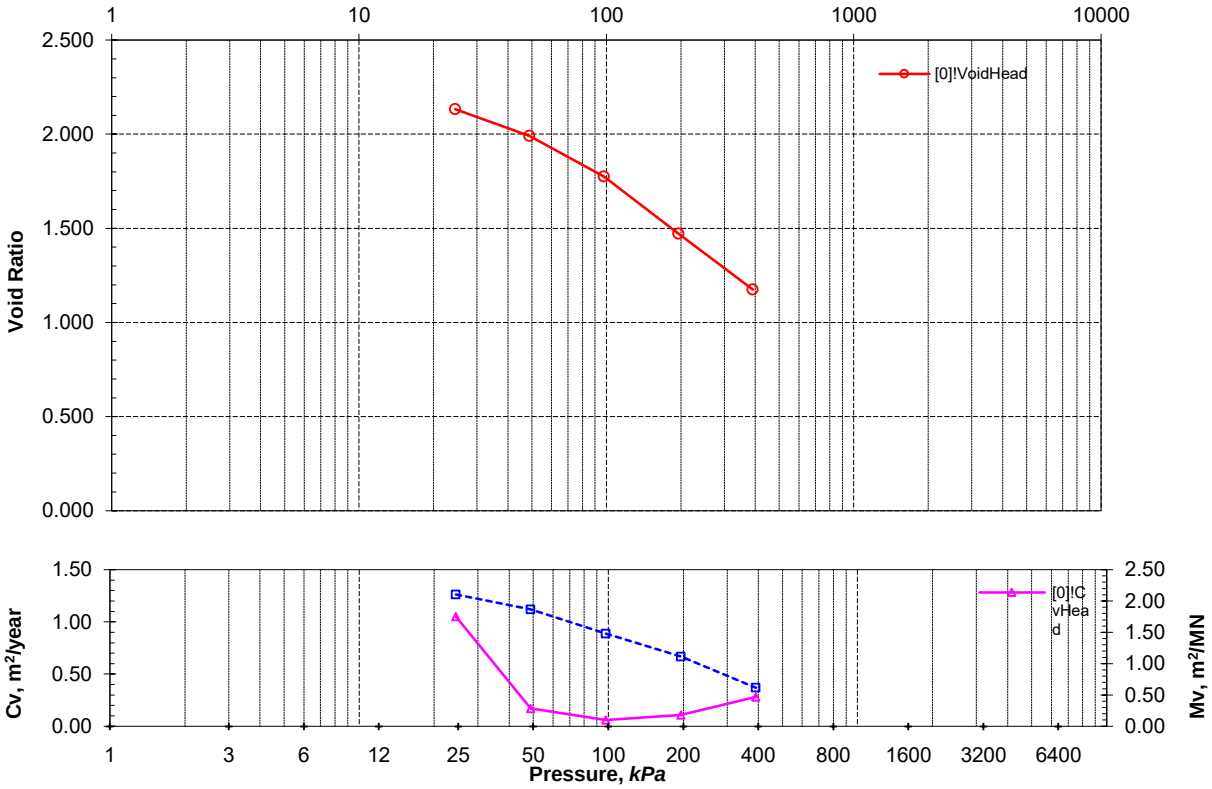
Oedometer Consolidation Test

to BS 1377-5:1990 cl.3

Location ID	***BH02***
Sample Depth m:	***2.50***
Sample Type:	*Undisturbed*

Visual description:

Soft dark grey slightly sandy organic CLAY. With occasional intact organic fragments.



Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Volume Compressibility m_v, m^2/MN	Coefficient of Consolidation c_v, $m^2/year$
0	19.00	2.303	/	/
24	18.02	2.133	2.104	1.1
49	17.20	1.990	1.868	0.17
98	15.96	1.774	1.478	0.06
196	14.22	1.472	1.114	0.11
391	12.51	1.175	0.615	0.28

* c_v *calculated by Log-time method ; # sample swelled.*

BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.0*
Moisture Content (initial), %	*94.0*
Bulk Density, Mg/m^3	*1.48*
Dry Density, Mg/m^3	*0.76*
Void Ratio (initial)	*2.303*
Degree of Saturation, %	*100.0*
Particle Density (measured)	*2.51*

AFTER TEST	
Sample Height (final), *mm*	*12.5*
Moisture Content (final), %	*54.1*
Void Ratio (final)	*1.175*

Comments:

Client: *Caulmert Ltd*	**Checked:** **TG**	**Proj No:** **J15309**
Project Name: *Riverside Industrial Park, West Thurrock, Grays,*	**Date:** 16-Jan-23	

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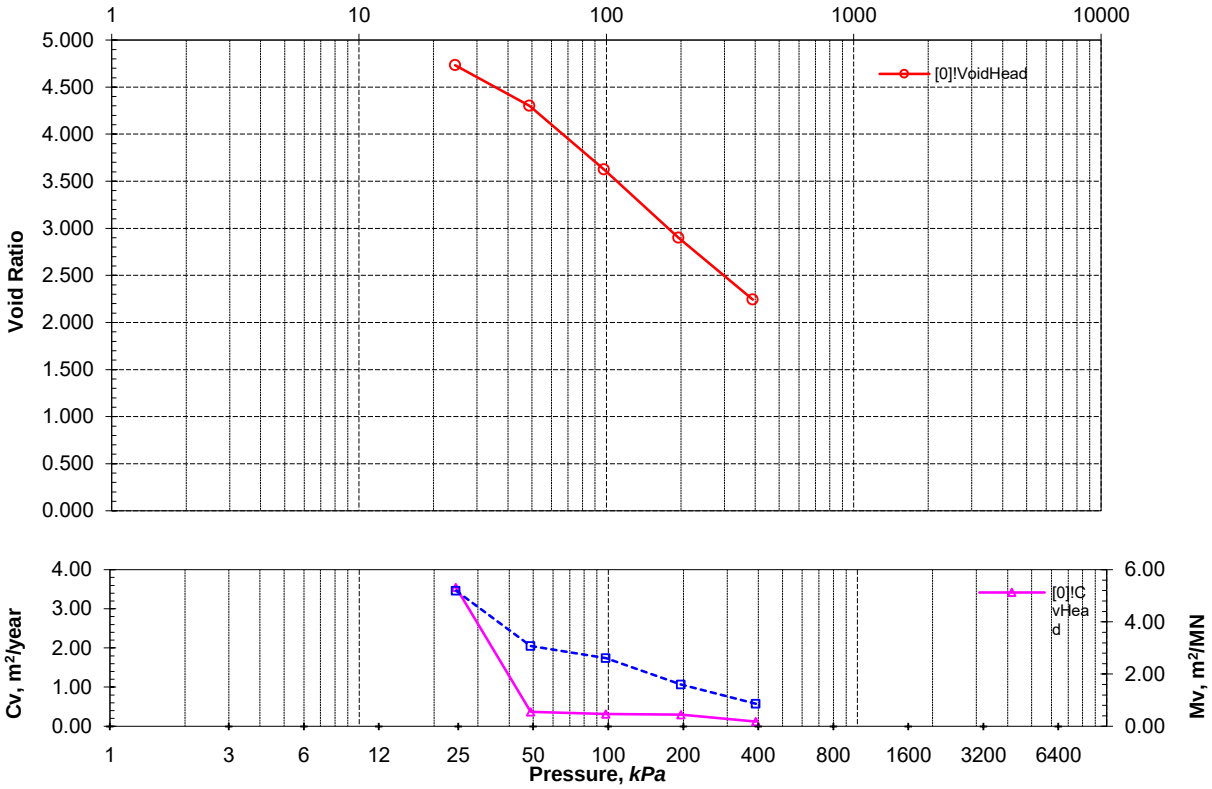
Oedometer Consolidation Test

to BS 1377-5:1990 cl.3

Location ID	***BH04***
Sample Depth m:	***3.50***
Sample Type:	*Undisturbed*

Visual description:

Very soft black fibrous PEAT.With abundant intact organic fragments.



Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Volume Compressibility m_v, m^2/MN	Coefficient of Consolidation c_v, $m^2/year$
0	19.10	5.567	/	/
24	16.67	4.732	5.196	3.6
49	15.42	4.302	3.078	0.37
98	13.45	3.624	2.613	0.31
196	11.35	2.901	1.600	0.30
391	9.43	2.243	0.863	0.12

* c_v *calculated by Log-time method ; # sample swelled.*

BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.1*
Moisture Content (initial), %	*248.5*
Bulk Density, Mg/m^3	*1.06*
Dry Density, Mg/m^3	*0.30*
Void Ratio (initial)	*5.567*
Degree of Saturation, %	*87.9*
Particle Density (measured)	*1.97*

AFTER TEST	
Sample Height (final), *mm*	*9.4*
Moisture Content (final), %	*109.5*
Void Ratio (final)	*2.243*

Comments:

Remoulded by hand.

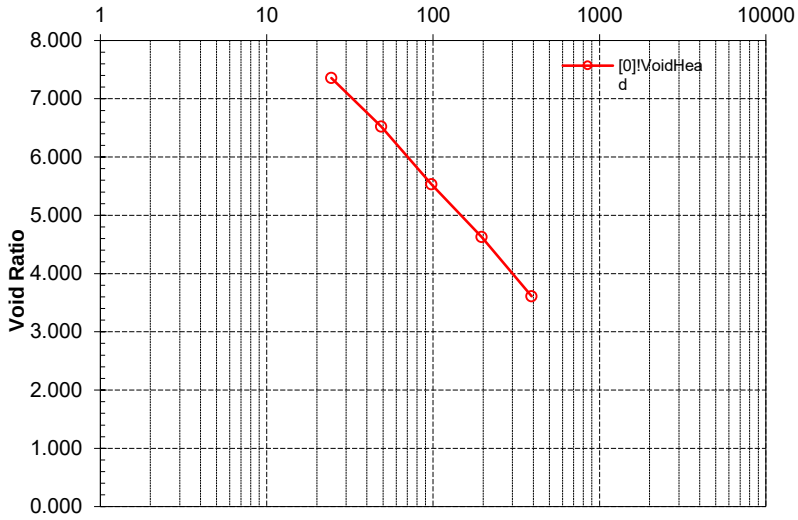
Client: *Caulmert Ltd*	**Checked:** TG	**Proj No:** J15309
Project Name: *Riverside Industrial Park, West Thurrock, Grays,*	**Date:** 16-Jan-23	

Southern Testing Environmental & Geotechnical | ST Consult Environmental & Geotechnical

Oedometer Consolidation Test

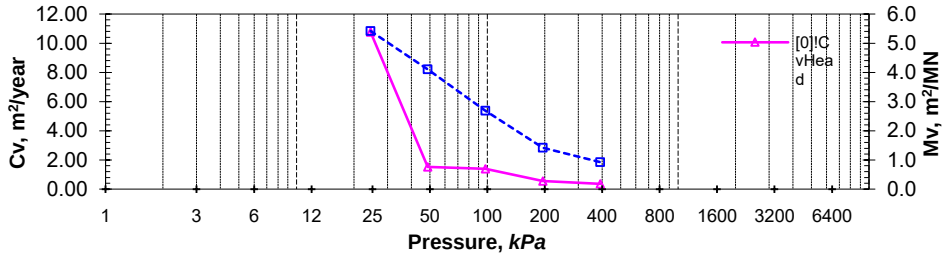
to BS 1377-5:1990 cl.3

Location ID:	***BH01***	**Visual description:**
Sample Depth m:	***4.50***	*Very soft black fibrous PEAT. With abundant intact organic fragments.*
Sample Type:	*Undisturbed*	



BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.0*
Moisture Content (initial), %	*468.5*
Bulk Density, *Mg/m³*	*1.07*
Dry Density, *Mg/m³*	*0.19*
Void Ratio (initial)	*8.632*
Degree of Saturation, %	*99.3*
Particle Density (measured)	*1.83*

AFTER TEST	
Sample Height (final), *mm*	*9.1*
Moisture Content (final), %	*210.6*
Void Ratio (final)	*3.611*



Comments:
Remoulded by hand.

Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Pressure Range *kPa*	Compression Ratios Initial r_o	Primary r_p	Secondary r_s	Volume Compressibility m_v, m^2/MN	Coefficients of Consolidation Primary c_v, $m^2/year$	Secondary c_{sec}	Permeability (calculated) **k** , *m/s*
0	19.00	8.632	/	/	/	/	/	/	/	/
24	16.48	7.356	0 - 24	0.356	0.477	0.166	5.417	10.8	1.127%	1.81E-08
49	14.84	6.521	24 - 49	0.083	0.830	0.087	4.100	1.5	1.127%	1.93E-09
98	12.89	5.534	49 - 98	0.083	0.821	0.097	2.684	1.4	1.082%	1.16E-09
196	11.10	4.627	98 - 196	0.124	0.738	0.138	1.419	0.56	1.804%	2.46E-10
391	9.10	3.611	196 - 391	0.020	0.930	0.050	0.924	0.36	0.413%	1.03E-10

** Log-time method adopted for calculations ; # sample swelled.*

Client: *Caulmert Ltd*	**Checked:** TG	**Proj No:** **J15309**
Project Name: *Riverside Industrial Park, West Thurrock, Grays, RM*	**Date:** 16-Jan-23	

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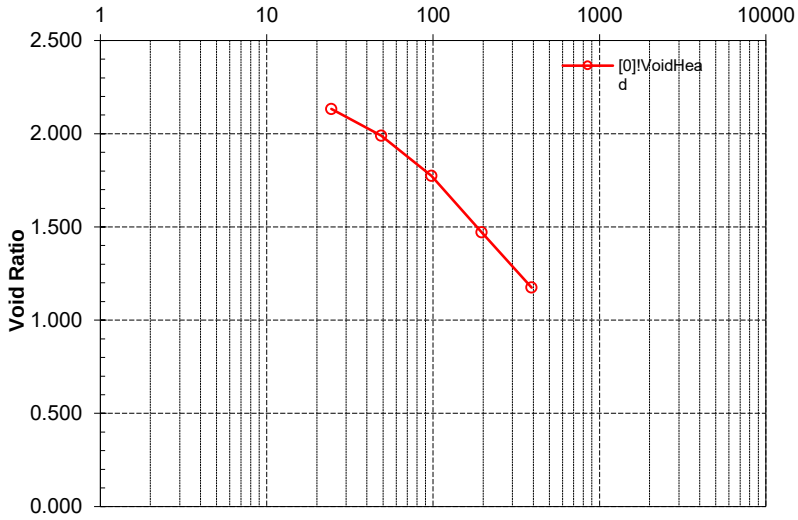
Oedometer Consolidation Test

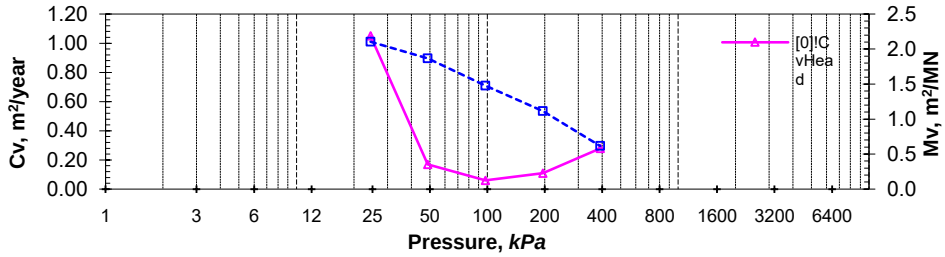
to BS 1377-5:1990 cl.3

Location ID:	***BH02***	**Visual description:**
Sample Depth m:	***2.50***	*Soft dark grey slightly sandy organic CLAY. With occasional intact organic fragments.*
Sample Type:	*Undisturbed*	



BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.0*
Moisture Content (initial), %	*94.0*
Bulk Density, *Mg/m³*	*1.48*
Dry Density, *Mg/m³*	*0.76*
Void Ratio (initial)	*2.303*
Degree of Saturation, %	*100.0*
Particle Density (measured)	*2.51*

AFTER TEST	
Sample Height (final), *mm*	*12.5*
Moisture Content (final), %	*54.1*
Void Ratio (final)	*1.175*



Comments:

Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Pressure Range *kPa*	Compression Ratios: Initial r_o	Primary r_p	Secondary r_s	Volume Compressibility m_v, m^2/MN	Coefficients of Consolidation: Primary c_v, $m^2/year$	Secondary c_{sec}	Permeability (calculated) **k** , *m/s*
0	19.00	2.303	/	/	/	/	/	/	/	/
24	18.02	2.133	0 - 24	0.227	0.710	0.063	2.104	1.1	0.266%	6.85E-10
49	17.20	1.990	24 - 49	0.044	0.908	0.048	1.868	0.17	0.433%	9.84E-11
98	15.96	1.774	49 - 98	0.030	0.922	0.049	1.478	0.06	1.127%	2.75E-11
196	14.22	1.472	98 - 196	0.049	0.900	0.051	1.114	0.11	1.127%	3.80E-11
391	12.51	1.175	196 - 391	0.209	0.671	0.120	0.615	0.28	0.994%	5.34E-11

** Log-time method adopted for calculations ; # sample swelled.*

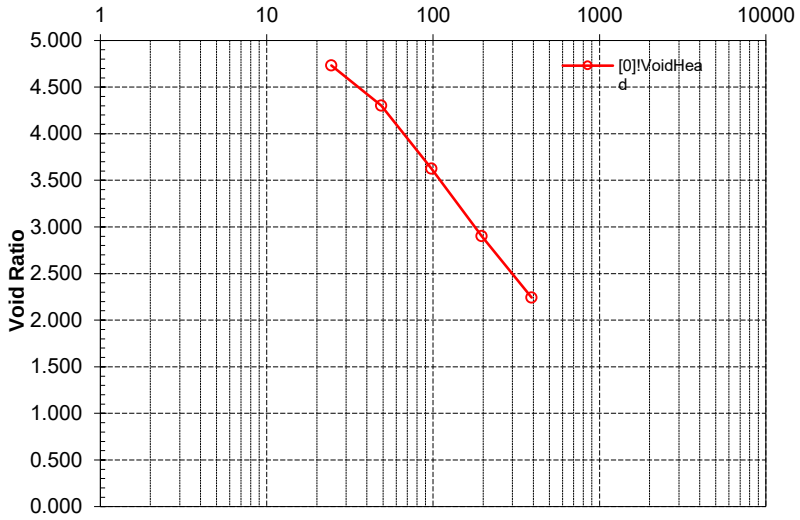
Client: *Caulmert Ltd*	**Checked:** TG	**Proj No:** **J15309**
Project Name: *Riverside Industrial Park, West Thurrock, Grays, RM*	**Date:** 16-Jan-23	

Southern Testing Environmental & Geotechnical | ST Consult Environmental & Geotechnical

Oedometer Consolidation Test

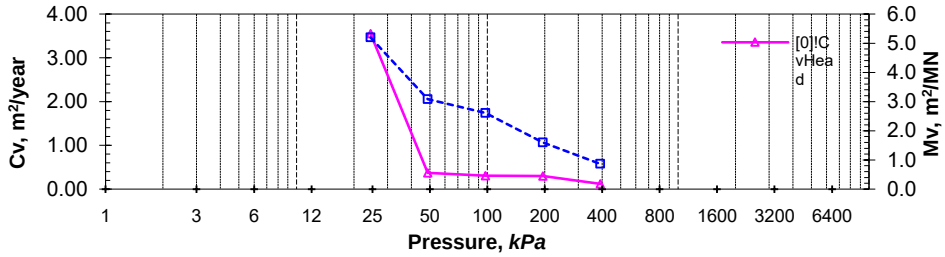
to BS 1377-5:1990 cl.3

Location ID:	***BH04***	**Visual description:**
Sample Depth m:	***3.50***	*Very soft black fibrous PEAT.With abundant intact organic fragments.*
Sample Type:	*Undisturbed*	



BEFORE TEST	
Sample Diameter (initial), *mm*	*75.0*
Sample Height, *mm*	*19.1*
Moisture Content (initial), %	*248.5*
Bulk Density, *Mg/m³*	*1.06*
Dry Density, *Mg/m³*	*0.30*
Void Ratio (initial)	*5.567*
Degree of Saturation, %	*87.9*
Particle Density (measured)	*1.97*

AFTER TEST	
Sample Height (final), *mm*	*9.4*
Moisture Content (final), %	*109.5*
Void Ratio (final)	*2.243*



Comments:
Remoulded by hand.

Pressure **p** , *kPa*	Sample Thickness **H** , *mm*	Void Ratio **e**	Pressure Range *kPa*	Compression Ratios Initial r_o	Primary r_p	Secondary r_s	Volume Compressibility m_v, m^2/MN	Coefficients of Consolidation Primary c_v, $m^2/year$	Secondary c_{sec}	Permeability (calculated) **k** , *m/s*
0	19.10	5.567	/	/	/	/	/	/	/	/
24	16.67	4.732	0 - 24	0.370	0.479	0.151	5.196	3.6	1.166%	5.72E-09
49	15.42	4.302	24 - 49	0.096	0.859	0.045	3.078	0.37	1.121%	3.53E-10
98	13.45	3.624	49 - 98	0.075	0.879	0.046	2.613	0.31	0.072%	2.51E-10
196	11.35	2.901	98 - 196	0.071	0.730	0.198	1.600	0.30	2.207%	1.49E-10
391	9.43	2.243	196 - 391	0.056	0.888	0.056	0.863	0.12	0.480%	3.21E-11

** Log-time method adopted for calculations ; # sample swelled.*

Client: *Caulmert Ltd*	**Checked:** TG	**Proj No:** **J15309**
Project Name: *Riverside Industrial Park, West Thurrock, Grays, RM*	**Date:** 16-Jan-23	

Southern Testing | ST Consult

IMMEDIATE UNDRAINED TRIAXIAL SUMMARY

To BS1377-7

AGS

Project Name	*Riverside Industrial Park, West Thurrock*			Project Number	*J15309*
Client	*Caulmert Ltd*	PE	*SM*	Date Issued	*25-Jan-23*

Location	Depth (m)	Sample Type	Visual Description	Comments	Test Type	UCS by Hand Pen. (KPa)	NMC (%)	Cell Press. (KPa)	Deviator Stress (KPa)	Apparent Cohesion C_u (KPa)	Bulk Density (Mg/m^3)
BH01	7.50	U	*Soft grey organic CLAY. With intact fibrous fragments throughout.*		*Single Stage*	*50*	*91.6*	*150*	*53*	*27*	*1.43*
BH02	4.50	U	*Soft grey organic CLAY. With intact fibrous fragments throughout.*		*Single Stage*	*70*	*106.4*	*90*	*48*	*24*	*1.40*
BH04	6.00	U	*Soft black fibrous PEAT. With occasional grey clay patches.*	*Sample Unsuitable.*	*Single Stage*	*60*	*164.7*				

Southern Testing | ST Consult

HAND SHEAR VANE TEST SUMMARY

Project Name	Riverside Industrial Park, West Thurrock			Project Number	J15309
Client	Caulmert Ltd	PE	SM	Date Issued	25-Jan-23

Location	Depth (m)	Sample Type	Visual Description	Comments	Tube Diameter (mm)	Position in Tube	NMC (%)	Average Hand Vane Shear Strength (kPa)	Average Remoulded Shear Strength (kPa)
BH01	4.50	U	*Very soft black fibrous PEAT. With abundant intact organic fragments.*		*105*	*Top*	*469*	*44*	-
BH01	7.50	U	*Soft grey organic CLAY. With intact fibrous fragments throughout.*		*105*	*Top*	*92*	*17*	-
BH02	2.50	U	*Soft dark grey slightly sandy organic CLAY. With occasional intact organic fragments.*		*105*	*Top*	*94*	*22*	-
BH02	4.50	U	*Soft grey organic CLAY. With intact fibrous fragments throughout.*		*105*	*Top*	*107*	*40*	-
BH02	7.50	U	*Very soft dark grey slightly sandy organic CLAY. With patches of peat.*		*105*	*Top*	-	*28*	-
BH04	3.50	U	*Very soft black fibrous PEAT.With abundant intact organic fragments.*		*105*	*Top*	*249*	*20*	-
BH04	6.00	U	*Soft black fibrous PEAT. With occasional grey clay patches.*		*105*	*Top*	*165*	*19*	-

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Analytical Report Number : 22-14707

Project / Site name:	Riverside Industrial Park, West Thurrock	Samples received on:	22/12/2022
Your job number:	J15309	Samples instructed on/ Analysis started on:	22/12/2022
Your order number:	J15309 4	Analysis completed by:	04/01/2023
Report Issue Number:	1	Report issued on:	04/01/2023
Samples Analysed:	21 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_4

Lab Sample Number				2542392	2542393	2542394	2542395	2542396
Sample Reference				BH01	BH02	BH02	BH03	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.00	1.30	2.10	1.50	9.00
Date Sampled				24/11/2022	28/11/2022	28/11/2022	07/12/2022	07/12/2022
Time Taken				1200	1200	1200	1200	1200
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	60	31	45	28	50
Total mass of sample received	kg	0.001	NONE	0.6	0.6	0.6	0.6	0.6

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	-	-
pH - Automated	pH Units	N/A	MCERTS	6.7	7.5	-	7	7.4
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.5	1.3	-	0.47	1.3
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1510	1300	-	471	1330
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	4500*	260	-	81	2200*
Loss on Ignition @ 450oC	%	0.2	MCERTS	24	-	8.6	-	14.6
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	-	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	820	150	-	78	490
Magnesium (leachate equivalent)	mg/l	2.5	NONE	410	78	-	39	250

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

* Result was reported from high dilution and should be interpreted with care

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Analytical Report Number: 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_4

Lab Sample Number				2542397	2542398	2542399	2542400	2542401
Sample Reference				BH04	BH04	WLS01	WLS01	WLS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.80	4.00	1.50	2.00	1.50
Date Sampled				01/12/2022	01/12/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				0920	1200	1100	1100	1200
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	51	76	23	26	22
Total mass of sample received	kg	0.001	NONE	1	0.7	1	1.4	0.8

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	7.4	-	-	-
pH - Automated	pH Units	N/A	MCERTS	7.2	-	-	8.2	8
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.66	0.86	-	0.035	0.065
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	663	861	-	35.3	64.7
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1900	10000*	-	490	310
Loss on Ignition @ 450oC	%	0.2	MCERTS	-	53.2	5.5	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	< 2.0	-	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	300	570	-	110	79
Magnesium (leachate equivalent)	mg/l	2.5	NONE	150	280	-	53	39

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

* Result was reported from high dilution and should be interpreted with care

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Analytical Report Number: 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_4

Lab Sample Number				2542402	2542403	2542404	2542405	2542406
Sample Reference				WLS02	WLS03	WLS03	WLS04	WLS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	2.00	2.70	1.50	2.10
Date Sampled				21/11/2022	21/11/2022	21/11/2022	21/11/2022	23/11/2022
Time Taken				1200	1300	1300	1400	1420
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	26	61	33	37
Total mass of sample received	kg	0.001	NONE	0.6	1	1.2	0.9	1

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	-	-
pH - Automated	pH Units	N/A	MCERTS	-	6.7	-	8.7	6.9
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.32	-	0.32	0.72
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	324	-	316	723
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	120	-	530	620
Loss on Ignition @ 450oC	%	0.2	MCERTS	5.7	-	14.6	5.9	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	-	< 2.0	-	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	-	51	-	68	110
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	25	-	34	55

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

* Result was reported from high dilution and should be interpreted with care

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Analytical Report Number: 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_4

Lab Sample Number				2542407	2542408	2542409	2542410	2542411
Sample Reference				WLS06	WLS06	WLS07	WLS07	WLS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.70	2.50	1.80	2.50	1.50
Date Sampled				23/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1145	1145	1030	1030	1445
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	27	64	26	36	7.8
Total mass of sample received	kg	0.001	NONE	1.5	1.5	1	0.6	1

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-	-	-	-	-
pH - Automated	pH Units	N/A	MCERTS	8.1	-	-	7.2	9
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.057	-	-	0.4	1.1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	56.9	-	-	396	1100
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	190	-	-	350	18
Loss on Ignition @ 450oC	%	0.2	MCERTS	-	35.6	4.4	-	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0	-	-	< 2.0	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	45	-	-	75	12
Magnesium (leachate equivalent)	mg/l	2.5	NONE	23	-	-	38	6.1

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

* Result was reported from high dilution and should be interpreted with care

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_4

Lab Sample Number				2542412
Sample Reference				WLS09
Sample Number				None Supplied
Depth (m)				1.80
Date Sampled				23/11/2022
Time Taken				1330
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	30
Total mass of sample received	kg	0.001	NONE	0.6

General Inorganics

pH - Manual	pH Units	N/A	MCERTS	-
pH - Automated	pH Units	N/A	MCERTS	7.8
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.17
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	173
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	330
Loss on Ignition @ 450oC	%	0.2	MCERTS	-
Water Soluble Nitrate (2:1) as N (leachate equivalent)	mg/l	2	NONE	< 2.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	100
Magnesium (leachate equivalent)	mg/l	2.5	NONE	51

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

* Result was reported from high dilution and should be interpreted with care

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2542392	BH01	None Supplied	4	Brown clay and sand with gravel.
2542393	BH02	None Supplied	1.3	Brown clay with chalk.
2542394	BH02	None Supplied	2.1	Brown clay.
2542395	BH03	None Supplied	1.5	Brown clay.
2542396	BH03	None Supplied	9	Brown clay.
2542397	BH04	None Supplied	2.8	Brown clay.
2542398	BH04	None Supplied	4	Brown loam with vegetation.
2542399	WLS01	None Supplied	1.5	Brown clay.
2542400	WLS01	None Supplied	2	Brown clay.
2542401	WLS02	None Supplied	1.5	Brown clay.
2542402	WLS02	None Supplied	2	Brown clay.
2542403	WLS03	None Supplied	2	Brown clay.
2542404	WLS03	None Supplied	2.7	Brown silt with gravel and vegetation.**
2542405	WLS04	None Supplied	1.5	Brown clay.
2542406	WLS05	None Supplied	2.1	Brown clay.
2542407	WLS06	None Supplied	1.7	Brown clay.
2542408	WLS06	None Supplied	2.5	Brown clay.
2542409	WLS07	None Supplied	1.8	Brown clay.
2542410	WLS07	None Supplied	2.5	Brown clay.
2542411	WLS08	None Supplied	1.5	Brown clay.
2542412	WLS09	None Supplied	1.8	Brown clay.

**unaccredited sample matrix

Analytical Report Number : 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Loss on ignition of soil @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace.	In house method.	L047-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
pH at 20oC in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In house method.	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Water Soluble Nitrate (2:1) as N in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	W	NONE
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report

Analytical Report Number : 22-14707
Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01	None Supplied	S	2542392	c	Chloride, water soluble, in soil	L082-PL	c
BH01	None Supplied	S	2542392	c	Loss on ignition of soil @ 450oC	L047-PL	c
BH01	None Supplied	S	2542392	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
BH01	None Supplied	S	2542392	c	pH in soil (automated)	L099-PL	c
WLS01	None Supplied	S	2542399	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS01	None Supplied	S	2542400	c	Chloride, water soluble, in soil	L082-PL	c
WLS01	None Supplied	S	2542400	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS01	None Supplied	S	2542400	c	pH in soil (automated)	L099-PL	c
WLS02	None Supplied	S	2542401	c	Chloride, water soluble, in soil	L082-PL	c
WLS02	None Supplied	S	2542401	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS02	None Supplied	S	2542401	c	pH in soil (automated)	L099-PL	c
WLS02	None Supplied	S	2542402	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS03	None Supplied	S	2542403	c	Chloride, water soluble, in soil	L082-PL	c
WLS03	None Supplied	S	2542403	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS03	None Supplied	S	2542403	c	pH in soil (automated)	L099-PL	c
WLS03	None Supplied	S	2542404	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS04	None Supplied	S	2542405	c	Chloride, water soluble, in soil	L082-PL	c
WLS04	None Supplied	S	2542405	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS04	None Supplied	S	2542405	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS04	None Supplied	S	2542405	c	pH in soil (automated)	L099-PL	c
WLS05	None Supplied	S	2542406	c	Chloride, water soluble, in soil	L082-PL	c
WLS05	None Supplied	S	2542406	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS05	None Supplied	S	2542406	c	pH in soil (automated)	L099-PL	c
WLS06	None Supplied	S	2542407	c	Chloride, water soluble, in soil	L082-PL	c
WLS06	None Supplied	S	2542407	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS06	None Supplied	S	2542407	c	pH in soil (automated)	L099-PL	c
WLS06	None Supplied	S	2542408	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS07	None Supplied	S	2542409	c	Loss on ignition of soil @ 450oC	L047-PL	c
WLS07	None Supplied	S	2542410	c	Chloride, water soluble, in soil	L082-PL	c
WLS07	None Supplied	S	2542410	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS07	None Supplied	S	2542410	c	pH in soil (automated)	L099-PL	c
WLS08	None Supplied	S	2542411	c	Chloride, water soluble, in soil	L082-PL	c
WLS08	None Supplied	S	2542411	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS08	None Supplied	S	2542411	c	pH in soil (automated)	L099-PL	c
WLS09	None Supplied	S	2542412	c	Chloride, water soluble, in soil	L082-PL	c
WLS09	None Supplied	S	2542412	c	Water Soluble Nitrate (2:1) as N in soil	L078-PL	c
WLS09	None Supplied	S	2542412	c	pH in soil (automated)	L099-PL	c

Southern Testing
Environmental & Geotechnical

ST Consult
Environmental & Geotechnical

APPENDIX D

Contamination Laboratory Test Methods and Results

D

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Analytical Report Number : 22-13407

Replaces Analytical Report Number: 22-13407, issue no. 1
Additional analysis undertaken.

Project / Site name:	Riverside Industrial Park, West Thurrock	**Samples received on:**	15/12/2022
Your job number:	J15309	**Samples instructed on/ Analysis started on:**	15/12/2022
Your order number:	J15309_1	**Analysis completed by:**	16/01/2023
Report Issue Number:	2	**Report issued on:**	18/01/2023
Samples Analysed:	25 soil samples		

Signed:

Adam Fenwick
Technical Reviewer
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534306	2534307	2534308	2534309	2534310
Sample Reference				BH01	BH01	BH02	BH02	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.50	0.30	0.10	0.30
Date Sampled				24/11/2022	24/11/2022	28/11/2022	28/11/2022	07/12/2022
Time Taken				1200	1200	1342	1345	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	-	< 0.1	< 0.1	< 0.1	-
Moisture Content	%	0.01	NONE	-	19	30	29	-
Total mass of sample received	kg	0.001	NONE	-	1	1	1	-
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	N/A	KSZ	N/A	KSZ
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	-	9.3	7.6	7.5	-
Total Cyanide	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Complex Cyanide	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Thiocyanate as SCN	mg/kg	5	NONE	-	< 5.0	< 5.0	< 5.0	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	2100	4300	4500	-
Total Potential Sulphate	mg/kg	30	NONE	-	7000	8400	9700	-
Total Sulphur	mg/kg	50	MCERTS	-	2300	2800	3200	-
Ammoniacal Nitrogen as NH3	mg/kg	0.5	MCERTS	-	13	34	41	-
Organic Matter (automated)	%	0.1	MCERTS	-	5.2	2.3	3.2	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	-	0.55*	< 0.05	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	-	0.34*	< 0.05	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	-	0.84*	< 0.05	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	< 0.05*	< 0.05	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	< 0.05*	< 0.05	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05*	< 0.05	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	30.2*	< 0.80	< 0.80	-

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534306	2534307	2534308	2534309	2534310
Sample Reference				BH01	BH01	BH02	BH02	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.50	0.30	0.10	0.30
Date Sampled				24/11/2022	24/11/2022	28/11/2022	28/11/2022	07/12/2022
Time Taken				1200	1200	1342	1345	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	-	< 1.0	< 1.0	3.3	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	14	17	18	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	-	300	68	46	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	1.1	1.4	1.5	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-	4	9.2	8.5	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.6	< 0.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	< 1.8	< 1.8	-
Chromium (III)	mg/kg	1	NONE	-	28	45	46	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	29	45	46	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	33	13	14	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	120	25	25	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	-
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	-	1.6	0.92	0.96	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	19	25	32	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	53	81	81	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	150	79	84	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-
o-xylene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	< 5.0	< 5.0	-

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534306	2534307	2534308	2534309	2534310
Sample Reference				BH01	BH01	BH02	BH02	BH03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	1.50	0.30	0.10	0.30
Date Sampled				24/11/2022	24/11/2022	28/11/2022	28/11/2022	07/12/2022
Time Taken				1200	1200	1342	1345	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	-	3.2	< 1.0	2	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	-	37	< 2.0	7.2	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	77	< 8.0	10	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	250	< 8.0	22	-
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	-	320	< 8.4	41	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	-	370	< 10	41	-
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	-	690	< 10	83	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	< 0.001	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	-	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	25	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	260	< 10	< 10	-
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	-	610	< 8.4	< 8.4	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	-	280	< 10	< 10	-
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	-	890	< 10	< 10	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534311	2534312	2534313	2534314	2534315
Sample Reference				BH03	BH04	WLS01	WLS01	WLS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.25	0.20	0.60	0.30
Date Sampled				07/12/2022	30/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1330	1100	1100	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
Moisture Content	%	0.01	NONE	26	4.9	7.7	12	-
Total mass of sample received	kg	0.001	NONE	1	1	1	1	-
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.001	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.001	-	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	KSZ	KSZ	N/A	KSZ
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.2	9.4	9.0	8.5	-
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	-
Total Sulphate as SO4	mg/kg	50	MCERTS	1200	350	2100	9400	-
Total Potential Sulphate	mg/kg	30	NONE	6500	1900	5700	16000	-
Total Sulphur	mg/kg	50	MCERTS	2200	640	1900	5200	-
Ammoniacal Nitrogen as NH3	mg/kg	0.5	MCERTS	55	< 0.5	< 0.5	< 0.5	-
Organic Matter (automated)	%	0.1	MCERTS	4.6	0.5	3.2	2.8	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.2	0.12	0.16*	0.29*	-
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.13*	0.23*	-
Acenaphthene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.16*	1.7*	-
Fluorene	mg/kg	0.05	MCERTS	0.06	< 0.05	0.15*	1.3*	-
Phenanthrene	mg/kg	0.05	MCERTS	0.47	0.08	1.4*	11*	-
Anthracene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.41*	3.4*	-
Fluoranthene	mg/kg	0.05	MCERTS	0.63	0.16	2.4*	13*	-
Pyrene	mg/kg	0.05	MCERTS	0.57	0.16	2.2*	11*	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.32	0.1	1.1*	5.9*	-
Chrysene	mg/kg	0.05	MCERTS	0.3	0.07	1.1*	5.1*	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.33*	0.14*	1.4*	5.4*	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.1	0.07	0.41*	2.8*	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.3*	0.11*	1.2*	5.1*	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.17	0.09	0.7*	2.4*	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.12*	0.59*	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.18	0.1	0.85*	2.6*	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.78	1.2	13.9*	71.5*	-

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534311	2534312	2534313	2534314	2534315
Sample Reference				BH03	BH04	WLS01	WLS01	WLS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.25	0.20	0.60	0.30
Date Sampled				07/12/2022	30/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1330	1100	1100	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	5.3	4	-
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	3.5	53	7.3	-
Barium (aqua regia extractable)	mg/kg	1	MCERTS	82	150	120	180	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	0.33	0.85	0.71	-
Boron (water soluble)	mg/kg	0.2	MCERTS	4.3	0.5	0.7	1.3	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	0.4	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	-
Chromium (III)	mg/kg	1	NONE	40	36	20	15	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	37	20	15	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41	54	45	24	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	75	32	700	140	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.6	0.63	1.3	0.88	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	20	20	11	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	72	58	33	34	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	97	140	150	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
p & m-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
o-xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	< 5.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534311	2534312	2534313	2534314	2534315
Sample Reference				BH03	BH04	WLS01	WLS01	WLS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.50	0.25	0.20	0.60	0.30
Date Sampled				07/12/2022	30/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1330	1100	1100	1200
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	< 8.0	< 8.0	38	-	-
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	< 8.4	< 8.4	97	-	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	42	-	-
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	< 10	< 10	140	-	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	< 0.001	< 0.001	-	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	< 10	43	-	-
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	< 8.4	< 8.4	260	-	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	48	-	-
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	< 10	< 10	310	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534316	2534317	2534318	2534319	2534320
Sample Reference				WLS02	WLS02	WLS03	WLS03	WLS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	1.20	0.40	1.50	0.30
Date Sampled				21/11/2022	21/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1200	1300	1300	1400
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	6.7	22	9.4	23	11
Total mass of sample received	kg	0.001	NONE	1	1	1	1	1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	N/A	KSZ	N/A	KSZ
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.8	9.0	10.3	9.0	10.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	950	480	2200	490	2100
Total Potential Sulphate	mg/kg	30	NONE	2900	1100	7600	630	6000
Total Sulphur	mg/kg	50	MCERTS	980	360	2500	210	2000
Ammoniacal Nitrogen as NH3	mg/kg	0.5	MCERTS	< 0.5	2.4	< 0.5	< 0.5	< 0.5
Organic Matter (automated)	%	0.1	MCERTS	3.7	0.4	3.6	0.3	0.7
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05*	< 0.05	< 0.05*	< 0.05	0.1
Acenaphthylene	mg/kg	0.05	MCERTS	0.17*	< 0.05	< 0.05*	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.3*	< 0.05	< 0.05*	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.32*	< 0.05	< 0.05*	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	3.1*	0.07	0.56*	< 0.05	0.07
Anthracene	mg/kg	0.05	MCERTS	0.93*	< 0.05	0.19*	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	5.6*	0.13	0.96*	< 0.05	0.14
Pyrene	mg/kg	0.05	MCERTS	5.1*	0.13	0.97*	< 0.05	0.14
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2.5*	0.06	0.47*	< 0.05	0.09
Chrysene	mg/kg	0.05	MCERTS	2.5*	< 0.05	0.52*	< 0.05	0.07
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.5*	0.08*	0.49*	< 0.05	0.12*
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	1.6*	< 0.05	0.31*	< 0.05	0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.5*	0.05*	0.54*	< 0.05	0.09*
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1.2*	< 0.05	0.23*	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.28*	< 0.05	< 0.05*	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.4*	< 0.05	0.36*	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	30.2*	< 0.80	5.6*	< 0.80	0.87

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534316	2534317	2534318	2534319	2534320
Sample Reference				WLS02	WLS02	WLS03	WLS03	WLS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	1.20	0.40	1.50	0.30
Date Sampled				21/11/2022	21/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1200	1300	1300	1400
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	1.3	6.2	2.1	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	130	19	230	37	580
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.72	0.09	1.9	0.09	0.42
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	0.3	0.9	< 0.2	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.9
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	21	1.9	18	1.6	14
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	2	18	1.6	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	4.8	19	8.1	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	2	29	4.7	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	0.84	< 0.25	1.1	0.31	0.67
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	2	11	1.3	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	5.1	29	3.2	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	73	16	85	18	170
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	-	< 5.0	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	-	< 5.0	< 5.0	< 5.0

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534316	2534317	2534318	2534319	2534320
Sample Reference				WLS02	WLS02	WLS03	WLS03	WLS04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	1.20	0.40	1.50	0.30
Date Sampled				21/11/2022	21/11/2022	21/11/2022	21/11/2022	21/11/2022
Time Taken				1200	1200	1300	1300	1400
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	9.6	-	7	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	40	-	40	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	81	-	210	< 8.0	27
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	160	-	270	< 8.4	17
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	130	-	260	< 10	31
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	290	-	530	< 10	48
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	-	4.1	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	42	-	36	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	200	-	250	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	500	-	750	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	240	-	290	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	740	-	1000	< 10	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534321	2534322	2534323	2534324	2534325
Sample Reference				WLS04	WLS05	WLS05	WLS06	WLS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.30	1.20	0.20	0.80
Date Sampled				21/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1400	1000	1000	1100	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	-	< 0.1
Moisture Content	%	0.01	NONE	22	14	27	-	7
Total mass of sample received	kg	0.001	NONE	1	1	1	-	1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	JSW	N/A	JSW	JSW
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.9	10.4	8.4	-	9.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	500	1700	4500	-	1700
Total Potential Sulphate	mg/kg	30	NONE	680	3500	8200	-	4100
Total Sulphur	mg/kg	50	MCERTS	230	1200	2700	-	1400
Ammoniacal Nitrogen as NH3	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	-	1.1
Organic Matter (automated)	%	0.1	MCERTS	< 0.1	1	4.7	-	2
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05*	-	< 0.05*
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.08*	-	0.05*
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06*	-	0.14*
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07*	-	0.23*
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.41	0.85*	-	1.4*
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.13	0.22*	-	0.46*
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	1	2.2*	-	2.6*
Pyrene	mg/kg	0.05	MCERTS	< 0.05	1	2.2*	-	2.5*
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.61	1.8*	-	1.1*
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.56	2*	-	1.2*
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.82*	2*	-	1.2*
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.42	1.3*	-	0.7*
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.76*	1.9*	-	1.2*
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.5	1.2*	-	0.67*
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.1	0.26*	-	0.13*
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.63	1.4*	-	0.71*
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	6.99	17.6*	-	14.3*

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534321	2534322	2534323	2534324	2534325
Sample Reference				WLS04	WLS05	WLS05	WLS06	WLS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.30	1.20	0.20	0.80
Date Sampled				21/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1400	1000	1000	1100	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	< 1.0	4.5	-	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.1	7	29	-	7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	82	150	310	-	250
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.12	0.51	2.7	-	0.73
Boron (water soluble)	mg/kg	0.2	MCERTS	0.2	0.3	0.9	-	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.4	< 0.2	-	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	-	< 1.8
Chromium (III)	mg/kg	1	NONE	2.4	14	33	-	17
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	2.4	14	33	-	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.5	46	59	-	26
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	130	110	-	42
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	< 0.25	0.98	2.6	-	0.83
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	3.5	8.8	39	-	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	4.9	34	93	-	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	32	110	130	-	110
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	< 5.0

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534321	2534322	2534323	2534324	2534325
Sample Reference				WLS04	WLS05	WLS05	WLS06	WLS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.30	1.20	0.20	0.80
Date Sampled				21/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1400	1000	1000	1100	1100
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	-	4.7	-	-	13
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	18	-	-	40
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	-	26	-	-	120
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	-	25	-	-	120
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	-	48	-	-	170
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	-	73	-	-	300
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	-	< 0.001	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	-	< 1.0	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	-	4.4	-	-	8.2
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	16	-	-	22
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	-	29	-	-	95
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	-	57	-	-	210
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	-	50	-	-	120
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	-	110	-	-	330

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534326	2534327	2534328	2534329	2534330
Sample Reference				WLS07	WLS07	WLS08	WLS08	WLS09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.90	0.20	0.80	0.40
Date Sampled				23/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1000	1000	1445	1445	1300
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	7.3	21	-	3.8	4
Total mass of sample received	kg	0.001	NONE	1	1	-	1	1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	-	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	JSW	JSW	JSW	N/A	JSW
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	9.4	8.6	-	9.3	10.7
Total Cyanide	mg/kg	1	MCERTS	< 1.0	2	-	< 1.0	< 1.0
Complex Cyanide	mg/kg	1	MCERTS	< 1.0	2	-	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	-	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	1800	10000	-	880	1600
Total Potential Sulphate	mg/kg	30	NONE	3300	25000	-	2300	3700
Total Sulphur	mg/kg	50	MCERTS	1100	8300	-	760	1200
Ammoniacal Nitrogen as NH3	mg/kg	0.5	MCERTS	< 0.5	< 0.5	-	< 0.5	< 0.5
Organic Matter (automated)	%	0.1	MCERTS	1	1.9	-	0.7	1
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.13	0.13	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	0.11	-	< 0.05	0.07
Acenaphthene	mg/kg	0.05	MCERTS	0.07	0.06	-	0.05	0.07
Fluorene	mg/kg	0.05	MCERTS	0.1	0.11	-	0.05	0.09
Phenanthrene	mg/kg	0.05	MCERTS	0.75	0.8	-	0.9	0.67
Anthracene	mg/kg	0.05	MCERTS	0.25	0.25	-	0.17	0.2
Fluoranthene	mg/kg	0.05	MCERTS	1.6	2.2	-	1.4	1.3
Pyrene	mg/kg	0.05	MCERTS	1.5	2.2	-	1.3	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.91	1.3	-	0.7	0.71
Chrysene	mg/kg	0.05	MCERTS	0.85	1.1	-	0.58	0.62
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.1*	1.7*	-	0.83*	0.9*
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.58	0.52	-	0.27	0.33
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.1*	1.2*	-	0.65*	0.74*
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.65	0.76	-	0.43	0.49
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.13	0.17	-	0.08	0.12
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.79	0.84	-	0.45	0.54
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	10.5	13.4	-	7.93	8.1

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534326	2534327	2534328	2534329	2534330
Sample Reference				WLS07	WLS07	WLS08	WLS08	WLS09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.90	0.20	0.80	0.40
Date Sampled				23/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1000	1000	1445	1445	1300
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	14	89	-	< 1.0	< 1.0
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.3	14	-	5.6	9
Barium (aqua regia extractable)	mg/kg	1	MCERTS	150	190	-	170	130
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.75	1.2	-	0.63	0.65
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	1.5	-	0.7	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	< 1.8	< 1.8
Chromium (III)	mg/kg	1	NONE	25	25	-	24	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	25	-	24	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	67	-	22	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	1300	-	27	41
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	4.3	-	< 0.3	< 0.3
Molybdenum (aqua regia extractable)	mg/kg	0.25	MCERTS	1.2	1.5	-	0.76	1.2
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	20	-	13	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	36	-	46	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	98	210	-	100	110
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
p & m-xylene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
o-xylene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	-	-	< 5.0	< 5.0

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Lab Sample Number				2534326	2534327	2534328	2534329	2534330
Sample Reference				WLS07	WLS07	WLS08	WLS08	WLS09
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.90	0.20	0.80	0.40
Date Sampled				23/11/2022	23/11/2022	23/11/2022	23/11/2022	23/11/2022
Time Taken				1000	1000	1445	1445	1300
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS_1D_AL}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH_CU_1D_AL}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH_CU_1D_AL}$	mg/kg	2	MCERTS	4.7	-	-	< 2.0	4.9
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	11	-	-	< 8.0	14
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH_CU_1D_AL}$	mg/kg	8	MCERTS	34	-	-	14	31
TPH-CWG - Aliphatic > EC35 - EC44 $_{EH_CU_1D_AL}$	mg/kg	8.4	NONE	31	-	-	26	40
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	49	-	-	15	50
TPH-CWG - Aliphatic (EC5 - EC44) $_{EH_CU+HS_1D_AL}$	mg/kg	10	NONE	80	-	-	42	89
TPH-CWG - Aromatic >EC5 - EC7 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS_1D_AR}$	mg/kg	0.001	NONE	< 0.001	-	-	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH_CU_1D_AR}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH_CU_1D_AR}$	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	< 10	-	-	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH_CU_1D_AR}$	mg/kg	10	MCERTS	44	-	-	40	20
TPH-CWG - Aromatic > EC35 - EC44 $_{EH_CU_1D_AR}$	mg/kg	8.4	NONE	76	-	-	84	83
TPH-CWG - Aromatic (EC5 - EC35) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	54	-	-	45	25
TPH-CWG - Aromatic (EC5 - EC44) $_{EH_CU+HS_1D_AR}$	mg/kg	10	NONE	130	-	-	130	110

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

*Data reported unaccredited due to quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted and the failure justified as having no significant impact on sample data reported.

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Analytical Report Number: 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock
Your Order No: J15309_1

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2534306	BH01	0.20	163	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
2534313	WLS01	0.20	174	Loose Fibres	**Chrysotile**	0.001	**0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2534307	BH01	None Supplied	1.5	Brown clay and sand with vegetation.
2534308	BH02	None Supplied	0.3	Brown clay and sand with chalk.
2534309	BH02	None Supplied	0.1	Brown clay and sand with chalk.
2534311	BH03	None Supplied	1.5	Brown clay and sand with chalk.
2534312	BH04	None Supplied	0.25	Brown clay and sand with fibres.
2534313	WLS01	None Supplied	0.2	Brown clay and sand with gravel.
2534314	WLS01	None Supplied	0.6	Brown loam and sand with gravel and vegetation.
2534316	WLS02	None Supplied	0.7	Brown gravelly loam.
2534317	WLS02	None Supplied	1.2	Beige clay.
2534318	WLS03	None Supplied	0.4	Brown loam and sand with gravel.
2534319	WLS03	None Supplied	1.5	Beige clay.
2534320	WLS04	None Supplied	0.3	Brown clay.
2534321	WLS04	None Supplied	0.7	Beige clay.
2534322	WLS05	None Supplied	0.3	Grey clay.
2534323	WLS05	None Supplied	1.2	Brown gravelly loam.
2534325	WLS06	None Supplied	0.8	Brown gravelly loam.
2534326	WLS07	None Supplied	0.3	Brown gravelly loam.
2534327	WLS07	None Supplied	0.9	Brown clay and loam with gravel.
2534329	WLS08	None Supplied	0.8	Brown loam and sand with gravel.
2534330	WLS09	None Supplied	0.4	Brown loam and sand with gravel.

Analytical Report Number : 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Complex Cyanide in soil	Determination of complex cyanide by calculation.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Thiocyanate in soil	Determination of thiocyanate in soil by extraction in water followed by acidification followed by addition of ferric nitrate followed by discrete analyser (spectrophotometer).	In-house method	L082-PL	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total potential sulphate in soil	Determination of total potential sulphate in soil by calculation from total sulphur.	By calculation - In-house method based on TRL 447 report.	L038-PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS. Individual components MCERTS accredited	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Ammonia as NH3 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE

Analytical Report Number : 22-13407
Project / Site name: Riverside Industrial Park, West Thurrock

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report

Analytical Report Number : 22-13407

Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01	None Supplied	S	2534307	c	Free cyanide in soil	L080-PL	c
BH01	None Supplied	S	2534307	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH01	None Supplied	S	2534307	c	Complex Cyanide in soil	L080-PL	c
BH01	None Supplied	S	2534307	c	Speciated EPA-16 PAHs in soil	L064-PL	c
BH01	None Supplied	S	2534307	c	TPH in (Soil)	L076-PL	c
BH01	None Supplied	S	2534307	c	TPHCWG (Soil)	L088/76-PL	c
BH01	None Supplied	S	2534307	c	Thiocyanate in soil	L082-PL	c
BH01	None Supplied	S	2534307	c	Total cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534308	c	Free cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534308	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH02	None Supplied	S	2534308	c	Complex Cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534308	c	TPH in (Soil)	L076-PL	c
BH02	None Supplied	S	2534308	c	Thiocyanate in soil	L082-PL	c
BH02	None Supplied	S	2534308	c	Total cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534309	c	Free cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534309	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH02	None Supplied	S	2534309	c	Complex Cyanide in soil	L080-PL	c
BH02	None Supplied	S	2534309	c	TPH in (Soil)	L076-PL	c
BH02	None Supplied	S	2534309	c	Thiocyanate in soil	L082-PL	c
BH02	None Supplied	S	2534309	c	Total cyanide in soil	L080-PL	c
BH03	None Supplied	S	2534311	c	Free cyanide in soil	L080-PL	c
BH03	None Supplied	S	2534311	c	Complex Cyanide in soil	L080-PL	c
BH03	None Supplied	S	2534311	c	Total cyanide in soil	L080-PL	c
BH04	None Supplied	S	2534312	c	Free cyanide in soil	L080-PL	c
BH04	None Supplied	S	2534312	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH04	None Supplied	S	2534312	c	Complex Cyanide in soil	L080-PL	c
BH04	None Supplied	S	2534312	c	TPH in (Soil)	L076-PL	c
BH04	None Supplied	S	2534312	c	Thiocyanate in soil	L082-PL	c
BH04	None Supplied	S	2534312	c	Total cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534313	c	Free cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534313	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS01	None Supplied	S	2534313	c	Complex Cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534313	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS01	None Supplied	S	2534313	c	TPH in (Soil)	L076-PL	c
WLS01	None Supplied	S	2534313	c	TPHCWG (Soil)	L088/76-PL	c
WLS01	None Supplied	S	2534313	c	Thiocyanate in soil	L082-PL	c
WLS01	None Supplied	S	2534313	c	Total cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534314	c	Free cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534314	c	Complex Cyanide in soil	L080-PL	c
WLS01	None Supplied	S	2534314	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS01	None Supplied	S	2534314	c	Thiocyanate in soil	L082-PL	c
WLS01	None Supplied	S	2534314	c	Total cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534316	c	Free cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534316	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS02	None Supplied	S	2534316	c	Complex Cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534316	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS02	None Supplied	S	2534316	c	TPH in (Soil)	L076-PL	c
WLS02	None Supplied	S	2534316	c	TPHCWG (Soil)	L088/76-PL	c
WLS02	None Supplied	S	2534316	c	Thiocyanate in soil	L082-PL	c
WLS02	None Supplied	S	2534316	c	Total cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534317	c	Free cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534317	c	Complex Cyanide in soil	L080-PL	c
WLS02	None Supplied	S	2534317	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS02	None Supplied	S	2534317	c	Thiocyanate in soil	L082-PL	c
WLS02	None Supplied	S	2534317	c	Total cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534318	c	Free cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534318	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS03	None Supplied	S	2534318	c	Complex Cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534318	c	Speciated EPA-16 PAHs in soil	L064-PL	c

Analytical Report Number : 22-13407

Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WLS03	None Supplied	S	2534318	c	TPH in (Soil)	L076-PL	c
WLS03	None Supplied	S	2534318	c	TPHCWG (Soil)	L088/76-PL	c
WLS03	None Supplied	S	2534318	c	Thiocyanate in soil	L082-PL	c
WLS03	None Supplied	S	2534318	c	Total cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534319	c	Free cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534319	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS03	None Supplied	S	2534319	c	Complex Cyanide in soil	L080-PL	c
WLS03	None Supplied	S	2534319	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS03	None Supplied	S	2534319	c	TPH in (Soil)	L076-PL	c
WLS03	None Supplied	S	2534319	c	TPHCWG (Soil)	L088/76-PL	c
WLS03	None Supplied	S	2534319	c	Thiocyanate in soil	L082-PL	c
WLS03	None Supplied	S	2534319	c	Total cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534320	c	Free cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534320	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS04	None Supplied	S	2534320	c	Complex Cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534320	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS04	None Supplied	S	2534320	c	TPH in (Soil)	L076-PL	c
WLS04	None Supplied	S	2534320	c	TPHCWG (Soil)	L088/76-PL	c
WLS04	None Supplied	S	2534320	c	Thiocyanate in soil	L082-PL	c
WLS04	None Supplied	S	2534320	c	Total cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534321	c	Free cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534321	c	Complex Cyanide in soil	L080-PL	c
WLS04	None Supplied	S	2534321	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS04	None Supplied	S	2534321	c	Thiocyanate in soil	L082-PL	c
WLS04	None Supplied	S	2534321	c	Total cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534322	c	Free cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534322	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS05	None Supplied	S	2534322	c	Complex Cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534322	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS05	None Supplied	S	2534322	c	TPH in (Soil)	L076-PL	c
WLS05	None Supplied	S	2534322	c	TPHCWG (Soil)	L088/76-PL	c
WLS05	None Supplied	S	2534322	c	Thiocyanate in soil	L082-PL	c
WLS05	None Supplied	S	2534322	c	Total cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534323	c	Free cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534323	c	Complex Cyanide in soil	L080-PL	c
WLS05	None Supplied	S	2534323	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS05	None Supplied	S	2534323	c	Thiocyanate in soil	L082-PL	c
WLS05	None Supplied	S	2534323	c	Total cyanide in soil	L080-PL	c
WLS06	None Supplied	S	2534325	c	Free cyanide in soil	L080-PL	c
WLS06	None Supplied	S	2534325	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS06	None Supplied	S	2534325	c	Complex Cyanide in soil	L080-PL	c
WLS06	None Supplied	S	2534325	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS06	None Supplied	S	2534325	c	TPH in (Soil)	L076-PL	c
WLS06	None Supplied	S	2534325	c	TPHCWG (Soil)	L088/76-PL	c
WLS06	None Supplied	S	2534325	c	Thiocyanate in soil	L082-PL	c
WLS06	None Supplied	S	2534325	c	Total cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534326	c	Free cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534326	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS07	None Supplied	S	2534326	c	Complex Cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534326	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS07	None Supplied	S	2534326	c	TPH in (Soil)	L076-PL	c
WLS07	None Supplied	S	2534326	c	TPHCWG (Soil)	L088/76-PL	c
WLS07	None Supplied	S	2534326	c	Thiocyanate in soil	L082-PL	c
WLS07	None Supplied	S	2534326	c	Total cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534327	c	Free cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534327	c	Complex Cyanide in soil	L080-PL	c
WLS07	None Supplied	S	2534327	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS07	None Supplied	S	2534327	c	Thiocyanate in soil	L082-PL	c
WLS07	None Supplied	S	2534327	c	Total cyanide in soil	L080-PL	c

Sample Deviation Report

Analytical Report Number : 22-13407

Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WLS08	None Supplied	S	2534329	c	Free cyanide in soil	L080-PL	c
WLS08	None Supplied	S	2534329	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS08	None Supplied	S	2534329	c	Complex Cyanide in soil	L080-PL	c
WLS08	None Supplied	S	2534329	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS08	None Supplied	S	2534329	c	TPH in (Soil)	L076-PL	c
WLS08	None Supplied	S	2534329	c	TPHCWG (Soil)	L088/76-PL	c
WLS08	None Supplied	S	2534329	c	Thiocyanate in soil	L082-PL	c
WLS08	None Supplied	S	2534329	c	Total cyanide in soil	L080-PL	c
WLS09	None Supplied	S	2534330	c	Free cyanide in soil	L080-PL	c
WLS09	None Supplied	S	2534330	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
WLS09	None Supplied	S	2534330	c	Complex Cyanide in soil	L080-PL	c
WLS09	None Supplied	S	2534330	c	Speciated EPA-16 PAHs in soil	L064-PL	c
WLS09	None Supplied	S	2534330	c	TPH in (Soil)	L076-PL	c
WLS09	None Supplied	S	2534330	c	TPHCWG (Soil)	L088/76-PL	c
WLS09	None Supplied	S	2534330	c	Thiocyanate in soil	L082-PL	c
WLS09	None Supplied	S	2534330	c	Total cyanide in soil	L080-PL	c

UKAS TESTING
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Analytical Report Number : 23-11235

Project / Site name:	Riverside Industrial Park, West Thurrock	**Samples received on:**	06/01/2023
Your job number:	J15309	**Samples instructed on/ Analysis started on:**	12/01/2023
Your order number:		**Analysis completed by:**	29/01/2023
Report Issue Number:	1	**Report issued on:**	29/01/2023
Samples Analysed:	4 water samples		

Signed:

Claire Brown-Crociquia
Group Customer Services Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
General Inorganics							
pH (L005B)	pH Units	N/A	ISO 17025	7.6	7.5	7.5	7.6
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Complex Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Free Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Thiocyanate as SCN	µg/l	200	ISO 17025	350	< 200	210	390
Sulphate as SO4	µg/l	45	ISO 17025	782000	661000	941000	745000
Sulphate as SO4	mg/l	0.045	ISO 17025	782	661	941	745
Ammoniacal Nitrogen as NH3	µg/l	15	ISO 17025	11000	15000	11000	14000
Nitrate as N	mg/l	0.01	ISO 17025	0.19	0.19	0.27	0.31
Chemical Oxygen Demand (Total) (L065B)	mg/l	2	ISO 17025	620	600	700	890
BOD (Biochemical Oxygen Demand) (Total) - PL (L086B)	mg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hardness - Total	mgCaCO3/l	1	ISO 17025	2660	2500	3530	2780
Total Phenols							
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10
Speciated PAHs							
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Total PAH							
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16	< 0.16	< 0.16	< 0.16
Heavy Metals / Metalloids							
Boron (dissolved)	µg/l	10	ISO 17025	1200	1000	1200	1100
Calcium (dissolved)	mg/l	0.012	ISO 17025	280	310	360	310
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0	< 5.0	< 5.0
Chromium (III)	µg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0
Iron (dissolved)	mg/l	0.004	ISO 17025	0.12	0.11	0.021	0.72
Magnesium (dissolved)	mg/l	0.005	ISO 17025	470	420	640	480
Selenium (dissolved)	µg/l	4	ISO 17025	< 4.0	< 4.0	< 4.0	< 4.0
Mercury (total)	µg/l	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05
Aluminium (dissolved)	mg/l	0.001	ISO 17025	0.0066	0.0025	0.0088	0.0022
Antimony (dissolved)	µg/l	0.4	ISO 17025	< 0.4	0.5	0.7	0.5
Arsenic (dissolved)	µg/l	0.15	ISO 17025	0.77	1.92	1.01	0.97
Barium (dissolved)	µg/l	0.06	ISO 17025	210	250	200	210

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Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Beryllium (dissolved)	µg/l	0.1	ISO 17025	< 0.1	< 0.1	< 0.1	< 0.1
Cadmium (dissolved)	µg/l	0.02	ISO 17025	< 0.02	< 0.02	0.03	< 0.02
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.4	0.2	< 0.2	0.8
Copper (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	0.9	< 0.5
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2
Manganese (dissolved)	µg/l	0.05	ISO 17025	610	1000	700	570
Molybdenum (dissolved)	µg/l	0.05	ISO 17025	2.4	3.6	2.2	1.8
Nickel (dissolved)	µg/l	0.5	ISO 17025	3.1	5	9.3	1.8
Vanadium (dissolved)	µg/l	0.2	ISO 17025	0.6	0.6	0.5	1.2
Zinc (dissolved)	µg/l	0.5	ISO 17025	78	330	66	3.9
Monoaromatics & Oxygenates							
Benzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons							
TPH-CWG - Aliphatic >C5 - C6 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C6 - C8 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C8 - C10 $_{HS_1D_AL}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >C10 - C12 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C12 - C16 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C16 - C21 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C21 - C35 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic >C35 - C44 $_{EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C35) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (C5 - C44) $_{HS+EH_1D_AL_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C5 - C7 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C7 - C8 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C8 - C10 $_{HS_1D_AR}$	µg/l	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >C10 - C12 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C12 - C16 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C16 - C21 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C21 - C35 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >C35 - C44 $_{EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C35) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (C5 - C44) $_{HS+EH_1D_AR_MS}$	µg/l	10	NONE	< 10	< 10	< 10	< 10

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Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
VOCs							
Chloromethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/l	3	NONE	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/l	3	NONE	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p & m-Xylene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
o-Xylene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
n-Propylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status				
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0

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Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
SVOCs							
Aniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroisopropyl)ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachloroethane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Isophorone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Nitrophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dimethylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bis(2-chloroethoxy)methane	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
1,2,4-Trichlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobutadiene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chloro-3-methylphenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,6-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,4,5-Trichlorophenol	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2-Chloronaphthalene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dimethylphthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
2,6-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
2,4-Dinitrotoluene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzofuran	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Chlorophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Diethyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
4-Nitroaniline	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Azobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Bromophenyl phenyl ether	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Carbazole	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Dibutyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Anthraquinone	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Butyl benzyl phthalate	µg/l	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01

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Analytical Report Number: 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Lab Sample Number				2550925	2550926	2550927	2550928
Sample Reference				BH01	BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.47	0.95	1.26	0.94
Date Sampled				04/01/2023	04/01/2023	04/01/2023	04/01/2023
Time Taken				1022	1200	1349	1306
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01	< 0.01	< 0.01
3&4-Methylphenol	µg/l	0.1	NONE	< 0.10	< 0.10	< 0.10	< 0.10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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Analytical Report Number : 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (total)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 "for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW, PrW.(Al, Cu,Fe,Zn).	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Boron in water	Determination of boron in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM	L039-PL	W	ISO 17025
Biological oxygen demand (total) of water	Determination of biochemical oxygen demand in water (5 days). Accredited matrices: SW, PW, GW.	In-house method based on standard method 5210B.	L086-PL	W	ISO 17025
Complex cyanide in water	Determination of complex cyanide by calculation. Accredited matrices SW, PW, GW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Free cyanide in water	Determination of free cyanide by distillation followed by colorimetry.Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total Hardness of water	Determination of hardness in waters by calculation from calcium and magnesium. Accredited Matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards. Accredited matrices: SW PW GW	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
Thiocyanate in water	Determination of thiocyanate in water by discreet analyser (colorimetry). Accredited matrices SW, GW, PW.	In house method based on SMWW 4500-CN-M. Accredited matrices: SW, PW, GW.	L082-PL	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds in leachate by extraction in dichloromethane followed by GC-MS.	In-house method based on USEPA 8270	L102B-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	ISO 17025
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025

Analytical Report Number : 23-11235
Project / Site name: Riverside Industrial Park, West Thurrock

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Ammonia as NH3 in water	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	ISO 17025
Nitrate as N in water	Determination of nitrate by reaction with sodium salicylate and colorimetry. Accredited matrices SW, GW, PW.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08,	L078-PL	W	ISO 17025
Cr (III) in water	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
pH at 20oC in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In house method.	L099-PL	W	ISO 17025
Chemical Oxygen Demand in Water (Total)	Determination of total COD in water by reflux oxidation with acidified K2Cr2O7 followed by colorimetry. Accredited matrices: SW, PW, GW.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
TPH in (Water)	Determination of TPH bands by HS-GC-MS/GC-MS	In-house method, TPH with carbon banding.	L070-PL	W	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Sample Deviation Report

Analytical Report Number : 23-11235

Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01	None Supplied	W	2550925	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH01	None Supplied	W	2550925	c	Hexavalent chromium in water	L080-PL	c
BH01	None Supplied	W	2550925	c	Ammonia as NH3 in water	L082-PL	c
BH01	None Supplied	W	2550925	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH01	None Supplied	W	2550925	c	Biological oxygen demand (total) of water	L086-PL	c
BH01	None Supplied	W	2550925	c	Boron in water	L039-PL	c
BH01	None Supplied	W	2550925	c	Complex cyanide in water	L080-PL	c
BH01	None Supplied	W	2550925	c	Cr (III) in water	L080-PL	c
BH01	None Supplied	W	2550925	c	Free cyanide in water	L080-PL	c
BH01	None Supplied	W	2550925	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH01	None Supplied	W	2550925	c	Metals in water by ICP-MS (total)	L012-PL	c
BH01	None Supplied	W	2550925	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH01	None Supplied	W	2550925	c	Nitrate as N in water	L078-PL	c
BH01	None Supplied	W	2550925	c	Sulphate in water	L039-PL	c
BH01	None Supplied	W	2550925	c	Total Hardness of water	L045-PL	c
BH01	None Supplied	W	2550925	c	Total cyanide in water	L080-PL	c
BH01	None Supplied	W	2550925	c	Volatile organic compounds in water	L073B-PL	c
BH01	None Supplied	W	2550925	c	pH at 20oC in water (automated)	L099-PL	c
BH02	None Supplied	W	2550926	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH02	None Supplied	W	2550926	c	Hexavalent chromium in water	L080-PL	c
BH02	None Supplied	W	2550926	c	Ammonia as NH3 in water	L082-PL	c
BH02	None Supplied	W	2550926	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH02	None Supplied	W	2550926	c	Biological oxygen demand (total) of water	L086-PL	c
BH02	None Supplied	W	2550926	c	Boron in water	L039-PL	c
BH02	None Supplied	W	2550926	c	Complex cyanide in water	L080-PL	c
BH02	None Supplied	W	2550926	c	Cr (III) in water	L080-PL	c
BH02	None Supplied	W	2550926	c	Free cyanide in water	L080-PL	c
BH02	None Supplied	W	2550926	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH02	None Supplied	W	2550926	c	Metals in water by ICP-MS (total)	L012-PL	c
BH02	None Supplied	W	2550926	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH02	None Supplied	W	2550926	c	Nitrate as N in water	L078-PL	c
BH02	None Supplied	W	2550926	c	Sulphate in water	L039-PL	c
BH02	None Supplied	W	2550926	c	Total Hardness of water	L045-PL	c
BH02	None Supplied	W	2550926	c	Total cyanide in water	L080-PL	c
BH02	None Supplied	W	2550926	c	Volatile organic compounds in water	L073B-PL	c
BH02	None Supplied	W	2550926	c	pH at 20oC in water (automated)	L099-PL	c
BH03	None Supplied	W	2550927	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH03	None Supplied	W	2550927	c	Hexavalent chromium in water	L080-PL	c
BH03	None Supplied	W	2550927	c	Ammonia as NH3 in water	L082-PL	c
BH03	None Supplied	W	2550927	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH03	None Supplied	W	2550927	c	Biological oxygen demand (total) of water	L086-PL	c
BH03	None Supplied	W	2550927	c	Boron in water	L039-PL	c
BH03	None Supplied	W	2550927	c	Complex cyanide in water	L080-PL	c
BH03	None Supplied	W	2550927	c	Cr (III) in water	L080-PL	c
BH03	None Supplied	W	2550927	c	Free cyanide in water	L080-PL	c
BH03	None Supplied	W	2550927	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH03	None Supplied	W	2550927	c	Metals in water by ICP-MS (total)	L012-PL	c
BH03	None Supplied	W	2550927	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH03	None Supplied	W	2550927	c	Nitrate as N in water	L078-PL	c
BH03	None Supplied	W	2550927	c	Sulphate in water	L039-PL	c
BH03	None Supplied	W	2550927	c	Total Hardness of water	L045-PL	c
BH03	None Supplied	W	2550927	c	Total cyanide in water	L080-PL	c
BH03	None Supplied	W	2550927	c	Volatile organic compounds in water	L073B-PL	c
BH03	None Supplied	W	2550927	c	pH at 20oC in water (automated)	L099-PL	c
BH04	None Supplied	W	2550928	c	BTEX and MTBE in water (Monoaromatics)	L073B-PL	c
BH04	None Supplied	W	2550928	c	Hexavalent chromium in water	L080-PL	c
BH04	None Supplied	W	2550928	c	Ammonia as NH3 in water	L082-PL	c
BH04	None Supplied	W	2550928	c	Ammoniacal Nitrogen as N in water	L082-PL	c
BH04	None Supplied	W	2550928	c	Biological oxygen demand (total) of water	L086-PL	c

Sample Deviation Report

Analytical Report Number : 23-11235

Project / Site name: Riverside Industrial Park, West Thurrock

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH04	None Supplied	W	2550928	c	Boron in water	L039-PL	c
BH04	None Supplied	W	2550928	c	Complex cyanide in water	L080-PL	c
BH04	None Supplied	W	2550928	c	Cr (III) in water	L080-PL	c
BH04	None Supplied	W	2550928	c	Free cyanide in water	L080-PL	c
BH04	None Supplied	W	2550928	c	Metals in water by ICP-MS (dissolved)	L012-PL	c
BH04	None Supplied	W	2550928	c	Metals in water by ICP-MS (total)	L012-PL	c
BH04	None Supplied	W	2550928	c	Metals in water by ICP-OES (dissolved)	L039-PL	c
BH04	None Supplied	W	2550928	c	Nitrate as N in water	L078-PL	c
BH04	None Supplied	W	2550928	c	Sulphate in water	L039-PL	c
BH04	None Supplied	W	2550928	c	Total Hardness of water	L045-PL	c
BH04	None Supplied	W	2550928	c	Total cyanide in water	L080-PL	c
BH04	None Supplied	W	2550928	c	Volatile organic compounds in water	L073B-PL	c
BH04	None Supplied	W	2550928	c	pH at 20oC in water (automated)	L099-PL	c

Certificate of Analysis

Certificate Number 23-00991 *Issued:* 27-Jan-23

Client i2 Analytical Ltd
Building 19, BRE
Garston
Watford
WD25 9XX

Our Reference 23-00991

Client Reference (not supplied)

Order No PO_S_C6074

Contract Title (not supplied)

Description 4 Water samples.

Date Received 16-Jan-23

Date Started 16-Jan-23

Date Completed 27-Jan-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

Summary of Chemical Analysis
Water Samples

Our Ref 23-00991
Client Ref
Contract Title

			Lab No	2109171	2109172	2109173	2109174
			.Sample ID	2550925	2550926	2550927	2550928
			Depth				
			Other ID	BH01	BH02	BH03	BH04
			Sample Type	WATER	WATER	WATER	WATER
			Sampling Date	04/01/2023	04/01/2023	04/01/2023	04/01/2023
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Metals							
Mercury (Elemental)	DETSC 2333*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (Inorganic)	DETSC 2332*	1	ug/l	< 1.0	< 1.0	< 1.0	< 1.0
Mercury (Methyl)	DETSC 2332*	1	ug/l	< 1	< 1	< 1	< 1

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 23-00991
Client Ref
Contract

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2109171	2550925 WATER	04/01/23	GB to 500ml		
2109172	2550926 WATER	04/01/23	GB to 500ml		
2109173	2550927 WATER	04/01/23	GB to 500ml		
2109174	2550928 WATER	04/01/23	GB to 500ml		

Key: G-Glass B-Bottle

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

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APPENDIX E

Monitoring Data

E

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SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	**Project Engineer:**	SM	**Date:**	19-Dec-22	**Project No:**
Client:	Caulmert Ltd	**Operative:**	SM	**Day of the week:**	Monday	J15309

		Land Gas Data									Groundwater Data			Remarks		
Well / TH No.	**Atmospheric Pressure (mb) and Ambient Temperature**		**PID**	**BH pressure**	**Flow Rate**		**CH_4**	**CO_2**	**O_2**	**CO**	**H_2S**	**Depth to base of well**	**Water level**	**Height of Cover**	**Details of water samples (colour, clarity, odour etc)**	**Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions**	**General Remarks**
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
BH01		P				P								N/A		Wet & windy, ground wet	Borehole and surrounding area flooded, unable to take gas/groundwater measurements.
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					
BH02	1010mb 10°C	P	0.0	0.0	0.0	P	0.0	0.0	20.4	0.0	0.0	22.82	1.19	N/A	No free product detected on interface meter.	Wet & windy, ground wet	
		S	0.0	0.0	0.0	S	0.0	0.0	20.4	0.0	0.0						
		Time Of Readings: 12:06/12:02				**Time Of Readings:** 12:05						**Time Of Readings:** 12:08					
BH03	1010mb 10°C	P	0.0	0.0	0.0	P	0.0	0.0	20.4	0.0	0.0	19.44	1.46	N/A	No free product detected on interface meter.	Wet & windy, ground wet	
		S	0.0	0.0	0.0	S	0.0	0.0	20.5	0.0	0.0						
		Time Of Readings: 12:27/12:22				**Time Of Readings:** 12:17						**Time Of Readings:** 12:30					
BH04	1010mb 10°C	P	0.0	-1.0	-0.3	P	0.0	0.0	20.2	0.0	0.0	22.81	1.20	N/A	No free product detected on interface meter.	Wet & windy, ground wet	
		S	0.0	-1.0	-0.3	S	0.0	0.0	20.2	0.0	0.0						
		Time Of Readings: 12:18/12:14				**Time Of Readings:** 12:17						**Time Of Readings:** 12:30					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					

P = Peak Reading, S = Steady reading | **Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser** | **Checked By**

Southern Testing
Environmental & Geotechnical

ST Consult
Environmental & Geotechnical

SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	**Project Engineer:**	SM	**Date:**	19-Dec-22	**Project No:**
Client:	Caulmert Ltd	**Operative:**	SM	**Day of the week:**	Monday	J15309

		Land Gas Data									Groundwater Data			Remarks		
Well / TH No.	**Atmospheric Pressure (mb) and Ambient Temperature**		**PID**	**BH pressure**	**Flow Rate**		**CH_4**	**CO_2**	**O_2**	**CO**	**H_2S**	**Depth to base of well**	**Water level**	**Height of Cover**	**Details of water samples (colour, clarity, odour etc)**	**Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions**	**General Remarks**
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
WLS04	1011mb 10°C	P	0.1	0.0	0.0	P	0.0	0.0	16.4	0.0	0.0	3.52	0.60	N/A		Wet & windy, ground wet.	
		S	0.1	0.0	0.0	S	0.0	0.0	19.2	0.0	0.0						
		Time Of Readings: 10:02/09:57				**Time Of Readings:** 10:01						**Time Of Readings:** 10:04					
WLS05	1010mb 10°C	P	0.0	0.0	0.0	P	0.0	0.6	15.8	0.0	0.0	0.85	Dry	N/A		Wet & windy, ground wet.	
		S	0.0	0.0	0.0	S	0.0	0.6	16.3	0.0	0.0						
		Time Of Readings: 11:23/11:17				**Time Of Readings:** 11:21						**Time Of Readings:** 11:24					
WLS07	1011mb 10°C	P	0.0	506.0	40.5	P	19.8	0.8	13.0	0.0	0.0	1.32	1.18	N/A		Wet & windy, ground wet.	Borehole cover flooded.
		S	0.0	0.0	0.0	S	10.1	0.4	16.4	0.0	0.0						
		Time Of Readings: 11:09/11:04				**Time Of Readings:** 11:07						**Time Of Readings:** 11:11					
WLS08	1011mb 10°C	P	0.2	0.0	0.0	P	0.0	0.6	19.8	0.0	0.0	1.57	1.04	N/A		Wet & windy, ground wet.	
		S	0.2	0.0	0.0	S	0.0	0.6	19.8	0.0	0.0						
		Time Of Readings: 10:56/10:51				**Time Of Readings:** 10:55						**Time Of Readings:** 10:57					
WLS09	1010mb 10°C	P	0.0	4.0	1.9	P	0.0	0.5	20.2	0.0	0.0	1.80	0.94	N/A		Wet & windy, ground wet.	Borehole cover flooded.
		S	0.0	0.0	0.0	S	0.0	0.5	20.2	0.0	0.0						
		Time Of Readings: 11:36/11:31				**Time Of Readings:** 11:34						**Time Of Readings:** 11:37					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					

P = Peak Reading, S = Steady reading — **Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser** — **Checked By**

Southern Testing Environmental & Geotechnical

ST Consult Environmental & Geotechnical

SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	**Project Engineer:**	SM	**Date:**	04-Jan-23	**Project No:**
Client:	Caulmert Ltd	**Operative:**	SM/MS	**Day of the week:**	Wednesday	J15309

		Land Gas Data										Groundwater Data			Remarks		
Well / TH No.	**Atmospheric Pressure (mb) and Ambient Temperature**		**PID**	**BH pressure**	**Flow Rate**		**CH_4**	**CO_2**	**O_2**	**CO**	**H_2S**	**Depth to base of well**	**Water level**	**Height of Cover**	**Details of water samples (colour, clarity, odour etc)**	**Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions**	**General Remarks**
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
BH01	1016mb 11°C	P	0.1	0.0	0.0	P	0.0	0.3	17.8	0.0	0.0	22.66	1.56	N/A	No free product detected on interface meter. Pale Grey to white, with no odour.	Cloudy, but dry, ground wet.	Area surrounding borehole flooded. Standing water level at 1.47m (bgl), upon completion of sampling.
		S	0.0	0.0	0.0	S	0.0	0.3	17.8	0.0	0.0						
		Time Of Readings: 09:39/09:33				**Time Of Readings:** 09:35						**Time Of Readings:** 09:41					
BH02	1016mb 11°C	P	0.0	0.0	0.0	P	0.0	0.0	20.5	0.0	0.0	22.82	0.95	N/A	No free product detected on interface meter. Pale Grey to white, with no odour.	Cloudy, but dry, ground wet.	Standing water level at 0.97m (bgl), upon completion of sampling.
		S	0.0	0.0	0.0	S	0.0	0.0	20.5	0.0	0.0						
		Time Of Readings: 11:00/10:55				**Time Of Readings:** 10:59						**Time Of Readings:** 11:41					
BH03	1016mb 11°C	P	0.0	0.0	0.0	P	0.0	0.0	20.5	0.0	0.0	19.44	1.26	N/A	No free product detected on interface meter. Pale Grey to white, with no odour.	Cloudy, but dry, ground wet.	Standing water level at 1.31m (bgl), upon completion of sampling.
		S	0.0	0.0	0.0	S	0.0	0.0	20.5	0.0	0.0						
		Time Of Readings: 11:36/11:30				**Time Of Readings:** 11:34						**Time Of Readings:** 13:18					
BH04	1016mb 11°C	P	0.0	500.0	50.0	P	0.0	0.0	20.5	0.0	0.0	22.81	0.94	N/A	No free product detected on interface meter. Pale grey to grey, with a organic odour.	Cloudy, but dry, ground wet.	Standing water level at 1.01m (bgl), upon completion of sampling.
		S	0.0	0.0	0.0	S	0.0	0.0	20.5	0.0	0.0						
		Time Of Readings: 11:50/11:45				**Time Of Readings:** 11:49						**Time Of Readings:** 12:37					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					

P = Peak Reading, S = Steady reading **Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser** **Checked By**

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SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	Project Engineer:	SM	Date:	04-Jan-23	Project No:
Client:	Caulmert Ltd	Operative:	MS/SM	Day of the week:	Wednesday	J15309

		Land Gas Data									Groundwater Data			Remarks		
Well / TH No.	Atmospheric Pressure (mb) and Ambient Temperature		PID	BH pressure	Flow Rate		CH_4	CO_2	O_2	CO	H_2S	Depth to base of well	Water level	Height of Cover	Details of water samples (colour, clarity, odour etc)	Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions	General Remarks
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
WLS04	1016mb 11°C	P	0.2	0.0	0.0	P	0.0	0.0	21.0	0.0	0.0	3.52	0.67	N/A	No free product detected on interface meter.	Cloudy, windy, occasional slight drizzle	
		S	0.0	0.0	0.0	S	0.0	0.0	21.0	0.0	0.0						
		Time Of Readings: 11:15				Time Of Readings: 11:15						Time Of Readings: 11:17					
WLS05	1016mb 11°C	P	0.0	0.0	0.0	P	0.0	1.4	19.7	0.0	0.0	1.88	1.18	N/A	No free product detected on interface meter.	Cloudy, windy, occasional slight drizzle	
		S	0.0	0.0	0.0	S	0.0	1.4	19.5	0.0	0.0						
		Time Of Readings: 14:05				Time Of Readings: 14:05						Time Of Readings: 14:08					
WLS07	1016mb 11°C	P	0.0	550.0	800.0	P	74.8	1.9	4.4	0.0	0.0	1.32	1.12	N/A	No free product detected on interface meter.	Cloudy, windy, occasional slight drizzle	
		S	0.0	0.0	0.0	S	74.5	1.9	1.9	0.0	0.0						
		Time Of Readings: 14:26				Time Of Readings: 14:26						Time Of Readings: 14:30					
WLS08	1016mb 11°C	P	0.1	0.0	0.0	P	0.0	1.3	20.1	0.0	0.0	1.57	1.02	N/A	No free product detected on interface meter.	Cloudy, windy, occasional slight drizzle	Borehole cover flooded
		S	0.0	0.0	0.0	S	0.0	0.5	20.1	0.0	0.0						
		Time Of Readings: 14:19				Time Of Readings: 14:19						Time Of Readings: 14:23					
WLS09	1016mb 11°C	P	0.0	0.0	0.0	P	0.0	0.7	20.5	0.0	0.0	1.80	0.94	N/A	No free product detected on interface meter.	Cloudy, windy, occasional slight drizzle	Borehole cover flooded
		S	0.0	0.0	0.0	S	-0.1	0.7	20.5	0.0	0.0						
		Time Of Readings: 13:55				Time Of Readings: 13:55						Time Of Readings: 13:59					
		P				P											
		S				S											
		Time Of Readings:				Time Of Readings:						Time Of Readings:					

P = Peak Reading, S = Steady reading

Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser

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SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	**Project Engineer:**	SM	**Date:**	12-Jan-23	**Project No:**	J15309
Client:	Caulmert Ltd	**Operative:**	SM	**Day of the week:**	Thursday		

		Land Gas Data									Groundwater Data			Remarks		
Well / TH No.	**Atmospheric Pressure (mb) and Ambient Temperature**		**PID**	**BH pressure**	**Flow Rate**		**CH_4**	**CO_2**	**O_2**	**CO**	**H_2S**	**Depth to base of well**	**Water level**	**Height of Cover**	**Details of water samples (colour, clarity, odour etc)**	**Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions**	**General Remarks**
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
BH01	7°C 1006mb	P	0.0	-1198.0	-71.9	P	0.0	0.0	20.4	0.0	0.0	22.66	1.75	N/A	No free product detected on interface meter.	Overcast with light rain	Area surrounding borehole flooded.
		S	0.0	0.0	0.0	S	0.0	0.0	20.4	0.0	0.0						
		Time Of Readings: 09:28/09:23				**Time Of Readings:** 09:27						**Time Of Readings:** 09:30					
BH02	7°C 1005mb	P	0.0	0.0	0.0	P	0.0	0.0	20.6	0.0	0.0	22.82	1.64	N/A	No free product detected on interface meter.	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	0.0	20.6	0.0	0.0						
		Time Of Readings: 09:50/09:44				**Time Of Readings:** 09:49						**Time Of Readings:** 09:51					
BH03	7°C 1005mb	P	0.0	0.0	0.0	P	0.0	0.0	20.4	0.0	0.0	19.44	1.95	N/A	No free product detected on interface meter.	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	0.0	20.4	0.0	0.0						
		Time Of Readings: 10:21/10:16				**Time Of Readings:** 10:20						**Time Of Readings:** 10:22					
BH04	7°C 1005mb	P	0.0	0.0	0.0	P	0.0	0.0	20.5	0.0	0.0	22.81	1.84	N/A	No free product detected on interface meter.	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	0.0	20.5	0.0	0.0						
		Time Of Readings: 11:14/11:09				**Time Of Readings:** 11:13						**Time Of Readings:** 11:15					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					

P = Peak Reading, S = Steady reading | **Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser** | **Checked By**

Southern Testing Environmental & Geotechnical

ST Consult Environmental & Geotechnical

SOIL GAS AND GROUND WATER DAILY RECORD SHEET

Project Name:	Riverside Industrial Park, West Thurrock, Grays, RM20 3EF	**Project Engineer:**	SM	**Date:**	12-Jan-23	**Project No:**
Client:	Caulmert Ltd	**Operative:**	SM	**Day of the week:**	Thursday	J15309

		Land Gas Data										Groundwater Data			Remarks		
Well / TH No.	**Atmospheric Pressure (mb) and Ambient Temperature**		**PID**	**BH pressure**	**Flow Rate**		**CH_4**	**CO_2**	**O_2**	**CO**	**H_2S**	**Depth to base of well**	**Water level**	**Height of Cover**	**Details of water samples (colour, clarity, odour etc)**	**Ground Conditions (soft, wet/dry, frozen etc) & Weather Conditions**	**General Remarks**
			ppm	Pa	l/hr		%	%	%	ppm	ppm	m below top of cover	m below top of cover	m above GL			
WLS04	7°C 1005mb	P	0.0	35.0	6.0	P	0.0	0.0	14.9	0.0	0.0	3.52	0.61	N/A	No free product detected on interface	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	0.0	14.9	0.0	0.0						
		Time Of Readings: 10:02/09:57				**Time Of Readings:** 10:01						**Time Of Readings:** 10:03					
WLS05	7°C 1006mb	P	0.0	5.0	3.0	P	0.0	1.4	15.4	0.0	0.0	1.88	1.05	N/A	No free product detected on interface	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	1.4	15.4	0.0	0.0						
		Time Of Readings: 10:43/10:38				**Time Of Readings:** 10:42						**Time Of Readings:** 10:44					
WLS07	7°C 1006mb	P	0.0	479.0	38.7	P	31.5	0.8	10.2	0.0	0.0	1.32	1.10	N/A	No free product detected on interface	Overcast with light rain	Borhole cover flooded.
		S	0.0	0.0	0.0	S	10.3	0.3	16.7	0.0	0.0						
		Time Of Readings: 11:05/10:58				**Time Of Readings:** 11:04						**Time Of Readings:** 11:06					
WLS08	7°C 1006mb	P	0.0	0.0	0.0	P	0.0	0.4	20.0	0.0	0.0	1.57	0.90	N/A	No free product detected on interface	Overcast with light rain	
		S	0.0	0.0	0.0	S	0.0	0.4	20.0	0.0	0.0						
		Time Of Readings: 10:52/10:48				**Time Of Readings:** 10:51						**Time Of Readings:** 10:55					
WLS09	7°C 1006mb	P	0.0	6.0	3.5	P	0.0	0.1	20.2	0.0	0.0	1.80	0.84	N/A	No free product detected on interface	Overcast with light rain	Borhole cover flooded.
		S	0.0	0.0	0.0	S	0.0	0.1	20.2	0.0	0.0						
		Time Of Readings: 10:33/10:29				**Time Of Readings:** 10:32						**Time Of Readings:** 10:34					
		P				P											
		S				S											
		Time Of Readings:				**Time Of Readings:**						**Time Of Readings:**					

P = Peak Reading, S = Steady reading **Equipment Used: Interface Meter, MiniRAE 2000, GFM435 Gas Analyser** **Checked By**

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APPENDIX F

Photographs

F

View from centre of western site looking south

View from north of western site looking east

View from north of site looking east.

View from north of site looking north.

View from north east of site looking south

View from north east of site looking west

View from north of eastern site looking east.

View from north of eastern site looking west.

View from north of eastern site looking south west.

View from centre of eastern site looking north east.

View from south centre of eastern site looking west

View from south west of site looking west.

View from south west of site looking west.	View from north of site looking west.
View from north west of site looking south	View from south of western site looking north west.
View from south east of western site looking west.	View from south centre of western site looking east.

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APPENDIX 2

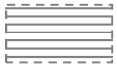
Indicative Cross Sections

Indicative Cross Sections

Legend:

MG Made Ground

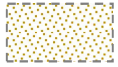
Al-S Sand/silt



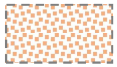
Al-Cl1, Al-Cl2 Clay

Al-Pt1, Al-Pt2 Peat

Alluvium

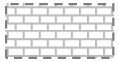


Sand Upper



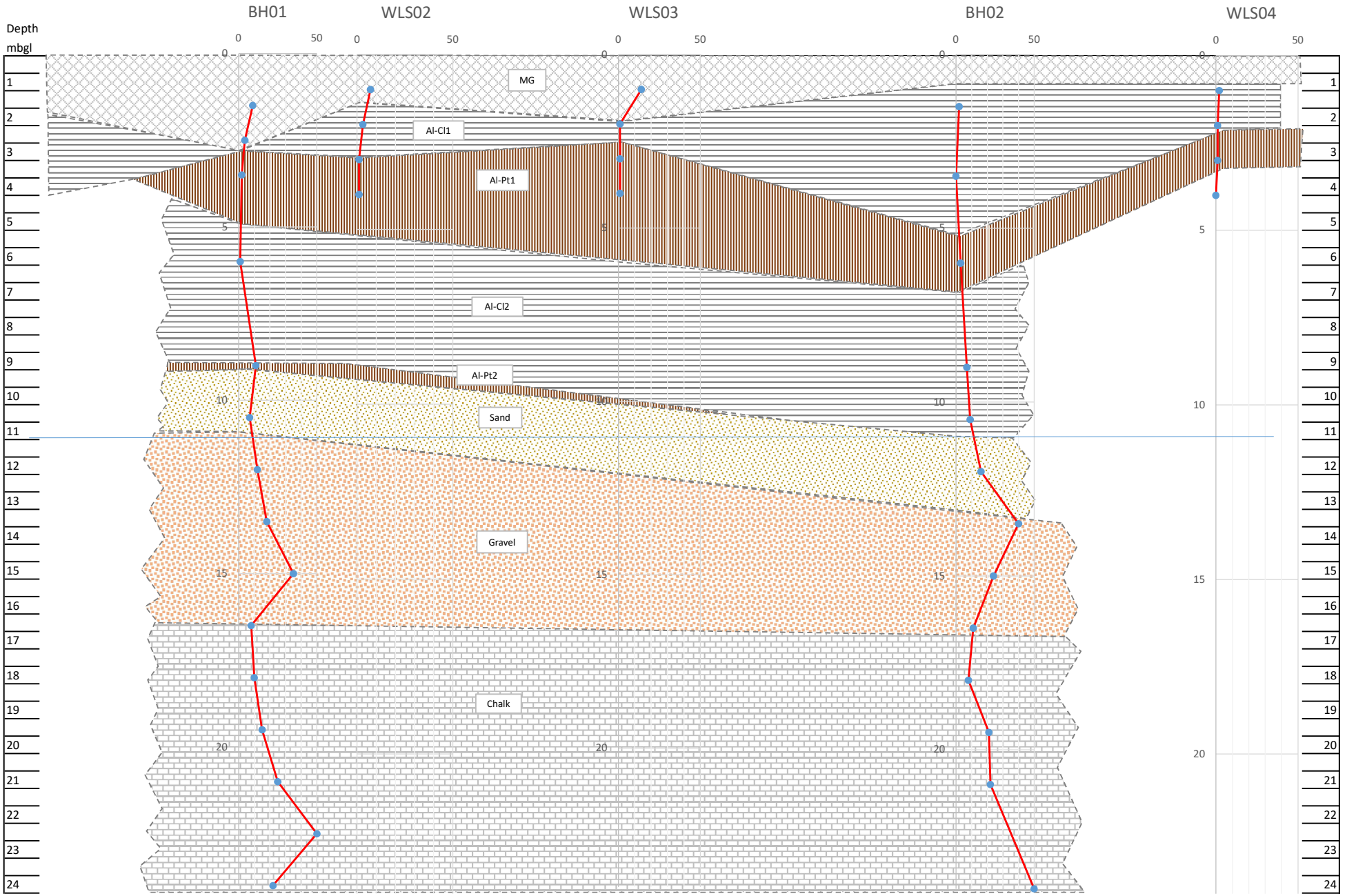
Gravel Lower

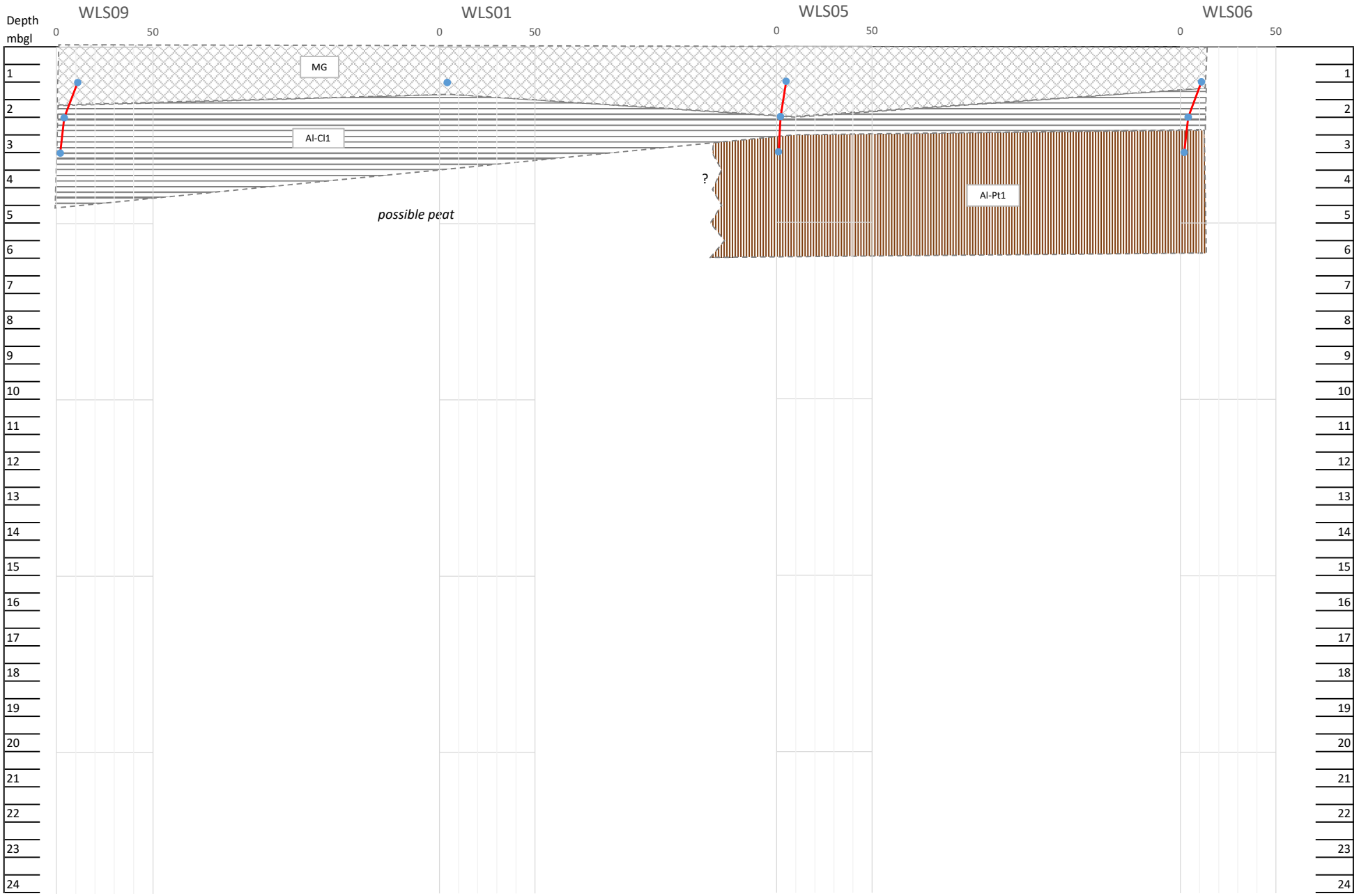
Taplow Gravel Member

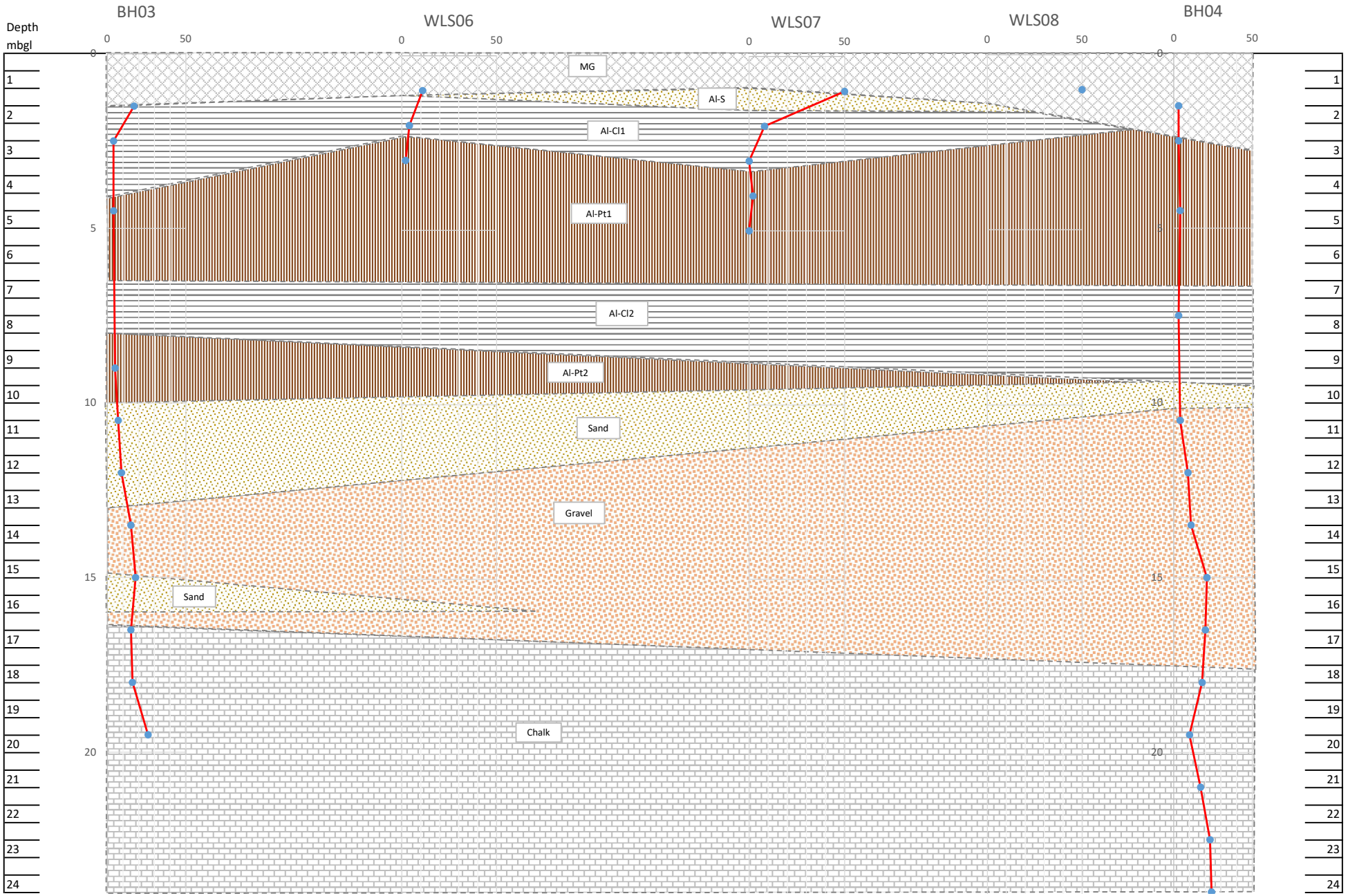


Chalk

Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation


BH01
WLS02
WLS03
BH02
WLS04
Depth
mbgl
MG
Al-Cl1
Al-Pt1
Al-Cl2
Al-Pt2
Sand
Gravel
Chalk


Depth mbgl
WLS09
WLS01
WLS05
WLS06
0
50
MG
Al-Cl1
possible peat
?
Al-Pt1
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24


Depth
mbgl
BH03
WLS06
WLS07
WLS08
BH04
0
50
MG
Al-S
Al-Cl1
Al-Pt1
Al-Cl2
Al-Pt2
Sand
Gravel
Sand
Chalk
5
10
15
20

APPENDIX 3

In-Situ and Laboratory Strength Test Results vs Depth

In-situ and Laboratory Strength Test Results

Date	December 2022
Job No	5148
Project	West Thurrock, RM20 3EF

All depths in mbgl

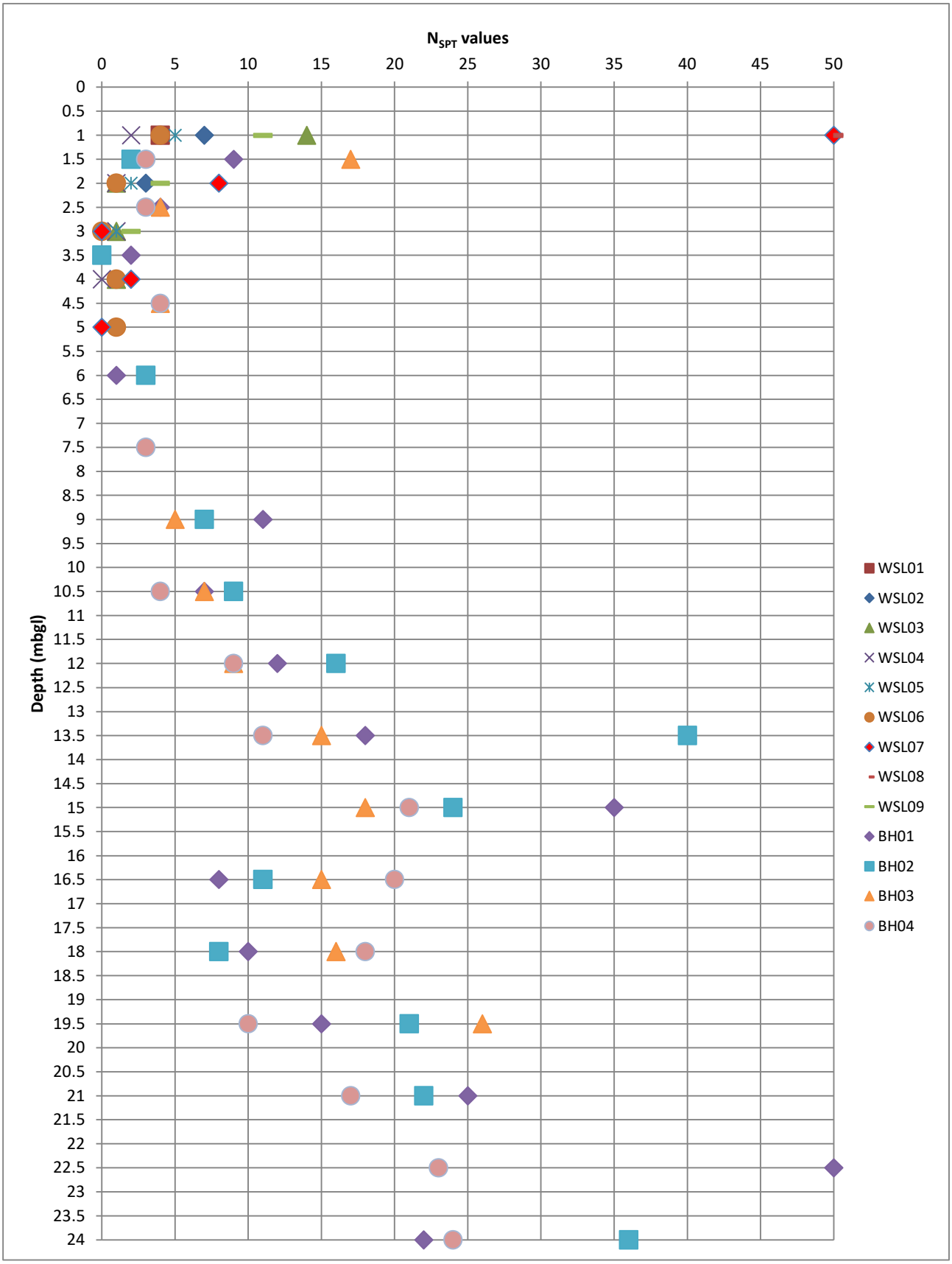
SPT Multiplier: 4.5

Hole ID	N_{SPT} depth	N_{SPT} value	c_u = SPT NxY (Y=4.5) [kPa]
WSL01	1	4	
WSL02	1	7	
	2	3	13.5
WSL03	1	14	
	2	1	4.5
	3	1	4.5
	4	1	4.5
WSL04	1	2	9
	2	1	4.5
	3	1	4.5
	4	0	0
WSL05	1	5	
	2	2	9
	3	1	4.5
WSL06	1	4	
	2	1	4.5
	3	0	0
	4	1	4.5
	5	1	4.5
WSL07	1	50	
	2	8	36
	3	0	0
	4	2	9
	5	0	0
WSL08	1	50	
WSL09	1	11	
	2	4	18
	3	2	9
BH01	1.5	9	
	2.5	4	18
	3.5	2	9
	6	1	4.5
	9	11	
	10.5	7	
	12	12	
	13.5	18	
	15	35	
	16.5	8	
	18	10	
	19.5	15	
	21	25	
	22.5	50	
	24	22	
BH02	1.5	2	9
	3.5	0	0
	6	3	13.5
	9	7	31.5
	10.5	9	40.5
	12	16	
	13.5	40	
	15	24	
	16.5	11	
	18	8	
	19.5	21	
	21	22	
	24	36	
BH03	1.5	17	
	2.5	4	18
	4.5	4	18
	9	5	22.5
	10.5	7	
	12	9	
	13.5	15	
	15	18	
	16.5	15	
	18	16	
	19.5	26	
BH04	1.5	3	
	2.5	3	13.5
	4.5	4	18
	7.5	3	13.5
	10.5	4	
	12	9	
	13.5	11	
	15	21	
	16.5	20	
	18	18	
	19.5	10	
	21	17	
	22.5	23	
	24	24	

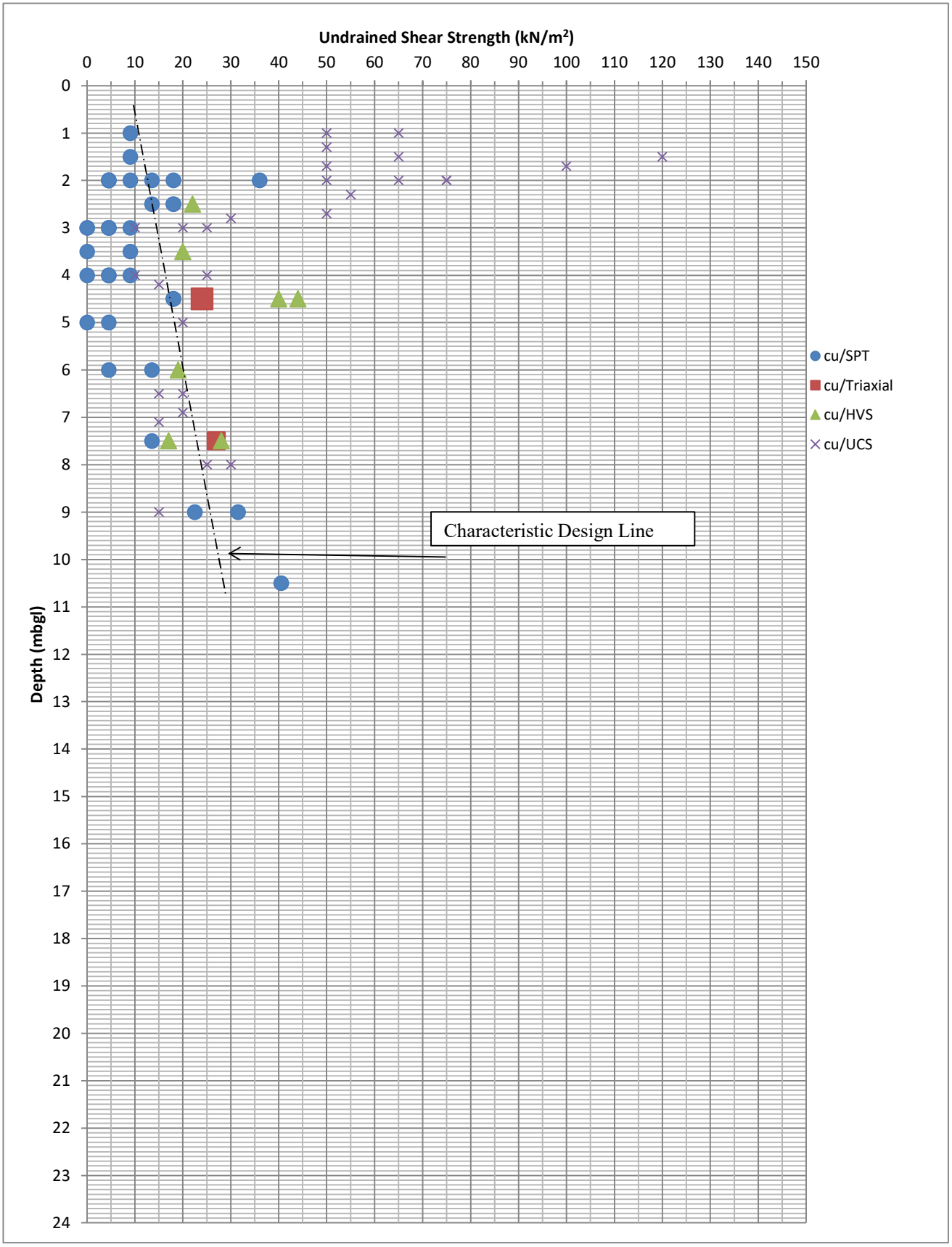
Hole ID	Depth of pocket penetrometer	Penetrometer result (kPa)	c_u = Penetrometer (kPa)
WLS01	1.7	200	100
	2	130	65
WLS02	1.5	130	65
	2	150	75
WLS04	1	130	65
WLS07	2	100	50
WLS09	1.7	100	50
	2.7	100	50
BH01	2.3	110	55
	3	20	10
BH02	1	100	50
	1.3	100	50
	3	40	20
	4	50	25
	5	40	20
	6.9	40	20
	8	50	25
BH03	1.5	240	120
	3	50	25
	4	20	10
	4.2	30	15
	6.5	30	15
	7.1	30	15
	8	60	30
	9	30	15
BH04	2	150	75
	2.8	60	30
	6.5	40	20

Hole ID	Depth	Triaxial c_u (kPa)
BH01	7.5	27
BH02	4.5	24

Hole ID	Depth	Hand Vane Test c_u (kPa)
BH01	4.5	44
	7.5	17
BH02	2.5	22
	4.5	40
	7.5	28
BH04	3.5	20
	6	19



Date	N_{SPT} values against depth	Job Number
December 2022		5148



Date	Undrained Shear Strength from triaxial tests, hand vane tests, N_{SPT}, and pocket penetrometer values against depth	Report Number.
December 2022		5148

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