EARTH ENVIRONMENTAL & GEOTECHNICAL

Ground Contamination Assessment Report

Berwick Farm

Berwick Lane

Hallen

South Gloucestershire

BS10 7RS

Report Ref: B23326/24

January 2024

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Prepared on Behalf of:

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GROUND CONTAMINATION ASSESSMENT

Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS

Report Reference: B3326/24

Version B.0

Date: 26th January 2024

Prepared for: Mr. E. Cemery

Prepared by: Earth Environmental & Geotechnical (Southern) Ltd
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Definition of Version Code:
D. Applied during initial drafting of the report before it has been reviewed.
C. Applied after the report has been reviewed but before it has been approved by the Project Manager.
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Written by:

Christian Kielinger
Geo-environmental Consultant

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Managing Director

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1.0 EXECUTIVE SUMMARY

Appointment	A ground contamination assessment has been commissioned to examine ground conditions and retrieve soil samples for chemical testing for a proposed residential development in Hallen, South Gloucestershire.
The Site	The site is occupied by a derelict farmhouse and associated soft landscaped areas, at Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, NGR 355658 180658, nearest postcode BS10 7RS. Geology: Superficial Tidal Flat Deposits (NW area only) overlying Mercia Mudstone.
Environmental Considerations	On Site: no records Within 250m of Site: 4 surface ground workings, 9 historical industrial land uses, 1 historical tank, 2 historical petrol stations, 2 recent industrial land uses, 3 licensed waste sites, 1 active landfill, 22 waste exemptions, 1 dangerous or hazardous site.
Site History	The site has been occupied by a farmhouse since earlies records (1880-1881).
The Investigation	The investigation comprised window sample boreholes, trial pitting with associated sampling and in situ testing, gas/groundwater monitoring, laboratory contamination testing.
Ground Conditions Encountered	The exploratory holes have encountered the anticipated geology of : Made Ground Tidal Flat Deposits Mercia Mudstone Groundwater was encountered in WS04 only at 1.00mbgl. Post investigation monitoring within WS01 and WS04 show groundwater depths of between 0.79m – 0.91m respectively. Significant levels of land gas have not been encountered.
Soil Contamination Risk Assessment	Current Site Users Very Low Risk Future Site Users (hard cover areas) Low Risk Future Site Users (soft landscaped areas) High Risk Remediation of soils required for soft landscaped areas.
Soil Waste Assessment	8 samples tested. 7 are classified as Non-Hazardous.1 classified as hazardous.
Protection of Buried Water Services	Special precautions likely required.
Land Gas Risk Assessment	Radon/Land Gas protection measures not required on site.
This sheet is intended to provide a summary only of the report. It does not provide a definitive engineering analysis for the purposes of costing or construction and is subject to the limitation of the agreed brief.	

2.0 INTRODUCTION

2.1 Background

A ground contamination assessment has been commissioned by Mr. E. Cemery (the 'Client) to examine ground conditions and retrieve soil samples for chemical testing for a proposed residential development in Hallen, South Gloucestershire.

Earth Environmental and Geotechnical (Southern) Ltd (EEGSL) previously carried out Phase I Geo-Environmental Desk Study for the site, the findings of which are included in the EEGSL Desk Study Report reference B3326/23 (November 2023) and summarised in this report.

2.2 Terms of Reference

Earth Environmental and Geotechnical (Southern) Ltd (EEGSL) was commissioned by the Client to undertake an Investigation of the site in accordance with a proposal B3326 dated 26th October 2023. The objectives of this investigation are as follows:

- *Assess the presence and likely extent of any potential environmental hazards (soil, groundwater, and gas) associated within the areas of the site investigated.*

2.3 Report Scope

This report presents a review of desk study information, full factual records of the site work carried out, the ground conditions encountered in the exploratory holes, the in situ and laboratory test results, and results of any monitoring. All information collected has been used to provide an interpretation of the ground conditions, with recommendations on potential ground contamination risks for the proposed development.

2.4 Limitations of the Study

The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information, improved practices or changes in legislation may require a reinterpretation of the report in whole or in part. EEGSL reserve the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use by the client and is confidential to them.

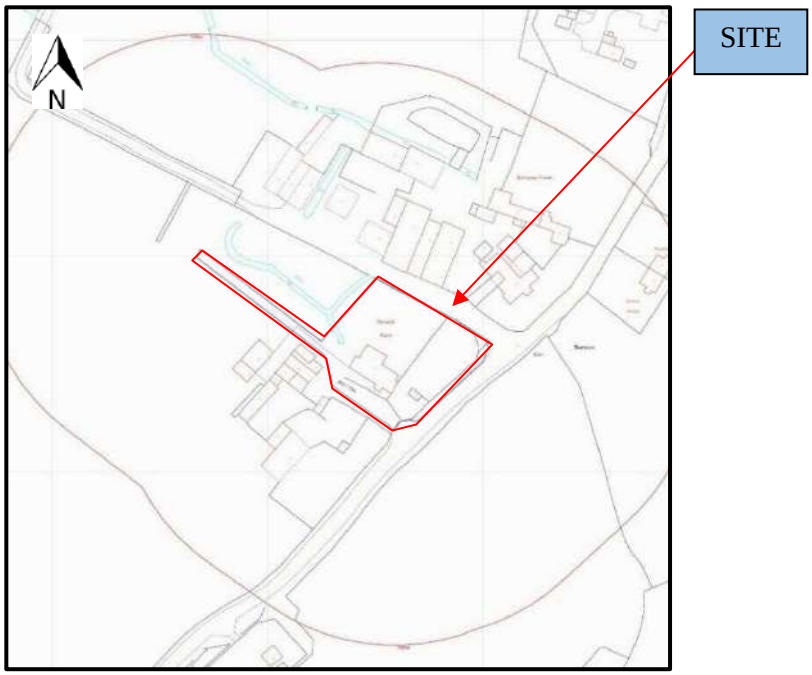
Recommendations within this report are also based on exploratory records and examination of samples and, where applicable, laboratory tests. No liability can be accepted for conditions not revealed by the boreholes and trial pits, particularly at intervening locations. Whilst every effort is made to ensure accuracy of data supplied, all opinions expressed as to the spatial distribution of strata between sampling locations is for guidance only and no responsibility is accepted as to its accuracy.

3.0 THE SITE

3.1 Site Location & Description

The site is located at Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, and is centred on National Grid Reference 355658, 180658 with the nearest postcode of BS10 7RS. The site and surrounding area are shown in Figure 1 below.

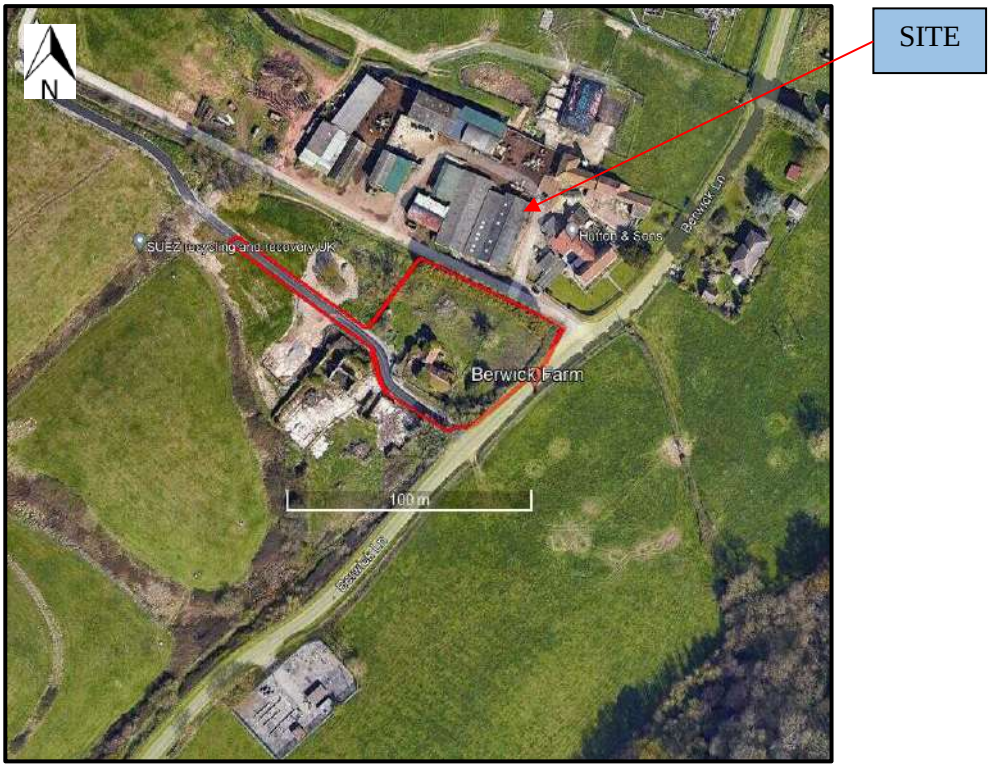
Figure 1 – Site Location Plan



The site is approximately 0.35ha and within it is an old derelict farmhouse with collapsed roofing, walls, and broken windows. There are large amounts of building rubble situated around the derelict building. Within the site boundary is also a portion of road that is newly paved with road construction materials in piles beside it. The soft landscaping around the site is vastly overgrown with various species of plants, bushes and trees mostly appear to be healthy. The site also has a derelict outhouse made of brick and concrete with some roofing material placed inside that may contain asbestos. Approximately 5m east of the outhouse is a manhole cover that may be access to a septic tank or sewer drain. On the east side of the farmhouse is a small garden shed that is completely overgrown and covered in vines bushes and surrounded by small trees. There is a small river that runs along the boundary between the site and the neighbouring far to the north.

The site is bounded to the north by Hutton & Sons Dairy Farm. The east boundary is against Berwick Lane with open fields and Berwick Woodland beyond that. South of the site is open fields and Berwick woodland with a fuel pumping station 100m southwest, the west is bounded by another derelict farm building and a 28ha landfill site. Access to the site is off Berwick Lane to the south.

Figure 2 – Aerial Photograph Showing Site Location



General site photographs are presented in Figure 3 overleaf.

Figure 3 – General Site Photographs

Photo 1: Site entrance looking towards the west.	**Photo 2:** Gated site entrance looking towards the east.
	
Photo 3: South of the existing derilict farm building taken from the access road.	**Photo 4:** North west of building looking towards the east.
	

3.2 Proposed Development

The proposed development of the site is to demolish the existing derelict farmhouse and construct a residential property within the original building's footprint with hard and soft landscaping.

The proposed development layout details are shown in Figure 4 overleaf.

Figure 4 – Proposed Development Details

4.0 REVIEW OF DESK STUDY INFORMATION

The following sections provide a review of the information in the EEGSL Desk Study Report for the site, reference B3226/23 (November 2023).

The following sections are generally limited to locations within 250m of the site boundary unless it is considered that installation or activities beyond that range could potentially have an impact on the site or be affected by the redevelopment of the site.

4.1 Geological Setting

4.1.1 *Geology*

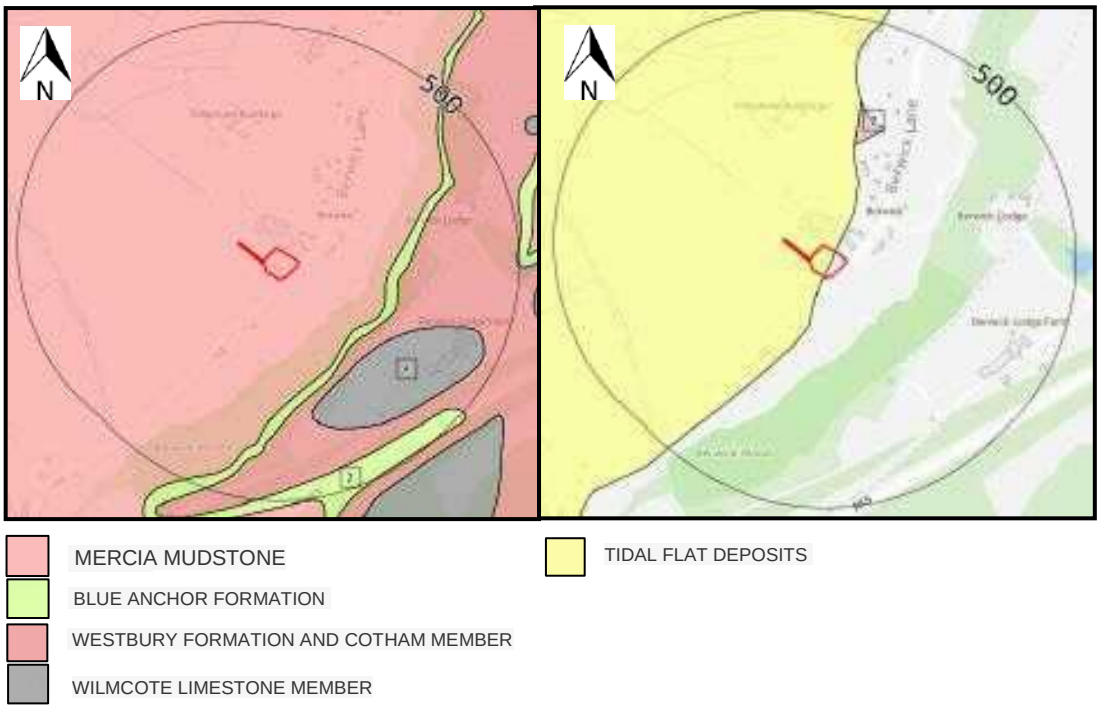
The Groundsure Report indicates the site could be underlain by infilled ground.

According to the British Geological Survey (BGS), the site is partly underlain by superficial tidal flat deposits across its northwestern half. The bedrock beneath the entire site is the Mercia Mudstone Group of Triassic Age.

Tidal flat deposits are described as comprising unconsolidated sediment, mainly mud and/or sand with gravel and peat in places.

The Mercia Mudstone is described as dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/anhydrite are widespread; thin sandstones are also present.

Figure 5 – Geological & Superficial Map Extract



4.1.2 *Ground Stability*

The ground stability risk across the site is variable, due mainly to the presence of Tidal Flat Deposits on part of the site. The following risk ratings for ground stability:

Running Sands	Moderate to Negligible
Compressible Deposits	Moderate to Negligible
Shrink Swell Clays	Low to Very Low
Landslides	Very Low
Collapsible Deposits	Very Low to Negligible
Ground Dissolution of Rocks	Negligible

4.1.3 *Radon Potential*

The site is located in a radon affected area in which less than 1% of properties are expected to be above the action level. Therefore, no radon protection measures are required.

4.1.4 *Soil Chemistry*

There are 2 estimated soil chemistry records on site, the results of which are shown in Table 1 below.

Table 1 – Soil Chemistry Records

Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
15-35 mg/kg	100-200 mg/kg	60-120 mg/kg	2.2-3.0 mg/kg	60-120 mg/kg	15-30 mg/kg

All the above chemicals: (arsenic, cadmium, chromium, nickel or lead) have estimated concentrations on site that are below the recognised screening levels based on Defra C4SL Health Criteria Values (March 2014) and LQM/CIEH Suitable 4 Use Levels (2015) for the relevant residential and commercial setting, shown in the table below.

Table 2 – Soil Screening Levels

Determinand	C4SL/S4UL Levels (mg/kg)*	
	Residential with homegrown produce	**Residential** without homegrown produce
Arsenic	37	40
Cadmium	26	149
Chromium	910	910
Lead	200	310
Nickel	180	180

4.1.5 *Mining, Ground Workings & Natural Cavities*

The assessment site is not located within gypsum, brine, tin, or clay mining areas.

There are 4 surface ground workings located within 250m of the site boundary. The closest is identified as an unspecified heap 169m northeast of the site, recorded in 1969.

The Groundsure report has not identified any underground workings within 250m of the site. There are no records of brit pits within 250m of the site. Furthermore, the site is not located within a coal mining area as defined by the Coal Authority.

4.2 Environmental Setting

4.2.1 *Industrial Land Use Information*

Historical and current industrial land usage on-site and within 250m of the site is summarised in Table 3 below:

Table 3 - Summary of Industrial Land Use

Description	On-Site	Records within 250m of site	Details of nearest Record
Historical Industrial Land Uses	0	9	Nearest: 111m SW Gas Valve Compound 1974-1989
Historical Tanks	0	1	Nearest: 171m NE, Unspecified Tank 1971
Historical Energy Features	0	0	-
Historical Petrol Station	0	2	Nearest: 122m NE Petroleum depot
Historical Garage	0	0	-
Historical Military Land	0	0	-
Historical Railway and Tunnel Features	0	0	-
Historical Railways	0	0	-
Recent Industrial Land Use	0	2	Nearest: 88m N Slurry Bed Waste Storage, Processing and Disposal
Current/Recent Petrol Stations	0	0	-
Electricity Cables	0	0	-
Gas Pipelines	0	0	-
Current Railway Features	0	0	-

4.2.2 *Waste and Landfill Sites*

According to Groundsure, there are no records of historical waste sites or historical landfill. However, there are 3 licensed waste sites, located at Berwick farm landfill site 132m northwest and 194m west.

There is one active or recent landfill site within 250m of the assessment site, located 33m west of site at Berwick Farm Landfill, current status is closed.

There are 22 waste exemptions located at 30m northeast of the assessment site. All exemptions are located at Sampson Farm and include exemptions for ‘spreading waste on agricultural land to confer benefit’, ‘burning of waste as a fuel in a small appliance’, ‘storage of waste in secure containers’, ’aerobic composting and associated prior treatment’, ‘deposit of waste from dredging of inland waters’, and ‘burning waste in the open’.

4.2.3 *Environmental Permits, Incidents and Registers*

Table 4 overleaf details environmental permits, incidents and registers within 250m of the site.

Table 4 - Environmental Permits, Incidents and Registers Within 250m of the Site

Sites Determined as Contaminated Land under Part 2A EPA1990	0	-
Dangerous or Hazardous (COMAH and NIHHS) Sites	1	128m NE, Exolum Pipeline System Limited, Current COMAH Site
Regulated Explosive Sites	0	-
Hazardous Substance Storage/Usage	0	-
Historical Licensed Industrial Activities (IPC)	0	-
Licensed Industrial Activities Part A (1)	0	-
Licensed Pollutant Release Part A (2) and Part B	0	-
Radioactive Substance Authorisations	0	-
Licensed Discharge to Controlled Waters	0	-
Pollutant Release to surface waters (Red List)	0	-
Pollutant Release to Public Sewer	0	-
List 1 Dangerous Substances	0	-
List 2 Dangerous Substances	0	-
Pollution Incidents (EA/NRW)	0	-
Pollution Inventory Substances / Waste Transfers/ Radioactive Waste	0	-

4.2.4 *Hydrogeology and Hydrology*

The Superficial Deposits on site are classified as a 'Unproductive' by the Environmental Agency. The EA definition of an unproductive aquifer is given below:

> ***"Unproductive aquifer"*** *- These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.*

The bedrock geology has been classified as a 'Secondary B' aquifer, the EA definition of this is provided below:

> ***"Secondary B Aquifer"*** *- Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons, and weathering. These are generally the water-bearing parts of the former non-aquifers.*

There are no Source Protection Zone's (SPZ), groundwater, surface water or potable water abstractions on site or within 250 m of the site.

The site is located within the Chestle Pill surface water body catchment and the Avonmouth Mercia Mudstone groundwater body. There are 5 records of surface water features within 250m of the site, the nearest of which is on site and is described as an inland river not influenced by normal tidal action.

4.2.5 *Potential Flood Risks*

A comprehensive flood risk assessment is not within the scope of this report. However, based on a preliminary examination of flood data, the following observations can be made:

- On the site itself, the risk of surface water flooding is considered low, occurring at an estimated return period of 1 in 30 years with water levels typically ranging from 0.3 meters to 1 metre. The risk of groundwater flooding on site and within 250m is considered negligible.

- The site is located within a designated flood zone 2 area, indicating a 1 in 1000 (0.1%) chance of flooding each year. Within 50 m of the site is a flood zone 3 area meaning it is land at risk of flooding, when the presence of flood defences is ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers.

- There are no recorded historical flood events.

The risk of groundwater flooding on site and within 250m is considered negligible. There are no records of flood defences, however there are two areas benefitting from flood defences. One is situated on site and the other is 72m southwest. There are no flood storage areas within 250m of the site.

4.2.6 *Environmentally Sensitive Sites*

There are no records of special areas of conservation, special protection areas, local or national nature reserves or sites of special scientific interest.

There is one record of designated ancient woodland at 130m southeast and is recorded as ‘Ancient & Semi-Natural Woodland’.

4.2.7 *Visual and Cultural Designations*

There are no world heritage sites, national parks, scheduled ancient monuments, registered parks and gardens or area of outstanding natural beauty (AONB) within 250m of the site.

The site is located on Grade 3 agricultural land, which is defined as Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

The site is not located within a nitrate vulnerable zone.

4.3 Site History

The historical development of the site has been determined by reference to historical plans and Google Earth imagery. The reviewed historical plans comprise only readily available records and may be limited; however, the information available to date indicates that additional searches are unlikely to add to our understanding of the site. The earliest available historical mapping covering the site is from 1880. The site history is summarised in Table 5 overleaf.

Table 5 - Summary of Site History

Date	Site	Surrounding Land Use (Within 250m of Site)
1880-1881	The site has one large farmhouse situated slightly off centre to the SW with three small footpaths leading to the farmhouse. Sparse trees on the soft landscaping surrounding the farmhouse. Small foot bridge immediately N of site farmhouse.	Immediately N of the site is farmland with a footbridge, likely over a drain and two large buildings 40-75m NE. E & S of the site is grassland and woodland (Berwick woodland). Two farm buildings are positioned immediately W and SW of the site. Open fields and a drain running NW to SE are found W and NW of the site
1887	No significant change.	No significant change.
1901	No significant change.	One rectangular farm building constructed 10m NNE Small rectangular building located within the same field as the site in the N corner, 55m NNW
1903-1921	No significant change.	No significant change.
1935	No significant change.	Patch of farmland has been segmented, potentially into pens and small farm buildings, 5m SW. Two small conjoined residential homes located 80m E. Roadway established between site and Sampson Farm.
1938	No significant change.	No significant change.
1955	No significant change.	Area N of farmland labelled as 'Rises' meaning change in topography and potentially made ground, 75m N
1969	No significant change.	No significant change.
1971	Small hut constructed 5m SW of farmhouse	Farm to the N now labelled as Sampson Farm with one new farm building 10m N. Large petroleum depot on both sides of Berwick Lane 125m NW. Multiple pump stations with one labelled tank. Ground levelling and terracing to the landscape on the E side of Berwick Lane for the petroleum depot. Gas valve compound (GVC) located 110m SSW. 2 small structures adjacent to the two small residential buildings 105m NE.
1974-1991	No significant change.	Berwick Farm has constructed 2 new buildings 30 m SW and 15m SW of site roadway. Sampson Farm has also constructed 2 new square buildings 20m-50m NW.
1992	No significant change.	Berwick farmland to the S has been fenced and segmented. Small building constructed joined to existing small building 25m SW of site roadway. 2 large buildings constructed on Sampson Farm 70m N. Small rectangular building constructed near residential homes 115m NE. GVC site has been expanded 110m S. Petroleum Depot to the N shows non-coniferous trees scattered through the depot.
2001	No significant change.	No significant change.
2003	No significant change.	One rectangular farm building constructed on Sampson Farm 50m N.
2010-2023	No significant change.	Berwick Farm buildings demolished immediately SW of site. Pipelines lab

5.0 PRELIMINARY CONTAMINATION RISK ASSESSMENT

5.1 Introduction

The following paragraphs outline a Preliminary Risk Assessment (PRA) for the site based on the above desk study information as defined by DEFRA and the EA Model Procedures for the Management of Land Contamination, CLR11(2004).

Table 8 provides a Preliminary Conceptual Model (PCM) which considers the source-pathway-receptor linkages present alongside the likelihood, severity and risk level as defined within Table 6 and Table 7 below. The assessment of probability, a modified risk table, and certain consequence definitions are based on CIRIA C552 and CLR11.

Table 8 considers whether a pollution linkage is potentially present and provides a preliminary qualitative assessment of risk based on the information currently available. Where a possible linkage is identified, it does not necessarily mean that a significant risk exists but indicates that further information is required through appropriate site investigation to substantiate the conceptual model.

The PCM/PRA is based on a residential end use.

Table 6 - Consequence, Probability and Risk

Probability	Consequence,	Risk
High Likelihood- There is a pollution linkage and an event either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution	Very High – acute risk to the human health likely to result in significant harm. Risk of severe or irreversible effect on ground/surface water quality. Catastrophic damage to buildings / property.	Very High – there is a high potential that the source-pathway-receptor scenarios may give rise to harm to human health or the environment and remedial action is likely to be required.
Likely – there is a pollution linkage and all the elements are present, which means that it is probable an event will occur. Circumstances are such that an event is not inevitable, but possible in the short term and likely over the long term.	High – Severe or irreversible effect on human health. Temporary severe or irreversible effect on ground/surface water quality. Reduction of water quality rendering groundwater or surface water unfit to drink and/or substantial adverse impact on groundwater dependant environmental receptors.	High – it is likely that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, which may require remediation and/or control measures to mitigate risks
Low likelihood– there is a pollutant linkage and circumstances are possible for an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term	Moderate – Long term or short term moderate effect on human health. Moderate effect on ground/surface water quality, reversible with time. Reduced reliability of a supply at a groundwater or surface water abstraction source	Moderate – it is possible that the source-pathway-receptor scenarios may give rise to an impact on human health or the environment, however it is either relatively unlikely that such would be severe, or if any harm were to occur it is more likely that harm would be mild.
Unlikely – there is a pollution linkage, but circumstances are such that it is doubtful that an event would occur even in the very long term.	Low – Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.) Slight effect on ground/surface water quality, reversible with time. Marginal reduced reliability of a supply at a groundwater or surface water abstraction source.	Low – it is possible that harm could arise at the source, however it is likely that they would at worst be mild.
		Very Low – it is unlikely that the source-pathway-receptor scenarios will give rise to an impact on human health or the environment.

Table 7 - Estimation of Level of Risk by Comparison of Consequence and Probability

		Consequence			
		High	**Moderate**	**Low**	**Very low**
Probability	**High Likelihood**	Very High	High risk	Moderate risk	Moderate to low risk
	Likely	High risk	Moderate risk	Moderate to low risk	Low risk
	Low Likelihood	Moderate risk	Moderate to low risk	Low risk	Very low risk
	Unlikely	Moderate to low risk	Low risk	Very low risk	Very low risk

5.2 Potential Sources

Existing Building:

Lead-Based Paint: Paint used before 1978 often contained lead, which can pose a risk if it deteriorates and leads to lead dust or chips. This is especially relevant in structures built before 1880.

Asbestos: Asbestos-containing materials may have been used in roofing, insulation, or siding. Disturbed asbestos can lead to airborne fibres, which are hazardous to health.

Septic Systems:

Antiquated septic systems may fall short of contemporary standards, posing a risk of groundwater contamination without adequate upkeep. A manhole cover, identified near the farmhouse and mentioned by a former resident and neighbouring farmer, is suspected to serve as a septic tank for the deteriorated farmhouse and outhouse.

Organic Deposits below ground level:

Tidal Flat Deposits can contain peat which has the potential to generate land gas.

Offsite:

Licensed Landfill and Waste Sites:

The presence of licensed waste sites at Berwick Farm landfill, located 132m northwest and 194m west, may pose a risk of soil and groundwater contamination. The status of the landfill site at Berwick Farm is noted as closed. However, the waste site's boundary is 35m north and upslope of the site suggesting groundwater infiltration through the made ground onto site. Landfills have the potential to generate land gas.

Manure and Slurry:

Livestock produce manure and slurry, which contain nutrients like nitrogen and phosphorus. A portion of the site's roadway is also road access to the west and southwest farm buildings which appear to have animal pens within a courtyard area. If not managed properly, these can leach into the groundwater or via surface runoff into the site.

Farmland and Drain:

The presence of farmland to the north of the site with multiple drains suggests the possibility of agricultural runoff of chemicals used in agriculture, such as pesticides and herbicides, can run off into the drain and waterway between the site and farmland affect aquatic ecosystems and soil on site. This also includes the application of fertilisers to crops which can lead to nutrient runoff.

Farm Buildings:

The two large farm buildings located 40-75m northeast and two farm buildings on the west boundary of the site may have historical or current uses that could result in localised contamination, such as fuel or chemical storage. Electrical equipment identified on the west farm buildings likely as disused refrigeration units are also within this area.

Petroleum Depot:

The large petroleum depot 125m northwest of the site, with multiple pump stations and tanks, could be a potential source of soil and groundwater contamination from fuel or chemical spills. However, its distance from site is sufficient for this to be an unlikely source of contamination.

Gas Valve Compound (GVC):

The GVC located 110m SSW might contain pipelines and equipment that could pose a risk of gas or chemical leaks. However, its distance from site is sufficient for this to be an unlikely source of contamination.

Pipelines:

The mention of pipelines suggests the presence of underground infrastructure that could be a source of contamination if there are leaks or spills. The pipeline is labelled as fuel that is within 25m of the north portion of the site.

Waste Exemptions:

The 22 waste exemptions located at Sampson Farm, 30m northeast of the assessment site, indicate various waste-related activities. These exemptions cover activities such as spreading waste on agricultural land, burning waste as a fuel, waste storage, composting, deposit of waste from dredging, and open burning of waste. Each of these activities has the potential to generate and release contaminants into the surrounding environment.

5.3 Potential Receptors

The following receptors have been considered as part of this assessment.

- Current land users.
- Adjacent land users.
- Future land users.
- Construction workers during site development works.

5.4 Potential Pathways

The following pathways have been considered as part of this assessment.

- Direct / dermal contact, ingestion, inhalation pathways of potentially contaminated soils.
- Vertical or lateral migration of contamination on and off site.

Table 8 - Preliminary Conceptual Model

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
Contamination of the ground beneath site due to current and historical use	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Low	Very Low	Due to historical and current use, there is potential for contamination of the ground. However, the risk is relatively low because there is little to no public involvement or access to the site. The primary pathways for exposure are dermal contact, ingestion, and inhalation of soil dust. The likelihood of exposure is unlikely, and the consequences are low, the overall risk to current site users remains **VERY LOW**.
		Future Site users	Likely	Low	Moderate to Low	The preliminary risk model for future site users, residing in a multibedroom residential house with access to grassland, soil, and potential vegetable cultivation, indicates a **MODERATE to LOW** overall risk level. Although there is a likelihood of exposure through dermal contact, ingestion, and inhalation of soil dust, the consequences are assessed as low for each pathway.
		Construction Workers	Low Likelihood	Low	Low	The preliminary risk model for construction workers at the site, which involves potential soil excavation, indicates a low overall risk level. This assessment considers the limited amount of time spent at the site, resulting in shorter durations of exposure. While there is a likelihood of exposure through dermal contact, ingestion, and inhalation of soil dust, the overall risk is low. Implementing safety measures and ensuring the use of appropriate protective equipment. (in line with CDM and other relevant health and safety guidance) provides a **LOW** risk to construction workers.
	Vertical or lateral migration of ground gasses	Current Site Users	Unlikely	Low	Very Low	Given the limited site access and its current disuse, the absence of exposure risk results in a classification of **VERY LOW** for current site users.
		Adjacent land users	Low Likelihood	Low	Low	Given the site's close proximity to the landfill site and the plausible historical use of the site for the transportation of waste materials to the landfill, it is probable that waste materials may have been deposited on-site. Furthermore, the landfill is situated immediately beyond the site boundary, inherently presents a high potential for ground gas presence. In addition, the proximity of Sampson Farm, located only 10 meters from the site, implies the potential for ground gas migration to adjacent land users. Consequently, the overall risk associated with these factors is evaluated as **LOW.**
		Future land users	Low Likelihood	Moderate	Moderate to Low	For future site users, including residents of the prospective residential home, the anticipated prolonged exposure, coupled with the absence of hard standing and the facilitation of gas permeation through soft landscaping, raises the likelihood of encountering ground gas to a Low likelihood. While the potential consequences are assessed as moderate, the overall risk for future site users is deemed

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
						MODERATE to LOW due to the extended and consistent nature of exposure.
		Construction Workers	Low Likelihood	Low	Moderate	For construction workers engaged in potential excavation activities at the site, it's important to note that their exposure duration is limited due to the nature of construction work. With the implementation of rigorous safety measures and the use of appropriate protective equipment, in compliance with CDM and other relevant health and safety guidance, the probability of encountering ground gases during this shorter exposure period is assessed as a **low likelihood**. While the consequences are moderated by these safety measures, the overall risk for construction workers is considered **LOW.**
	Vertical or horizontal migration of contamination via leaching into the underlying shallow groundwater	Controlled Waters	Low Likelihood	Moderate	Moderate to Low	The overall risk is assessed as **MODERATE to LOW.** The likelihood of contamination migration is considered of low likelihood due to limited potential sources of contamination on the site. as previously mentioned however, the site may have been used for access to the proximal landfill site causing some contamination on site. The higher topography of the landfill may result in runoff onto the site, increasing the potential for contamination leaching. Moreover, the presence of the septic tank/sewer and proximity to the waterways along the site's eastern borders accentuates the risk, as these waterways can act as receptors for leachate. While the consequences of contamination are assessed as moderate to low.

5.5 Preliminary Risk Assessment

This section provides an overview of the site's preliminary risk assessment, taking into account its proximity to contamination sources and future residential use. The assessment assigns a MODERATE to LOW overall risk rating.

The site is near potential contamination sources, notably a nearby landfill, historic and active farm and the presence of an underground septic tank or sewer. Historical data of the roadways suggests waste transportation through the site to the landfill, potentially depositing diverse contaminants. Given its future residential purpose, risks to both the ground and shallow groundwater are considered.

Of concern is the likelihood of ground gas, heightened by the landfill's proximity. The MODERATE to LOW-risk rating emphasises the need for vigilant monitoring, strict safety measures, and protective measures to ensure future residents' safety, addressing potential contamination sources, ground gas migration, and other risk factors.

6.0 SITE INVESTIGATION

6.1 Exploratory Fieldwork

The fieldwork was carried out by EEGSL on the 18th December and 21st December and comprised:

- 4 window sample boreholes (designated WS01 to WS04) were sunk to depths of between 3.00m and 5.00m below existing ground level. Window sampler boring is carried out with a small, track-mounted rig, which uses a chain-driven trip hammer to drive sampling tubes or penetrometers into the ground. These tools are coupled to the anvil of the hammer by solid drill rods. Sampling tubes comprise "windowless samplers", which are plain sampler tubes in which a continuous disturbed sample is recovered within a semi-rigid plastic liner. In order to reduce friction within the borehole, sampling tubes of progressively smaller diameter are used as the borehole depth increases. Sampler diameters generally range from between approximately 90mm to 50mm. Groundwater observations were noted where possible. These observations relate to the time of the investigation only, and do not necessarily reflect tidal or seasonal fluctuations. 50mm diameter standpipes were installed within WS01 and WS04 at depths of between 4m and 5m below ground level. Installation and backfill details are shown with the appropriate borehole logsheet in Appendix 1. Window sample liner photographs are presented in Appendix 2.

- To supplement the borehole investigation, 8 Hand dug pits (HP01-HP08) were carried out to depths of 0.50mbgl. The hand dug pits were completed to retrieve a good spread of contamination samples across the site for environmental testing. Trial pit logs are included in Appendix 1 and trial pit photographs included in Appendix 2.

- Dynamic probe tests were carried out generally in accordance with BS EN ISO 22476-2, at each WS location from ground level to depths of up to 5.00m below ground level. The results of these tests are shown in Appendix 3. Dynamic probe tests are conducted with a window sampler type rig, which uses a chain-driven trip hammer to drive a cone-tipped, solid steel penetrometer into the ground. The "super heavy" test (DPSH) uses a 50.5mm diameter cone, and a 63.5kg hammer, falling over a distance of 750mm. The resistance of the ground to the dynamic penetration is given by the number of blows required to drive the cone over depth increments of 100mm (DPN_{100}).

- EEGSL carried out groundwater/gas monitoring within the standpipes (WS01, WS04) after the fieldwork period, the results of which are presented in the Appendix 4.

Each exploratory location was scanned using a Cable Avoidance Tool (CAT) in order to locate unrecorded underground services, and the exploratory locations were repositioned if necessary. On completion, all samples recovered from the site were taken to a specialist laboratory for testing.

All site investigation work was supervised full time by a representative of EEGSL. The logging of soils and rocks has been carried out in accordance with BS5930(2015) except where superseded by the soil and rock description methodology in BS EN14688-1(2002), BS EN 14688-2(2004) and BS EN 14689-1(2003).

A summary of exploratory holes undertaken in presented in Table 9 overleaf.

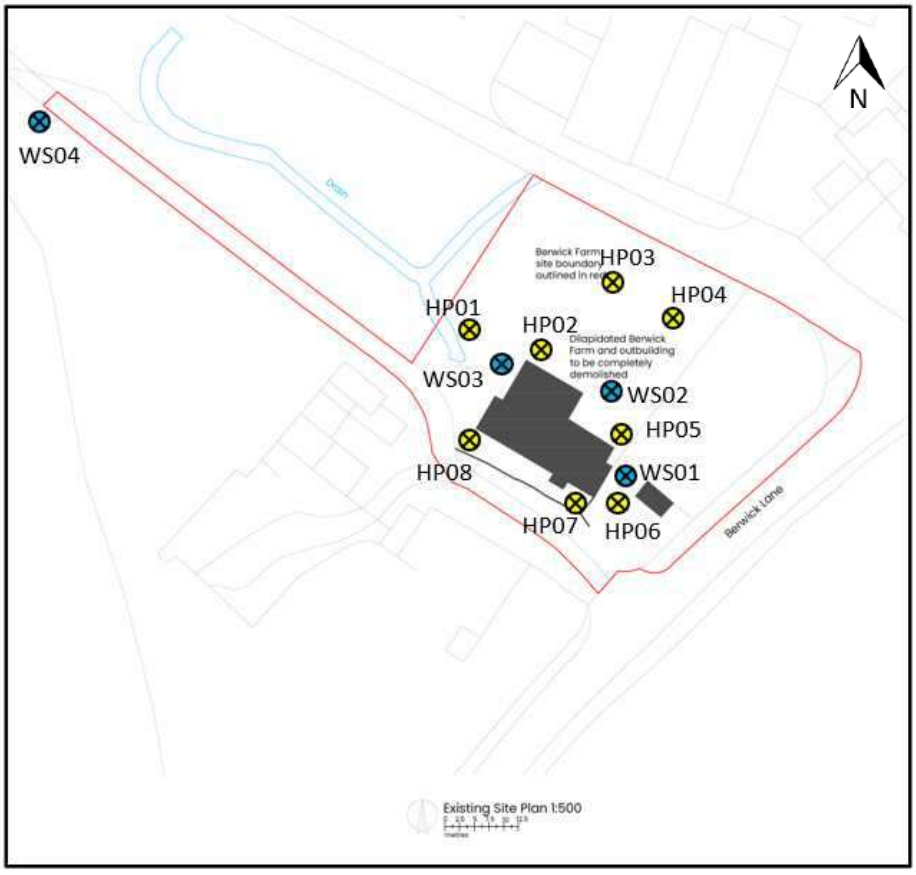
Table 9 – Summary of Exploratory Holes Undertaken

Hole	Type*	Depth (m)	Date Started	Date Finished	Location		Backfill Details**
					Easting (m)	Northing (m)	
WS01	WS/DP	4.00	21/12/2023	21/12/2023	355665	180639	SP
WS02	WS/DP	3.00	21/12/2023	21/12/2023	355660	180654	A
WS03	WS/DP	3.80	21/12/2023	21/12/2023	355645	180662	A
WS04	WS/DP	5.00	21/12/2023	21/12/2023	355558	180705	SP
HP01	HP	0.50	18/12/2023	18/12/2023	355639	180666	A
HP02	HP	0.45	18/12/2023	18/12/2023	355648	180661	A
HP03	HP	0.35	18/12/2023	18/12/2023	355660	180670	A
HP04	HP	0.50	18/12/2023	18/12/2023	355668	180664	A
HP05	HP	0.50	18/12/2023	18/12/2023	355664	180644	A
HP06	HP	0.20	18/12/2023	18/12/2023	355663	180634	A
HP07	HP	0.15	18/12/2023	18/12/2023	355655	180634	A
HP08	HP	0.15	18/12/2023	18/12/2023	355638	180643	A

*WS = Window Sample, DP = Dynamic Probe, HP = Hand Dug Pit
**A = Arisings, SP = Standpipe

The fieldwork was carried out generally in accordance with BS 5930:2015 Code of Practice for Site Investigations, Eurocode 7, unless otherwise stated. The exploratory hole locations are shown approximately on the Exploratory Hole Location Plan below:

Figure 6 - Exploratory Hole Location Plan



6.2 Environmental Testing

The environmental chemistry of the ground was investigated by specialist chemical analysis of selected samples, scheduled by EEGSL and carried out by DETS Ltd.

Chemical analyses were carried out on 8 soil samples and were submitted for the following suite of determinants:

Asbestos Screen, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc, Cyanide, Sulphate (SO_4), Sulphide, pH, Soil Organic Matter, Phenol, speciated Total Petroleum Hydrocarbons (TPH) and speciated Polyaromatic Hydrocarbons (PAH).

The results of the laboratory contamination tests are included in Appendix 4.

The range of potentially hazardous contaminants present on the site can be wide and varied, and the suite has been chosen to reflect both commonly found contaminants and others indicated by research to have a significant risk of being present. It is, however, possible that others may exist for which analyses have not been carried out. It is also possible that contaminants exist on the site but were not present at any of the exploratory hole locations.

7.0 GROUND CONDITIONS ENCOUNTERED

7.1 Soil Profile Encountered

The sequence of strata encountered beneath the site was as follows:

- Made Ground
- Tidal Flat Deposits
- Weathered Bedrock

The depths of the various materials encountered in each of the exploratory holes are summarised in Table 10 below.

Table 10 - Summary of Ground Conditions Encountered

Hole	Depth to Stratum (m)							GROUND-WATER
	MADE GROUND		TIDAL FLAT DEPOSITS			Weathered BEDROCK		
	Sandy clayey gravel	Sandy/gravelly silty clay/silt with brick, coal, chalk, organic inclusions	Grey brown sandy silty CLAY	Dark brown clayey SILT with chalk gravel	PEAT	Sandy/gravelly CLAY	Sandy/silty CLAY	
WS01	GL-0.20	0.20-0.50				0.50-1.10 2.70-4.00	1.10-2.70	Dry
WS02		GL-0.35				0.35-0.70 1.70-3.00	0.70-1.70	Dry
WS03		GL-1.10				2.80-3.80.	1.10-2.80	Dry
WS04			GL-4.90*		4.90-5.00			1.00m
HP01		GL-0.40		0.40-0.50				Dry
HP02		GL-0.45						Dry
HP03		GL-0.50						Dry
HP04		GL-0.50						Dry
HP05		GL-0.50						Dry
HP06	GL-0.20							Dry
HP07	GL-0.20							Dry
HP08	GL-0.20							Dry
*strong organic/peaty odour 2.10-4.90m								

7.2 Obstructions

Underground man-made obstructions were not encountered during the investigation.

7.3 Groundwater

Groundwater was encountered within WS04 at 1.00mbgl. No Groundwater was encountered within the exploratory holes WS01-WS03, HP01-HP08 during the investigation.

Post investigation monitoring within WS01 and WS04 show groundwater depths of between 0.79m – 0.91m respectively.

7.4 Land Gas

Results obtained during the initial monitoring visit indicated Methane (CH_4) levels of 0% by volume, Carbon Dioxide (CO_2) levels ranging from 0% to 1.4% by volume, and Oxygen (O_2) levels ranging from 17% to 19.7% by volume. Borehole pressures ranging from -1Pa to -4Pa and gas flows ranging from -1.4l/hr to -1.8l/hr were recorded.

Results obtained during subsequent monitoring visits indicated Methane levels ranging from 0% to 0% by volume, Carbon Dioxide levels ranging from 0.1% to 0.1% by volume, and Oxygen levels ranging from 19.1% to 20.2% by volume. Hydrogen Sulphide levels ranging from 0ppm and Carbon Monoxide levels ranging from 0ppm to 0ppm were recorded. Borehole pressures ranging from -0.1Pa to 0Pa and gas flows ranging from 0l/hr to 0.2l/hr were recorded. Atmospheric pressure was recorded in the range 1006mb to 1089mb.

It should be noted that the concentrations and levels of mobile liquid and gaseous materials are likely to vary with time. The results obtained may therefore be representative of the conditions only at the time of sampling.

7.5 Visual / Olfactory Evidence of Contamination

Strong organic odours are present within WS04. No visual/olfactory evidence of contamination was encountered in any of the exploratory holes.

8.0 SOIL CONTAMINATION RISK ASSESSMENT

8.1 General

The following sections provide a Human Health Soil Assessment for groundworkers during development and future site users.

8.2 Tier I Human Health Soil Risk Assessment – Groundworkers During Development

To assess the risk of soil contamination to construction and ground workers during development, guidelines from the HSE Document 'Protection of workers and the general public during development of contaminated land'(1991) are used. The document assesses soil contamination test results and classifies the site as being uncontaminated or contaminated with varying degrees of contamination from 'slight' to 'unusually heavy'.

The guideline values and laboratory test results are summarised in the following table:

Table 11 - Summary of Guideline Values for Protection of Workers and the General Public During Development of Contaminated Land

Contaminant	Typical Values* for:					Test Results	Class
	Uncontaminated Soils	Slight Contamination	Contaminated	Heavy Contamination	Unusually Heavy Contamination		
	Class A	Class B	Class C	Class D	Class E		
pH (alkaline)	7 - 8	8 - 9	9 - 10	10 - 12	12	7.0-7.5	A
Arsenic	0 - 30	30 - 50	50 - 100	100 - 500	500	7-46	A-B
Cadmium	0 - 1	1 - 3	3 - 10	10 - 50	50	0.8-13.2	A-D
Chromium	0 - 100	100 - 200	200 - 500	500 - 2500	2500	10-31	A
Copper	0 - 100	100 - 200	200 - 500	500 - 2500	2500	38-169	A-B
Lead	0 - 500	500 - 1000	1000 - 2000	2000 – 1%	1.0%	74-758	A-B
Mercury	0 - 1	1 - 3	3 - 10	10 - 50	50	<1-1.1	A-B
Nickel	0 - 20	20 - 50	50 - 200	200 - 1000	1000	10-29	A-B
Zinc	0 - 250	250 - 500	500 - 1000	1000 - 5000	5000	166-2760	A-D
Boron	0 - 2	2 - 5	5 - 50	50 - 250	250	<1-2	A
Selenium	0 - 1	1 - 3	3 - 10	10 - 50	50	<2	A
Barium	0-500	500-1000	1000-2000	2000-1.0%	1.0%	200-638	A-B
Beryllium	0 - 5	5 - 10	10 - 20	20 - 50	50	0.5-1.4	A
Vanadium	0 - 100	100 - 200	200 - 500	500 - 2500	2500	12-34	A
Sulphate	0 - 2000	2000 - 5000	5000 – 1%	1% - 5%	5.05%	449-1460	A
Sulphide	0 - 10	10 - 20	20 - 100	100 - 500	500	<5 - 15	A-B
Cyanide (free)	0 - 1	1 - 5	5 - 50	50 - 100	100	<1	A
Coal Tar	0-500	500-1000	1000-2000	2000-1.0%	1.0%	<42	A
Phenol	0 - 2	2 - 5	5 - 50	50 - 250	250	<2	A

Based on the above results there is a moderate potential risk from soil contamination to construction workers, ground workers and members of the public, and appropriate measures, such as PPE, site health plans, appropriate disposal of material arisings will be required to mitigate this risk.

8.3 Tier I Human Health Soil Risk Assessment – Future Site Users

As part of the contamination assessment, the chemical results obtained by EEGSL have been screened against accepted compliance criteria, namely:

- Defra C4SL Health Criteria Values(March 2014), where available; and
- Tier 1 assessment values - based on LQM/CIEH Suitable 4 Use Levels(2015) (S4ULs).

As a preliminary screening assessment, all results have been compared to residential end use criteria.

The comparison of results is summarised in Table 12 overleaf.

Table 12 - Soil Results Comparison with C4SL/S4UL Levels

Determinand	C4SL/S4UL Levels (mg/kg)*						No. of Samples	Min. (mg/kg)	Max. (mg/kg)	No of Exceedances
	Residential with homegrown produce			**Residential** without homegrown produce						
Metals										
Arsenic	37			40			8	7	46	1
Beryllium	1.7			1.7			8	0.5	1.4	-
Cadmium	26			149			8	0.8	6	-
Chromium	910			910			8	10	31	-
Chromium VI	21			21			8	<2	<2	-
Copper	2400			7100			8	38	169	-
Lead	200			310			8	74	758	5
Mercury	1.2			1.2			8	<1	1.1	-
Nickel	180			180			8	10	29	-
Selenium	250			430			8	<2	<2	-
Vanadium	410			1200			8	12	34	-
Zinc	3700			4000			8	166	2760	-
Petroleum Hydrocarbons										
SOM (%)	**1.0**	**2.5**	**6.0**	**1.0**	**2.5**	**6.0**	**-**	**-**	**-**	**-**
Benzene	0.87	17	0.37	3.3	0.70	1.4	8	<0.002	<0.002	-
Toluene	230	290	660	880	1900	3900	8	<0.005	<0.005	-
Ethylbenzene	47	110	260	83	190	440	8	<0.002	<0.002	-
o-xylenes	60	140	330	88	210	480	8	<0.002	<0.002	-
p & m -xylenes	56	130	310	79	180	430	8	<0.002	<0.002	-
Aliphatic EC 5-6	42	78	160	42	78	160	8	<0.01	<0.01	-
Aliphatic EC >6-8	100	230	530	100	230	530	8	<0.05	<0.05	-
Aliphatic EC >8-10	27	65	150	27	65	150	8	<2	<2	-
Aliphatic EC >10-12	130	330	760	130	330	770	8	<2	<2	-
Aliphatic EC >12-16	1100	24000	4300	1100	24000	4400	8	<3	<3	-
Aliphatic EC >16-35	65000	92000	110000	65000	92000	110000	8	<10	<10	-
Aromatic EC 5-7	70	78	300	370	690	1400	8	<0.01	<0.01	-
Aromatic EC >7-8	130	230	660	860	1800	3900	8	<0.05	<0.05	-
Aromatic EC >8-10	34	65	190	47	110	270	8	<2	<2	-
Aromatic EC >10-12	74	330	380	250	590	1200	8	<2	<2	-
Aromatic EC>12-16	140	24000	660	1800	2300	2500	8	<2	<2	-
Aromatic EC>16-21	280	92000	930	1900	1900	1900	8	<3	<3	-
Aromatic EC>21-35	1100	92000	1700	1900	1900	1900	8	<10	<10	-
Polycyclic Aromatic Hydrocarbons										
Naphthalene	2.3	5.6	13	2.3	5.6	13	8	<0.1	<0.1	-
Acenaphthylene	170	420	920	2900	4600	6000	8	<0.1	<0.1	-
Acenaphthene	210	510	1100	3000	4700	6000	8	<0.1	<0.1	-
Fluorene	170	400	860	2800	3800	4500	8	<0.1	<0.1	-
Phenanthrene	95	220	440	1300	1500	1500	8	<0.1	0.90	-
Anthracene	2400	5400	11000	31000	35000	37000	8	<0.1	<0.1	-
Fluoranthene	280	560	890	1500	1600	1600	8	<0.1	2.20	-
Pyrene	620	1200	2000	3700	3800	3800	8	<0.1	1.78	-
Benz(a)anthracene	7.2	11	13	11	14	15	8	<0.1	0.55	-
Chrysene	15	22	27	30	31	32	8	<0.1	0.90	-
Benzo(a)pyrene	5.0	2.7	3.0	5.3	3.2	3.2	8	<0.1	0.73	-
Benzo(b)fluoranthene	2.6	3.3	3.7	3.9	4.0	4.0	8	<0.1	0.96	-
Benzo(k)fluoranthene	77	93	100	110	110	110	8	<0.1	0.37	-
Indeno(1,2,3-cd)pyrene	27	36	41	45	46	46	8	<0.1	0.55	-
Dibenz(a,h)anthracene	0.24	0.28	0.3	0.31	0.31	0.32	8	<0.1	<0.1	-
Benzo(ghi)perylene	320	340	350	360	360	360	8	<0.1	0.46	-
Phenols										
Phenol	280	550	1100	750	1300	2300	8	<2	<2	-

From Table 12 it can be some of the samples have elevated levels of arsenic and lead contaminants. These elevated contaminants are summarised in Table 16 below.

Table 13 – Summary of Elevated Levels of Contamination

Location	Depth	Strata	Elevated contaminants in excess of:	
			Residential end use with homegrown produce	Residential end use without homegrown produce
HP08	0.05-0.15m	Made Ground	Arsenic	Arsenic
HP01	0.30-0.40m	Made Ground	Lead	Lead
HP02	0.35-0.45m	Made Ground	Lead	Lead
HP03	0.20-0.30m	Made Ground	Lead	-
HP06	0.10-0.20m	Made Ground	Lead	Lead
HP08	0.05-0.15m	Made Ground	Lead	Lead

Asbestos has not been encountered in any of the samples tested.

8.4 Soil Waste Assessment

Environment Agency Technical Guidance WM3.1: Hazardous Waste; "Guidance on the classification and assessment of waste", May 2018, published by Environment Agency of England and Wales, SEPA, NIEA and Natural Resources Wales has been used to characterise soil materials.

HazWasteOnline™ a cloud-based software application for the management, analysis and reporting of hazardous waste materials has been used to make this assessment.

The Hazardous Waste Assessment (included in Appendix 6) confirms that all the samples tested can be classified as **Non-Hazardous**, with the exception of the sample from HP08 which is **Hazardous** due to the elevated level of Zinc.

9.0 PROTECTION OF BURIED WATER PIPES

The potential risk to new buried water pipes associated with ground contamination has been assessed using the Water Regulations Advisory Scheme (WRAS) Guidance Note No. 9-04-03(2002) and Water UK *'Contaminated Land Assessment Guidance'* (January 2014). The results of contamination testing compared to WRAS Guidance Values are summarised in the following table:

Table 14 – Soil Results Comparison with WRAS Guidance Levels

Contaminant	Threshold Level (mg/kg)	HP01 0.30-0.40m	HP02 0.35-0.45m	HP03 0.20-0.30m	HP04 0.5 -0.50m	HP05 0.30-0.40m	HP06 0.10-0.20m	HP07 0.05-0.15m	HP08 0.05-0.15m	No. of Exceedances
Corrosion										
Sulphate	2000	1025	1212	809	449	729	12894	939	1460	0
Sulphide	250	5	<5	<5	<5	<5	5	<5	15	0
pH	5 ≤ pH ≤ 8	7.4	7.4	7.0	7.3	7.5	7.5	7.5	7.4	0
Toxicity										
Arsenic	10	17	21	12	9	8	17	7	46	4
Cadmium	3	6.0	3.8	5.6	1	0.8	9.0	2.9	13.2	4
Chromium (hexavalent)	25	<2	<2	<2	<2	<2	<2	<2	<2	0
Chromium (total)	600	31	21	21	23	15	10	10	18	0
Cyanide (free)	25	<1	<1	<1	<1	<1	<1	<1	<1	0
Cyanide (complex)	250	<1	<1	<1	<1	<1	<1	<1	<1	0
Lead	500	758	381	226	74	79	362	143	685	2
Mercury	1	1.1	<1	<1	<1	<1	1.1	<1	<1	2
Selenium	3	<2	<2	<2	<2	<2	<2	<2	<2	0
Organic contaminants										
BTEX & MTBE	0.1	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0
EC5-EC10 ali + aro hydrocarbons	2	<2	<2	<2	<2	<2	<2	<2	<2	0
EC10-EC16 ali + aro hydrocarbons	10	<3	<3	<3	<3	<3	<3	<3	<3	0
EC16-EC40 ali + aro hydrocarbons	500	27	<10	<10	<10	<10	<10	<10	<10	0
Phenols	2	<2	<2	<2	<2	<2	<2	<2	<2	0
Polycyclic Aromatic Hydrocarbons (PAH)	50	3.0	<1.6	<1.6	<1.6	<1.6	2.1	3.3	9.4	0

Notes:
(1) For copper pipes, corrosive if pH<5 or >8.

From the above table, it can be seen there are some elevated contaminant levels suggesting special requirements could be required for new water pipes.

10.0 REVIEW OF PRELIMINARY CONTAMINATION RISK ASSESSMENT

The following table provides a review of the Preliminary Conceptual Model/Contamination Risk Assessment included in Section 5.0, based on the findings of the Phase II investigation, and laboratory testing.

Table 15 - Revised Conceptual Model

Source	Pathway	Receptor	Risk
Contamination of the ground beneath site due to current and historical use	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	VERY LOW
		Future Site users	Hard Cover Development : VERY LOW Soft Landscaping: HIGH
		Construction Workers	LOW TO MODERATE
	Vertical or lateral migration of contamination (including ground gas) on and off site.	Current Site Users	VERY LOW
		Adjacent land users	LOW
		Future land users	LOW
		Controlled Waters	VERY LOW
		Construction Workers	LOW

11.0 GROUND CONTAMINATION CONCLUSIONS AND RECOMMENDATIONS

11.1 Soil Contamination

Based on available soil contamination test results there is a low to moderate potential risk from soil contamination to construction workers and ground workers during development and appropriate measures such as PPE, site health plans, appropriate disposal of material arisings will be required to mitigate this risk. The groundworks contractor must provide a soil management plan including methods of dealing with soil contamination encountered during groundworks.

As discussed in the above sections, elevated levels of arsenic and lead have been encountered within the Made Ground near surface, above the recommended guideline values for residential end use with and without home grown produce.

Areas of proposed hardcover development will not require any remediation as these areas effectively seal contamination beneath and break any potential source-pathway-pollutant linkage.

The elevated contamination encountered is located within the Made Ground near surface. Areas of proposed soft landscaping will require remediation. This can be carried out by either removing the Made Ground from these areas, capping the Made Ground with a minimum 600mm of clean imported material, or a combination of both, depending on finished site levels.

The presence of higher levels of contamination on areas of the site not covered by the current exploratory holes should not be discounted and additional spot checks would be prudent, particularly during groundworks and in areas of proposed soft landscaping. This testing can be carried out as part of the Soil Management Plan for the site.

11.2 Soil Disposal

Soils should be disposed of at a suitable site, registered to take the levels of contamination encountered. Seven of the eight samples tested have been classified as Non-Hazardous in accordance with Environment Agency guidance WM3.1. The sample from HP08 has been classified as hazardous.

11.3 Asbestos

Asbestos has not been encountered in any of the samples tested. It is therefore considered the risk of asbestos being in the ground is low.

11.4 Land Gas

Another potential source of contamination is land gas. Land gas is largely generated by the decomposition of organic matter, both in natural soils such as peat, and manmade materials such as landfill or other fill materials. The gases that are normally associated with these materials, which can pose a risk to health, include methane (which is toxic and potentially explosive) and carbon dioxide (which is toxic). Oxygen depletion is also a consequence of the generation of these other gases.

Based on the results of monitoring it is considered the risk posed by land gas is low and land gas protection measures will not be required for new buildings.

Based on information included in the Groundsure report, protection against the ingress of radon gas into the new building is not required.

11.5 Risk to Groundwater and Surface Waters

Based on the ground and groundwater conditions encountered and results of laboratory testing it is considered the risk from contamination to groundwater and surface waters is low.

11.6 Risk to Buried (Water) Services

Based on the results of laboratory testing it is considered standard materials are unlikely to be appropriate for new water pipes. The advice of the water supply company should be sought.

11.7 Site Personnel & Other Matters

As with all construction sites, personnel working on the site during the construction period should be encouraged to maintain a high standard of personal hygiene and on-site washing facilities should be available.

Due diligence is required during the construction period, and should any further evidence of contamination be found, appropriate investigation and / or action should be taken. The significance of any contamination not discovered by this investigation is outside the scope of this report.

APPENDIX 1

EXPLORATORY HOLE LOGS

Window Sample Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 31/01/2022
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor: Cook GI	Co-ords: E355665.00 N180639.00
Project No. : B3326	Crew Name: B + J	Drilling Equipment: Dart Archway

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS01	WS		AS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.10			MADE GROUND: Dark grey organic layer (leaves & roots)
					0.20			MADE GROUND: Pinkish brown slightly sandy slightly clayey gravel with rootlets/roots up to 3mm thickness. Gravel is subangular fine to coarse of limestone.
					0.50			MADE GROUND: Firm dark brown slightly sandy gravelly silty clay. Gravel is subangular to subrounded fine to coarse of limestone, brick, coal, chalk and organic inclusions.
								Firm dark brown slightly gravelly slightly sandy silty clay. Gravel is subangular fine to medium of limestone and mudstone. (WEATHERED MERCIA MUDSTONE BEDROCK)
					1.10			Firm light brown, brown and pinkish brown slightly sandy silty CLAY. Sand is fine to medium. (WEATHERED MERCIA MUDSTONE BEDROCK)
					1.50			Firm to stiff reddish brown slightly sandy slightly silty CLAY. Sand is fine to coarse.
								… becoming stiff to very stiff with minor fine to medium gravel sized lenses of green silt.
					2.70			Firm to stiff reddish brown with minor to occasional green medium to coarse gravel sized silt lenses, slightly sandy slightly gravelly silty CLAY. Gravel is subangular fine to coarse of sandstone and siltstone. Sand is fine to coarse. (WEATHERED MERCIA MUDSTONE BEDROCK)
								End of Borehole at 3.600m
					4.00			

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	87										
2.00	76										
3.00	67										
4.00	56										

Remarks

Foundation pit dug from 0.0 to 1.0m. Water at 2.0m

Window Sample Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 21/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor: Cook GI	Co-ords: E355660.00 N180654.00
Project No. : B3326	Crew Name: B + J	Drilling Equipment: Dart Archway

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS02	WS		AS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								MADE GROUND: Soft to firm dark brown slightly gravelly slightly sandy SILT with frequent rootlets. Gravel is subangular to subrounded fine to medium of limestone, chalk, brick and mudstone.
					0.35			*Clay pipe*
								Firm brown slightly gravelly slightly sandy slightly silty CLAY. Gravel is subangular fine to medium of limestone and mudstone. Sand is fine to coarse. (WEATHERED MERCIA MUDSTONE BEDROCK)
					0.70			Firm pale reddish brown mottled light brown slightly sandy silty CLAY. Sand is fine to coarse. (WEATHERED MERCIA MUDSTONE BEDROCK)
					1.05			Firm to stiff reddish brown mottled minor grey/ green slightly sandy slightly silty CLAY. Sand is fine to medium. (WEATHERED MERCIA MUDSTONE BEDROCK)
								… becoming slightly gravelly. Gravel is subrounded fine to medium of siltstone.
					1.70			Stiff to very stiff orange brown mottled red with minor fine to medium gravel sized green lenses slightly sandy silty CLAY. Gravel is subrounded fine to medium of weak mudstone/ recovered as very stiff clay. Sand is fine to medium. Friable. (WEATHERED MERCIA MUDSTONE BEDROCK)
					3.00			End of Borehole at 3.000m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	87										
2.00	76										
3.00	67										

Remarks

1. Exploratory position scanned with Cable Avoidance Tool prior to drilling. 2. Groundwater not encountered during drilling. 3. Dynamic Probing carried out to 3.00mbgl. Hole terminated at 3.00mbgl due to refusal. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

Window Sample Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 21/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor: Cook GI	Co-ords: E355645.00 N180662.00
Project No. : B3326	Crew Name: B + J	Drilling Equipment: Dart Archway

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS03	WS		AS	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
								MADE GROUND: Firm dark brown slightly sandy slightly gravelly very silty clay with frequent rootlets. Gravel is subangular to subrounded fine to coarse of limestone, brick, mudstone, chalk and organic inclusions.
					1.10			Firm grey brown mottled reddish brown & grey slightly sandy silty CLAY. Sand is fine to medium. (WEATHERED MERCIA MUDSTONE BEDROCK)
								Dark grey mottled pale grey
								Reddish brown mottled minor grey
					2.20			Firm reddish brown sandy silty CLAY. Sand is fine to coarse. (WEATHERED MERCIA MUDSTONE BEDROCK)
					2.80			Firm to stiff reddish brown with minor medium to coarse gravel sized green lenses slightly sandy silty CLAY. Sand is fine to medium. Friable. (WEATHERED MERCIA MUDSTONE BEDROCK)
					3.80			End of Borehole at 3.800m

1 2 3 4 5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	87										
2.00	76										
3.00	67										
4.00	56										

Remarks

1. Exploratory position scanned with Cable Avoidance Tool prior to drilling. 2. Groundwater not encountered during drilling. 3. Dynamic Probing carried out to 3.80mbgl. Hole terminated at 3.80mbgl due to refusal. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

Window Sample Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 21/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor: Cook GI	Co-ords: E355558.00 N180705.00
Project No. : B3326	Crew Name: B + J	Drilling Equipment: Dart Archway

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS04	WS		AS	1:25	Sheet 1 of 2

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	▼							Soft pale brown mottled grey slightly sandy silty CLAY. Sand is fine to medium. (TIDAL FLAT DEPOSITS)
								… becoming soft to very soft and grey.
					2.10			Soft to very soft grey slightly sandy very silty CLAY. Sand is fine to medium. Strong peaty/ organic odours. (TIDAL FLAT DEPOSITS)
								Soft
					4.90			Soft to firm dark brown silty PEAT.
					5.00			

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	87										
2.00	76										
3.00	67										
4.00	56										
5.00	56										

Remarks

1. Exploratory position scanned with Cable Avoidance Tool prior to drilling. 2. Groundwater encountered at 1.00mbgl. 3. Dynamic Probing carried out to 5.00mbgl. Hole terminated at target depth of 5.00mbgl. Hole installed with groundwater monitoring/ gas pipe.

Window Sample Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 21/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor: Cook GI	Co-ords: E355558.00 N180705.00
Project No. : B3326	Crew Name: B + J	Drilling Equipment: Dart Archway

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS04	WS		AS	1:25	Sheet 2 of 2

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				(TIDAL FLAT DEPOSITS) End of Borehole at 5.000m

6
7
8
9
10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	87										
2.00	76										
3.00	67										
4.00	56										
5.00	56										

Remarks

1. Exploratory position scanned with Cable Avoidance Tool prior to drilling. 2. Groundwater encountered at 1.00mbgl. 3. Dynamic Probing carried out to 5.00mbgl. Hole terminated at target depth of 5.00mbgl. Hole installed with groundwater monitoring/ gas pipe.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355641.00 N180664.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP01	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.40	ES		0.40			MADEGROUND: Grass over soft dark brown slightly gravelly slightly clayey slightly sandy SILT with frequent rootlets. Gravel is subangular to subrounded fine to coarse of brick and chalk.
					0.50			Soft dark brown slightly gravelly slightly clayey SILT. Gravel is subangular to subrounded fine to coarse of chalk. (TIDAL FLAT DEPOSITS)
								End of Borehole at 0.500m

1

2

3

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355650.00 N180667.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP02	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.35 - 0.45	ES		0.30			MADEGROUND: Grass over soft dark brown slightly gravelly slightly sandy clayey SILT with frequent roots and rootlets. Gravel is subangular to subrounded fine to coarse of brick and chalk. *Root with 1.5cm diameter at 0.1m.*
					0.45			MADEGROUND: Soft dark brown slightly gravelly slightly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse of brick, chalk and coal. *Large cobble present 8cm/6cm/5cm at 0.3m.* End of Borehole at 0.450m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355665.00 N180670.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP03	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES					MADEGROUND: Grass over soft dark brown slightly gravelly slightly sandy slightly clayey SILT with frequent roots/ rootlets. Gravel is subangular to subrounded fine to coarse of brick, chalk and slate.
					0.30			MADEGROUND: Soft dark brown slightly gravelly slightly sandy slightly silty CLAY. Gravel is subangular to subrounded fine to coarse of brick, coal, chalk and glass.
					0.50			End of Borehole at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355668.00 N180664.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP04	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADEGROUND: Grass over soft dark brown slightly gravelly slightly silty slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of coal and ceramic material.
		0.40 - 0.50	ES		0.50			MADEGROUND: Soft dark brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse of coal and brick.
								End of Borehole at 0.500m

1

2

3

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355662.00 N180652.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP05	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.40	ES		0.25			MADEGROUND: Grass over soft dark brown slightly gravelly slightly slightly sandy slightly silty CLAY. Gravel is subangular to subrounded fine to coarse of brick and ceramic material.
					0.50			MADEGROUND: Soft pale to dark brown with reddish brown pockets slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse of brick, coal and chalk.
								End of Borehole at 0.500m

1

2

3

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355662.00 N180631.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP06	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.20	ES		0.20			MADEGROUND: Grass over dense reddish GRAVEL. Gravel is subangular to subrounded fine to coarse of brick.
								End of Borehole at 0.200m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355656.00 N180628.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP07	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05 - 0.15	ES		0.15			MADEGROUND: Grass over dense reddish GRAVEL. Gravel is subangular to subrounded fine to coarse of brick.
								End of Borehole at 0.150m

1

2

3

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

EARTH ENVIRONMENTAL & GEOTECHNICAL

Trial Pit Log

Project Name: Berwick Farm	Client: Mr. E. Cemery	Date: 18/12/2023
Location: Berwick Farm, Berwick Lane, Hallen, South Gloucestershire, BS10 7RS	Contractor:	Co-ords: E355641.00 N180640.00
Project No. : 3326	Crew Name: Ck	Equipment:

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP08	TP		CK	1:15	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05 - 0.15	ES		0.15			MADEGROUND: Grass over dense reddish GRAVEL. Gravel is subangular to subrounded fine to coarse of chert.
								End of Borehole at 0.150m

1

2

3

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks

Exploratory position scanned with Cable Avoidance Tool prior to drilling. No groundwater encountered. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

APPENDIX 2

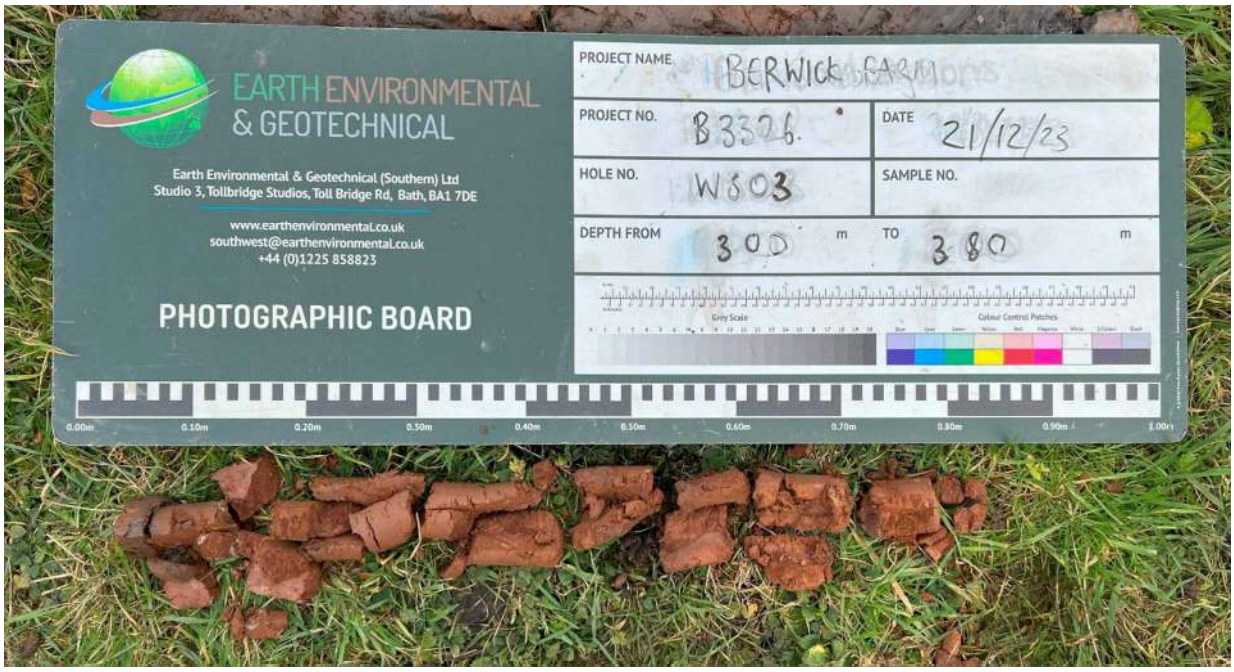
PHOTOGRAPHS

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS01**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS01**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS02**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS03**



EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS03**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS04**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Window Sample Photos
	Client: Mr. E. Cemery	Reference: **WS04**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP01**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP02**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP03**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP04**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP05**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP06**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP07**

EARTH ENVIRONMENTAL & GEOTECHNICAL	Project: B3326	Drawing Title: Hand Dug Pit Photos
	Client: Mr. E. Cemery	Reference: **HP08**

APPENDIX 3

IN SITU TEST RESULTS

Dynamic Probe Test Results Sheet

Site: **BERWICK FARM**

Job Number: **B3326**

Client: Mr. E. Cemery

Rig Type: Archway Dart

Date: 05-Jan-24

Test Type: DPSH

Final Depth: 5.00

Sheet 1 of 1

EARTH ENVIRONMENTAL & GEOTECHNICAL

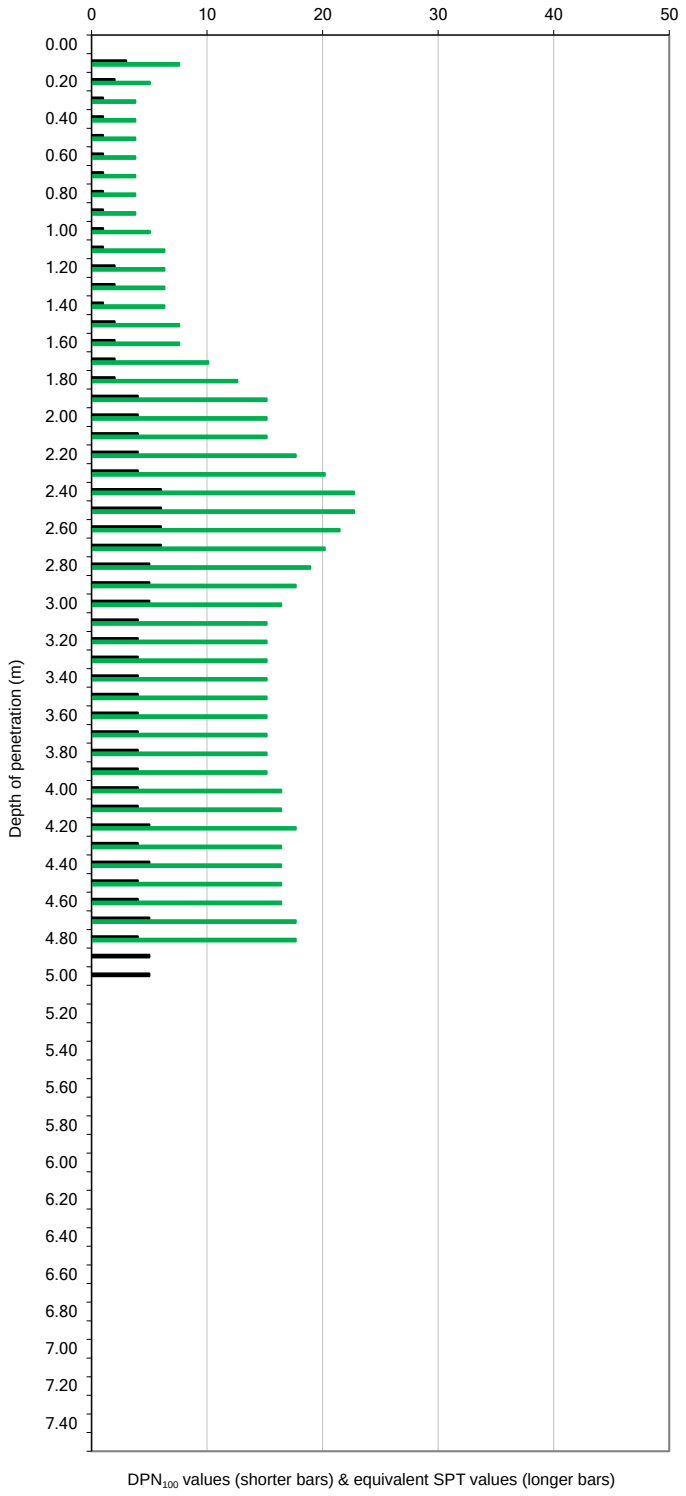
DP No: **WS01**

Penetration Test Results

Depth (m)	DPN_{100}	DPN_{300}	SPT N *
0.00			
0.10	3	6	8
0.20	2	4	5
0.30	1	3	4
0.40	1	3	4
0.50	1	3	4
0.60	1	3	4
0.70	1	3	4
0.80	1	3	4
0.90	1	3	4
1.00	1	4	5
1.10	1	5	6
1.20	2	5	6
1.30	2	5	6
1.40	1	5	6
1.50	2	6	8
1.60	2	6	8
1.70	2	8	10
1.80	2	10	13
1.90	4	12	15
2.00	4	12	15
2.10	4	12	15
2.20	4	14	18
2.30	4	16	20
2.40	6	18	23
2.50	6	18	23
2.60	6	17	21
2.70	6	16	20
2.80	5	15	19
2.90	5	14	18
3.00	5	13	16
3.10	4	12	15
3.20	4	12	15
3.30	4	12	15
3.40	4	12	15
3.50	4	12	15
3.60	4	12	15
3.70	4	12	15
3.80	4	12	15
3.90	4	12	15
4.00	4	13	16
4.10	4	13	16
4.20	5	14	18
4.30	4	13	16
4.40	5	13	16
4.50	4	13	16
4.60	4	13	16
4.70	5	14	18
4.80	4	14	18
4.90	5		
5.00	5		
5.10			
5.20			
5.30			
5.40			
5.50			
5.60			
5.70			
5.80			
5.90			
6.00			
6.10			
6.20			
6.30			
6.40			
6.50			
6.60			
6.70			
6.80			
6.90			
7.00			
7.10			
7.20			
7.30			
7.40			
7.50			

Hammer Mass: 63.5 kg Cone Dia: 50.5mm

Drop Height: 750 mm Test by: Cook GI



General Remarks:

DPN_{100} = Dynamic penetration resistance for 100mm penetration.

DPN_{300} = Dynamic penetration resistance for 300mm penetration (ie: sum of 3 consecutive DPN_{100} values), starting at the depth given.

* Equivalent SPT N-values (for 300mm penetration) assumed to approximate the DPN_{300} values for dynamic probe "super-heavy" test (DPSH).

For dynamic probe "heavy" test (DPH), equivalent SPT N-values estimated using the theoretical relationship DPN_{300} = 1.5 SPT-N. [see Card,G.B., Roche,D.P. & Herbert,S.M., in Geol. Soc. Special Publication No 6, *Field Testing in Engineering Geology* (1990)]. SPT values are estimated and are for general guidance only.

SPT hammer energy ratio = 75.73%

Dynamic Probe Test Results Sheet

Site: **BERWICK FARM**

Job Number: **B3326**

Client: Mr. E. Cemery

Rig Type: Archway Dart

Date: 05-Jan-24

Test Type: DPSH

Final Depth: 3.00

Sheet 1 of 1

EARTH ENVIRONMENTAL & GEOTECHNICAL

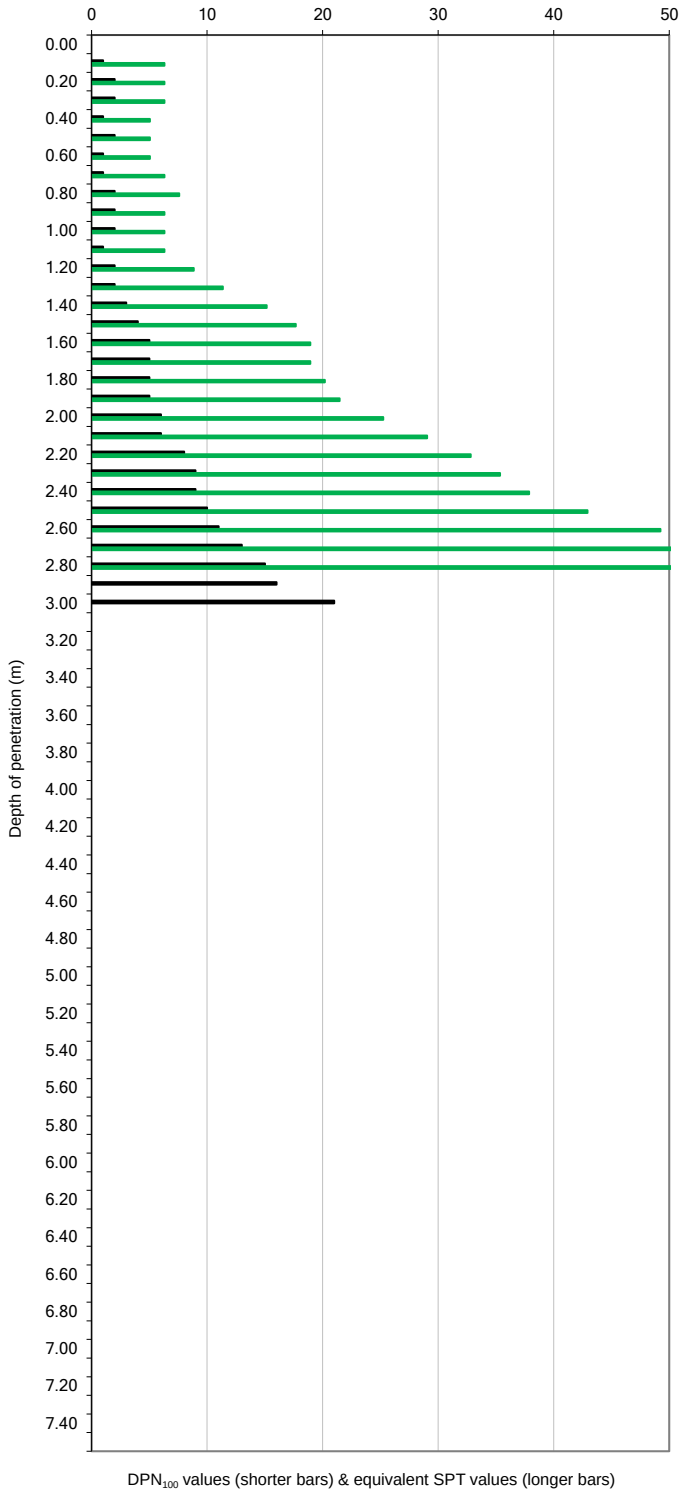
DP No: **WS02**

Penetration Test Results

Depth (m)	DPN_{100}	DPN_{300}	SPT N *
0.00			
0.10	1	5	6
0.20	2	5	6
0.30	2	5	6
0.40	1	4	5
0.50	2	4	5
0.60	1	4	5
0.70	1	5	6
0.80	2	6	8
0.90	2	5	6
1.00	2	5	6
1.10	1	5	6
1.20	2	7	9
1.30	2	9	11
1.40	3	12	15
1.50	4	14	18
1.60	5	15	19
1.70	5	15	19
1.80	5	16	20
1.90	5	17	21
2.00	6	20	25
2.10	6	23	29
2.20	8	26	33
2.30	9	28	35
2.40	9	30	38
2.50	10	34	43
2.60	11	39	49
2.70	13	44	56
2.80	15	52	66
2.90	16		
3.00	21		
3.10			
3.20			
3.30			
3.40			
3.50			
3.60			
3.70			
3.80			
3.90			
4.00			
4.10			
4.20			
4.30			
4.40			
4.50			
4.60			
4.70			
4.80			
4.90			
5.00			
5.10			
5.20			
5.30			
5.40			
5.50			
5.60			
5.70			
5.80			
5.90			
6.00			
6.10			
6.20			
6.30			
6.40			
6.50			
6.60			
6.70			
6.80			
6.90			
7.00			
7.10			
7.20			
7.30			
7.40			
7.50			

Hammer Mass: 63.5 kg Cone Dia: 50.5mm

Drop Height: 750 mm Test by: Cook GI



General Remarks:

DPN_{100} = Dynamic penetration resistance for 100mm penetration.

DPN_{300} = Dynamic penetration resistance for 300mm penetration (ie: sum of 3 consecutive DPN_{100} values), starting at the depth given.

* Equivalent SPT N-values (for 300mm penetration) assumed to approximate the DPN_{300} values for dynamic probe "super-heavy" test (DPSH).

For dynamic probe "heavy" test (DPH), equivalent SPT N-values estimated using the theoretical relationship DPN_{300} = 1.5 SPT-N. [see Card,G.B., Roche,D.P. & Herbert,S.M., in Geol. Soc. Special Publication No 6, *Field Testing in Engineering Geology* (1990)]. SPT values are estimated and are for general guidance only.

SPT hammer energy ratio = 75.73%

Dynamic Probe Test Results Sheet

Site: **BERWICK FARM**

Job Number: **B3326**

Client: Mr. E. Cemery

Rig Type: Archway Dart

Date: 05-Jan-24

Test Type: DPSH

Final Depth: 3.80

Sheet 1 of 1

EARTH ENVIRONMENTAL & GEOTECHNICAL

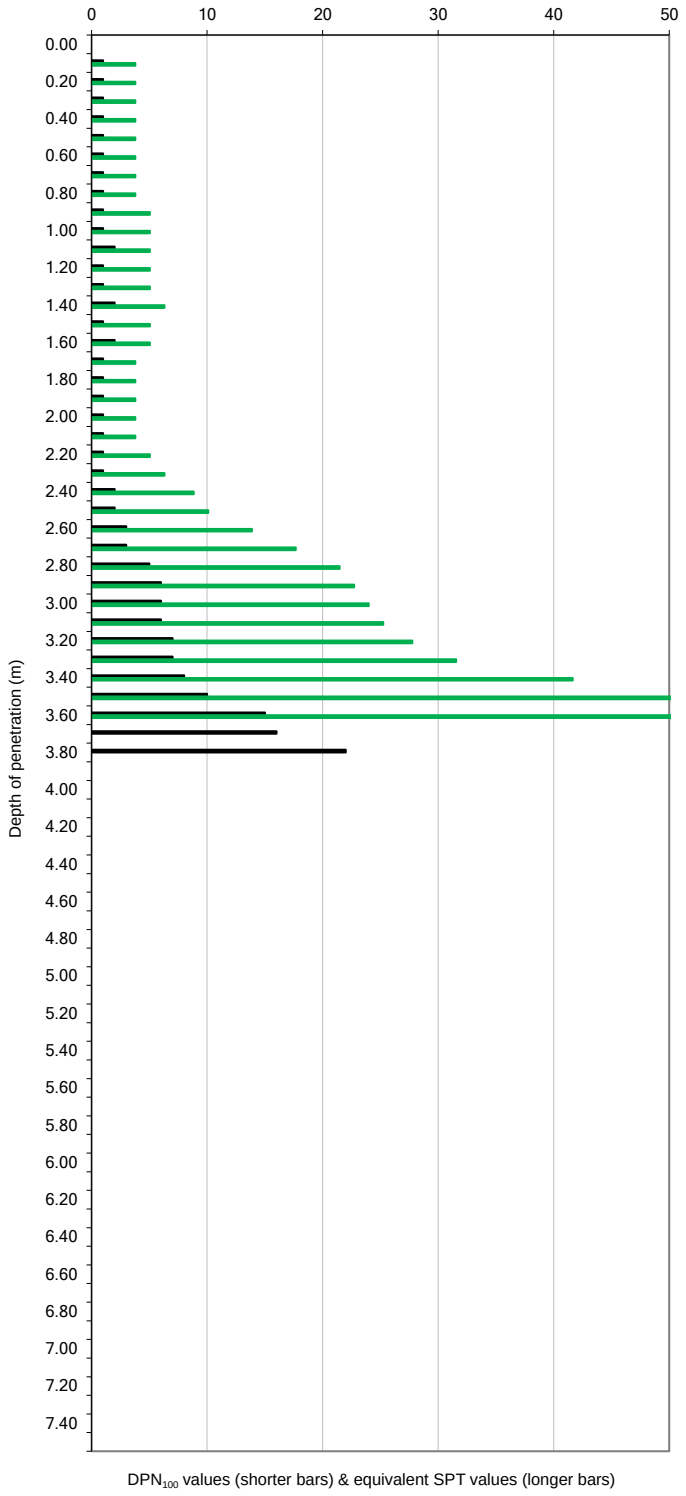
DP No: **WS03**

Penetration Test Results

Depth (m)	DPN_{100}	DPN_{300}	SPT N *
0.00			
0.10	1	3	4
0.20	1	3	4
0.30	1	3	4
0.40	1	3	4
0.50	1	3	4
0.60	1	3	4
0.70	1	3	4
0.80	1	3	4
0.90	1	4	5
1.00	1	4	5
1.10	2	4	5
1.20	1	4	5
1.30	1	4	5
1.40	2	5	6
1.50	1	4	5
1.60	2	4	5
1.70	1	3	4
1.80	1	3	4
1.90	1	3	4
2.00	1	3	4
2.10	1	3	4
2.20	1	4	5
2.30	1	5	6
2.40	2	7	9
2.50	2	8	10
2.60	3	11	14
2.70	3	14	18
2.80	5	17	21
2.90	6	18	23
3.00	6	19	24
3.10	6	20	25
3.20	7	22	28
3.30	7	25	32
3.40	8	33	42
3.50	10	41	52
3.60	15	53	67
3.70	16		
3.80	22		
3.90			
4.00			
4.10			
4.20			
4.30			
4.40			
4.50			
4.60			
4.70			
4.80			
4.90			
5.00			
5.10			
5.20			
5.30			
5.40			
5.50			
5.60			
5.70			
5.80			
5.90			
6.00			
6.10			
6.20			
6.30			
6.40			
6.50			
6.60			
6.70			
6.80			
6.90			
7.00			
7.10			
7.20			
7.30			
7.40			
7.50			

Hammer Mass: 63.5 kg Cone Dia: 50.5mm

Drop Height: 750 mm Test by: Cook GI



DPN_{100} values (shorter bars) & equivalent SPT values (longer bars)

General Remarks:

DPN_{100} = Dynamic penetration resistance for 100mm penetration.

DPN_{300} = Dynamic penetration resistance for 300mm penetration (ie: sum of 3 consecutive DPN_{100} values), starting at the depth given.

* Equivalent SPT N-values (for 300mm penetration) assumed to approximate the DPN_{300} values for dynamic probe "super-heavy" test (DPSH).

For dynamic probe "heavy" test (DPH), equivalent SPT N-values estimated using the theoretical relationship DPN_{300} = 1.5 SPT-N. [see Card,G.B., Roche,D.P. & Herbert,S.M., in Geol. Soc. Special Publication No 6, *Field Testing in Engineering Geology* (1990)]. SPT values are estimated and are for general guidance only.

SPT hammer energy ratio = 75.73%

Dynamic Probe Test Results Sheet

Site: **BERWICK FARM**

Job Number: **B3326**

Client: Mr. E. Cemery

Rig Type: Archway Dart

Date: 05-Jan-24

Test Type: DPSH

Final Depth: 5.00

Sheet 1 of 1

EARTH ENVIRONMENTAL & GEOTECHNICAL

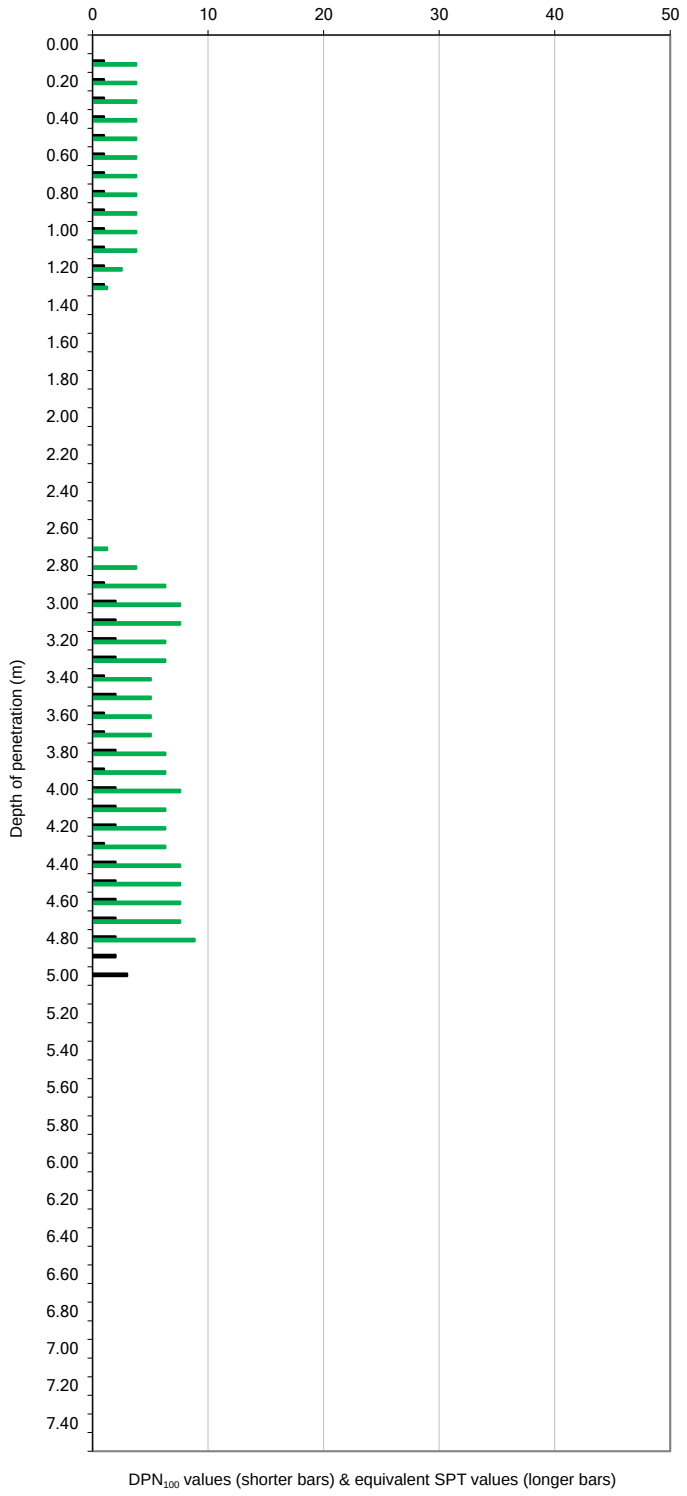
DP No: **WS04**

Penetration Test Results

Depth (m)	DPN_{100}	DPN_{300}	SPT N *
0.00			
0.10	1	3	4
0.20	1	3	4
0.30	1	3	4
0.40	1	3	4
0.50	1	3	4
0.60	1	3	4
0.70	1	3	4
0.80	1	3	4
0.90	1	3	4
1.00	1	3	4
1.10	1	3	4
1.20	1	2	3
1.30	1	1	1
1.40	0	0	0
1.50	0	0	0
1.60	0	0	0
1.70	0	0	0
1.80	0	0	0
1.90	0	0	0
2.00	0	0	0
2.10	0	0	0
2.20	0	0	0
2.30	0	0	0
2.40	0	0	0
2.50	0	0	0
2.60	0	0	0
2.70	0	1	1
2.80	0	3	4
2.90	1	5	6
3.00	2	6	8
3.10	2	6	8
3.20	2	5	6
3.30	2	5	6
3.40	1	4	5
3.50	2	4	5
3.60	1	4	5
3.70	1	4	5
3.80	2	5	6
3.90	1	5	6
4.00	2	6	8
4.10	2	5	6
4.20	2	5	6
4.30	1	5	6
4.40	2	6	8
4.50	2	6	8
4.60	2	6	8
4.70	2	6	8
4.80	2	7	9
4.90	2		
5.00	3		
5.10			
5.20			
5.30			
5.40			
5.50			
5.60			
5.70			
5.80			
5.90			
6.00			
6.10			
6.20			
6.30			
6.40			
6.50			
6.60			
6.70			
6.80			
6.90			
7.00			
7.10			
7.20			
7.30			
7.40			
7.50			

Hammer Mass: 63.5 kg Cone Dia: 50.5mm

Drop Height: 750 mm Test by: Cook GI



DPN_{100} values (shorter bars) & equivalent SPT values (longer bars)

General Remarks:

DPN_{100} = Dynamic penetration resistance for 100mm penetration.

DPN_{300} = Dynamic penetration resistance for 300mm penetration (ie: sum of 3 consecutive DPN_{100} values), starting at the depth given.

* Equivalent SPT N-values (for 300mm penetration) assumed to approximate the DPN_{300} values for dynamic probe "super-heavy" test (DPSH).

For dynamic probe "heavy" test (DPH), equivalent SPT N-values estimated using the theoretical relationship DPN_{300} = 1.5 SPT-N. [see Card,G.B., Roche,D.P. & Herbert,S.M., in Geol. Soc. Special Publication No 6, *Field Testing in Engineering Geology* (1990)]. SPT values are estimated and are for general guidance only.

SPT hammer energy ratio = 75.73%

APPENDIX 4

MONITORING RESULTS

Gas Monitoring Record

Project Number:	3326
Project Name:	Berwick Farm
Date:	04/01/2024
Logger	JL

Weather:	Wet, Rainy, Cold

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS01	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.79	4.05	
Flow Rate (l/hr)	-1.6	**CO2 (%)**	0	0.1	0.3	0.7	1	1	1.1	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	**Flow Rate (l/hr)**	-1.4			
Atmospheric Pressure (mbar)	997	**O2 (%)**	19.7	19.4	19.1	18.7	18.4	18.2	18	18	17.9	17.8	17.6	17.4	17.3	17.3	17.2	17.2	17.2	17	**Atmospheric Pressure (mbar)**	994			
Borehole Pressure (Pa)	-4	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	-3.9			
Time	14:56	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	15:03			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS04	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.91	4.54	
Flow Rate (l/hr)	-1.9	**CO2 (%)**	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	**Flow Rate (l/hr)**	-1.8			
Atmospheric Pressure (mbar)	989	**O2 (%)**	19.1	19.1	19.2	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.6	19.6	19.6	19.6	19.7	**Atmospheric Pressure (mbar)**	987			
Borehole Pressure (Pa)	-2	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	-1			
Time	15:10	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	15:17			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

Gas Monitoring Record

Project Number:	3326
Project Name:	Berwick Farm
Date:	11/01/2024
Logger	JL

Weather:	Cold, Dry, Cloudy

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS01	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.83	4.05	
Flow Rate (l/hr)	0	**CO2 (%)**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0			
Atmospheric Pressure (mbar)	1039	**O2 (%)**	19.1	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.2	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.1	**Atmospheric Pressure (mbar)**	1038			
Borehole Pressure (Pa)	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	-1			
Time	10:08	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	10:15			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS04	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.76	4.54	
Flow Rate (l/hr)	0.2	**CO2 (%)**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0			
Atmospheric Pressure (mbar)	1089	**O2 (%)**	19.4	19.5	19.5	19.5	19.5	19.5	19.5	19.5	19.4	19.5	19.5	19.5	19.4	19.5	19.4	19.5	19.5	19.6	**Atmospheric Pressure (mbar)**	1089			
Borehole Pressure (Pa)	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	0			
Time	10:29	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	10:56			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

Gas Monitoring Record

Project Number:	3326
Project Name:	Berwick Farm
Date:	18/01/2024
Logger	JL

Weather:	Sunny, Cold, Dry.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS01	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.86	4.04	
Flow Rate (l/hr)	0	**CO2 (%)**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0.2			
Atmospheric Pressure (mbar)	1006	**O2 (%)**	19.8	19.9	19.9	19.9	19.9	19.9	19.7	19.9	20	19.5	20	19.8	19.5	19.8	19.8	19.5	19.8	19.7	**Atmospheric Pressure (mbar)**	1010			
Borehole Pressure (Pa)	-1	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	1			
Time	14:21	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	14:28			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS04	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.6	4.51	
Flow Rate (l/hr)	0	**CO2 (%)**	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0.2			
Atmospheric Pressure (mbar)	1033	**O2 (%)**	19.9	20	20	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.8	**Atmospheric Pressure (mbar)**	1033			
Borehole Pressure (Pa)	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	0			
Time	14:37	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	14:44			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

Gas Monitoring Record

Project Number:	3326
Project Name:	Berwick Farm
Date:	25/01/2024
Logger	JL

Weather:	Cloudy, Mild, Wet.

*mbgl - Meters below Ground Level

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS01	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.87	4.08	
Flow Rate (l/hr)	0	**CO2 (%)**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0.2			
Atmospheric Pressure (mbar)	1032	**O2 (%)**	19.8	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	19.9	**Atmospheric Pressure (mbar)**	1021			
Borehole Pressure (Pa)	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	0			
Time	14:05	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	14:12			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

			Initial	10 secs	20 secs	30 secs	40 secs	50 secs	60 secs	70 secs	80 secs	90 secs	100 secs	110 secs	120 secs	130 secs	140 secs	150 secs	180 secs	300 secs	Steady State Flow Readings (taken after gas readings)		Groundwater Level (mbgl*)	Borehole Base (mbgl*)	Comments
Borehole ID	WS04	**CH4 (%)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0.49	4.49	
Flow Rate (l/hr)	0.1	**CO2 (%)**	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	**Flow Rate (l/hr)**	0.3			
Atmospheric Pressure (mbar)	1054	**O2 (%)**	20.1	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.2	20.1	20	20	20	20.1	20	20	20	20	**Atmospheric Pressure (mbar)**	1035			
Borehole Pressure (Pa)	0	**CO (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Borehole Pressure (Pa)**	2			
Time	14:19	**H2S (ppm)**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**Time**	14:26			
Peak VOC		**LEL (%)**	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	<	**Peak VOC**				

APPENDIX 5

LABORATORY TEST RESULTS

Christian Kielinger
Earth Environmental & Geotechnical (Southern Ltd)
Studio 3,
Tollbridge Studios
Toll Bridge Road
Bath
BA1 7DE

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-15524

Site Reference:	Berwick Farm
Project / Job Ref:	B3326
Order No:	B3326/CK/20122023
Sample Receipt Date:	20/12/2023
Sample Scheduled Date:	20/12/2023
Report Issue Number:	1
Reporting Date:	03/01/2024

Authorised by:

Steve Knight
Customer Support Manager

Dates of laboratory activities for each tested analyte are available upon request.

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Soil Analysis Certificate						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23	18/12/23	18/12/23
Earth Environmental & Geotechnical (Southern Ltd)	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Berwick Farm	**TP / BH No**	HP01	HP02	HP03	HP04	HP05
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: B3326/CK/20122023	**Depth (m)**	0.30 - 0.40	0.35 - 0.45	0.20 - 0.30	0.40 - 0.50	0.30 - 0.40
Reporting Date: 03/01/2024	**DETS Sample No**	691687	691688	691689	691690	691691

Determinand	Unit	RL	Accreditation				(n)	
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	7.4	7.4	7.0	7.3	7.5
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	1025	1212	809	449	729
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.10	0.12	0.08	0.04	0.07
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	18	12	15	< 10	< 10
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.02	0.01	0.02	< 0.01	< 0.01
Sulphide	mg/kg	< 5	NONE	5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	MCERTS	9.9	11.4	11.5	4.1	5.4
Arsenic (As)	mg/kg	< 2	MCERTS	17	21	12	9	8
Barium (Ba)	mg/kg	< 2.5	MCERTS	422	461	320	200	307
Beryllium (Be)	mg/kg	< 0.5	MCERTS	1.1	1.4	1.1	1	0.7
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	6	3.8	5.6	1	0.8
Chromium (Cr)	mg/kg	< 2	MCERTS	31	21	21	23	15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	98	74	69	44	38
Lead (Pb)	mg/kg	< 3	MCERTS	758	381	226	74	79
Mercury (Hg)	mg/kg	< 1	MCERTS	1.1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	29	27	24	25	16
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	MCERTS	32	34	28	30	21
Zinc (Zn)	mg/kg	< 3	MCERTS	681	540	524	230	166
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion

Subcontracted analysis (S)

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Soil Analysis Certificate						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23		
Earth Environmental & Geotechnical (Southern Ltd)	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Berwick Farm	**TP / BH No**	HP06	HP07	HP08		
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: B3326/CK/20122023	**Depth (m)**	0.10 - 0.20	0.05 - 0.15	0.05 - 0.15		
Reporting Date: 03/01/2024	**DETS Sample No**	691692	691693	691694		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.5	7.5	7.4		
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1		
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	1284	939	1460		
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.13	0.09	0.15		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	14	15	< 10		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.01	0.02	< 0.01		
Sulphide	mg/kg	< 5	NONE	5	< 5	15		
Organic Matter (SOM)	%	< 0.1	MCERTS	16	16.8	26.9		
Arsenic (As)	mg/kg	< 2	MCERTS	17	7	46		
Barium (Ba)	mg/kg	< 2.5	MCERTS	638	232	232		
Beryllium (Be)	mg/kg	< 0.5	MCERTS	0.5	0.6	1		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	2		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	9	2.9	13.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	10	10	18		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	60	49	169		
Lead (Pb)	mg/kg	< 3	MCERTS	362	143	685		
Mercury (Hg)	mg/kg	< 1	MCERTS	1.1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	11	10	23		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Vanadium (V)	mg/kg	< 1	MCERTS	13	12	17		
Zinc (Zn)	mg/kg	< 3	MCERTS	674	439	2760		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23	18/12/23	18/12/23
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Berwick Farm	**TP / BH No**	HP01	HP02	HP03	HP04	HP05
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: B3326/CK/20122023	**Depth (m)**	0.30 - 0.40	0.35 - 0.45	0.20 - 0.30	0.40 - 0.50	0.30 - 0.40
Reporting Date: 03/01/2024	**DETS Sample No**	691687	691688	691689	691690	691691

Determinand	Unit	RL	Accreditation				(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	0.17	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.59	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.63	0.17	0.18	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	MCERTS	0.58	0.14	0.16	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.21	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	0.33	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.27	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.25	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3	< 1.6	< 1.6	< 1.6	< 1.6

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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23		
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Berwick Farm	**TP / BH No**	HP06	HP07	HP08		
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: B3326/CK/20122023	**Depth (m)**	0.10 - 0.20	0.05 - 0.15	0.05 - 0.15		
Reporting Date: 03/01/2024	**DETS Sample No**	691692	691693	691694		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	0.13	0.24	0.90		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.40	0.73	2.20		
Pyrene	mg/kg	< 0.1	MCERTS	0.36	0.61	1.78		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.15	0.19	0.55		
Chrysene	mg/kg	< 0.1	MCERTS	0.26	0.35	0.90		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.29	0.37	0.96		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.12	0.37		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.22	0.28	0.73		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.17	0.19	0.55		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.14	0.17	0.46		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	2.1	3.3	9.4		

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Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23	18/12/23	18/12/23
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Berwick Farm	**TP / BH No**	HP01	HP02	HP03	HP04	HP05
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: B3326/CK/20122023	**Depth (m)**	0.30 - 0.40	0.35 - 0.45	0.20 - 0.30	0.40 - 0.50	0.30 - 0.40
Reporting Date: 03/01/2024	**DETS Sample No**	691687	691688	691689	691690	691691

Determinand	Unit	RL	Accreditation				(n)	
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	< 10	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21	< 21	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	4	< 3	< 3	< 3	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	23	< 10	< 10	< 10	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	27	< 21	< 21	< 21	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

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Soil Analysis Certificate - TPH CWG Banded							
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23		
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Berwick Farm	**TP / BH No**	HP06	HP07	HP08		
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: B3326/CK/20122023	**Depth (m)**	0.10 - 0.20	0.05 - 0.15	0.05 - 0.15		
Reporting Date: 03/01/2024	**DETS Sample No**	691692	691693	691694		

Determinand	Unit	RL	Accreditation					
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	**MCERTS**	< 3	< 3	< 3		
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	**MCERTS**	< 3	< 3	< 3		
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	**MCERTS**	< 10	< 10	< 10		
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21		
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01		
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05		
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2		
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	**MCERTS**	< 3	< 3	5		
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	**MCERTS**	< 10	< 10	< 10		
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	< 21	< 21		
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42		

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23	18/12/23	18/12/23
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Berwick Farm	**TP / BH No**	HP01	HP02	HP03	HP04	HP05
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: B3326/CK/20122023	**Depth (m)**	0.30 - 0.40	0.35 - 0.45	0.20 - 0.30	0.40 - 0.50	0.30 - 0.40
Reporting Date: 03/01/2024	**DETS Sample No**	691687	691688	691689	691690	691691

Determinand	Unit	RL	Accreditation				(n)	
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

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Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 23-15524	**Date Sampled**	18/12/23	18/12/23	18/12/23		
Earth Environmental & Geotechnical (Souther	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Berwick Farm	**TP / BH No**	HP06	HP07	HP08		
Project / Job Ref: B3326	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: B3326/CK/20122023	**Depth (m)**	0.10 - 0.20	0.05 - 0.15	0.05 - 0.15		
Reporting Date: 03/01/2024	**DETS Sample No**	691692	691693	691694		

Determinand	Unit	RL	Accreditation					
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2		
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5		

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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 23-15524	
Earth Environmental & Geotechnical (Southern Ltd)	
Site Reference: Berwick Farm	
Project / Job Ref: B3326	
Order No: B3326/CK/20122023	
Reporting Date: 03/01/2024	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
691687	HP01	None Supplied	0.30 - 0.40	23.5	Brown loamy sand with vegetation
691688	HP02	None Supplied	0.35 - 0.45	23.2	Brown loamy sand with vegetation
691689	HP03	None Supplied	0.20 - 0.30	23.9	Brown loamy sand with stones and vegetation
691690	HP04	None Supplied	0.40 - 0.50	22.6	Brown clay with vegetation
691691	HP05	None Supplied	0.30 - 0.40	16.4	Brown sandy clay with stones and vegetation
691692	HP06	None Supplied	0.10 - 0.20	13	Black loamy sand with stones
691693	HP07	None Supplied	0.05 - 0.15	11.5	Brown loamy sand with stones and vegetation
691694	HP08	None Supplied	0.05 - 0.15	30.3	Brown loamy sand with stones and vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 23-15524
Earth Environmental & Geotechnical (Southern Ltd)
Site Reference: Berwick Farm
Project / Job Ref: B3326
Order No: B3326/CK/20122023
Reporting Date: 03/01/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

List of HWOL Acronyms and Operators
DETS Report No: 23-15524
Earth Environmental & Geotechnical (Southern Ltd)
Site Reference: Berwick Farm
Project / Job Ref: B3326
Order No: B3326/CK/20122023
Reporting Date: 03/01/2024

Acronym	**Description**
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total

Det - Acronym
Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

APPENDIX 6

WASTE CLASSIFICATION REPORT

Waste Classification Report

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

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

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

E2QAD-C7NKX-JKH67

Job name

Berwick Farm

Description/Comments

Project

B3326

Site

Classified by

Name:
Simon Leat
Date:
26 Jan 2024 11:54 GMT
Telephone:
0161 975 6088

Company:
Earth Environmental & Geotechnical Ltd
Houldsworth Mill Business & Arts Centre
Houldsworth Street
Stockport
SK5 6DA

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

HazWasteOnline™ Certification: -

Course	Date
Hazardous Waste Classification	-

Purpose of classification

2 - Material Characterisation

Address of the waste

Berwick Lane, Hallen **Post Code** BS10 7RS

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Redevelopment of site by private developer

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

Groundworks

Description of the waste

Made Ground, natural clay

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	HP01	0.30 - 0.40	Non Hazardous		3
2	HP02	0.35 - 0.45	Non Hazardous		5
3	HP03	0.20 - 0.30	Non Hazardous		7
4	HP04	0.40 - 0.50	Non Hazardous		9
5	HP05	0.30 - 0.40	Non Hazardous		11
6	HP06	0.10 - 0.20	Non Hazardous		13
7	HP07	0.05 - 0.15	Non Hazardous		15
8	HP08	0.05 - 0.15	Hazardous	HP 14	17

Related documents

#	Name	Description
1	Example waste stream template for contaminated soils	waste stream template used to create this Job

Report

Created by: Simon Leat

Created date: 26 Jan 2024 11:54 GMT

Classification of sample: HP01

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

Sample details

Sample name:
HP01
Sample Depth:
0.30 - 0.40 m
Moisture content:
23.5%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 23.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	17.171	mg/kg	0.00172 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.335	mg/kg	0.000234 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		6	mg/kg	1.142	5.243	mg/kg	0.000524 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		31	mg/kg	1.462	34.661	mg/kg	0.00347 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2	mg/kg	2.27	<4.54	mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		98	mg/kg	1.126	84.408	mg/kg	0.00844 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	758	mg/kg	1.56	904.49	mg/kg	0.058 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.1	mg/kg	1.353	1.139	mg/kg	0.000114 %	✓	
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		29	mg/kg	2.976	66.028	mg/kg	0.0066 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2	mg/kg	2.554	<5.108	mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		681	mg/kg	2.469	1286.417	mg/kg	0.129 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
20		pH			PH		7.4	pH		7.4	pH	7.4 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		0.17	mg/kg		0.13	mg/kg	0.000013 %	✓	
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		0.59	mg/kg		0.451	mg/kg	0.0000451 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.63	mg/kg		0.482	mg/kg	0.0000482 %	✓	
28		pyrene		204-927-3	129-00-0		0.58	mg/kg		0.444	mg/kg	0.0000444 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.21	mg/kg		0.161	mg/kg	0.0000161 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.33	mg/kg		0.252	mg/kg	0.0000252 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.27	mg/kg		0.207	mg/kg	0.0000207 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.25	mg/kg		0.191	mg/kg	0.0000191 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
											Total:	0.214 %		

Key

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

Classification of sample: HP02

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

Sample details

Sample name:
HP02
Sample Depth:
0.35 - 0.45 m
Moisture content:
23.2%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 23.2% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		21	mg/kg	1.32	21.294	mg/kg	0.00213 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.4	mg/kg	2.775	2.984	mg/kg	0.000298 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		3.8	mg/kg	1.142	3.334	mg/kg	0.000333 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21	mg/kg	1.462	23.572	mg/kg	0.00236 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2	mg/kg	2.27	<4.54	mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		74	mg/kg	1.126	63.986	mg/kg	0.0064 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	381	mg/kg	1.56	456.414	mg/kg	0.0293 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		27	mg/kg	2.976	61.716	mg/kg	0.00617 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2	mg/kg	2.554	<5.108	mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		540	mg/kg	2.469	1024.067	mg/kg	0.102 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
20		pH			PH		7.4	pH		7.4	pH	7.4 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		0.17	mg/kg		0.131	mg/kg	0.0000131 %	✓	
28		pyrene		204-927-3	129-00-0		0.14	mg/kg		0.108	mg/kg	0.0000108 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
											Total:	0.156 %		

Key

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

Classification of sample: HP03

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

Sample details

Sample name:
HP03
Sample Depth:
0.20 - 0.30 m
Moisture content:
23.9%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 23.9% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		12	mg/kg	1.32	12.057	mg/kg	0.00121 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1.1	mg/kg	2.775	2.323	mg/kg	0.000232 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		5.6	mg/kg	1.142	4.868	mg/kg	0.000487 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		21	mg/kg	1.462	23.357	mg/kg	0.00234 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2	mg/kg	2.27	<4.54	mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		69	mg/kg	1.126	59.119	mg/kg	0.00591 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	226	mg/kg	1.56	268.266	mg/kg	0.0172 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		24	mg/kg	2.976	54.359	mg/kg	0.00544 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2	mg/kg	2.554	<5.108	mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		524	mg/kg	2.469	984.667	mg/kg	0.0985 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
20		pH			PH		7	pH		7	pH	7pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.18	mg/kg		0.137	mg/kg	0.0000137 %	✓	
28		pyrene		204-927-3	129-00-0		0.16	mg/kg		0.122	mg/kg	0.0000122 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
											Total:	0.137 %		

Key

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

Classification of sample: HP04

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

Sample details

Sample name:
HP04
Sample Depth:
0.40 - 0.50 m
Moisture content:
22.6%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 22.6% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		9 mg/kg	1.32	9.197 mg/kg	0.00092 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	2.148 mg/kg	0.000215 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		1 mg/kg	1.142	0.884 mg/kg	0.0000884 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		23 mg/kg	1.462	26.019 mg/kg	0.0026 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		44 mg/kg	1.126	38.343 mg/kg	0.00383 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	74 mg/kg	1.56	89.34 mg/kg	0.00573 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		25 mg/kg	2.976	57.591 mg/kg	0.00576 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		230 mg/kg	2.469	439.584 mg/kg	0.044 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
20		pH			PH		7.3	pH		7.3	pH	7.3 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
28		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
											Total:	0.0693 %		

Key

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

Classification of sample: HP05

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

Sample details

Sample name:
HP05
Sample Depth:
0.30 - 0.40 m
Moisture content:
16.4%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 16.4% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		8	mg/kg	1.32	8.83	mg/kg	0.000883 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.7	mg/kg	2.775	1.624	mg/kg	0.000162 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		0.8	mg/kg	1.142	0.764	mg/kg	0.0000764 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		15	mg/kg	1.462	18.328	mg/kg	0.00183 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2	mg/kg	2.27	<4.54	mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		38	mg/kg	1.126	35.767	mg/kg	0.00358 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	79	mg/kg	1.56	103.016	mg/kg	0.0066 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1	mg/kg	1.353	<1.353	mg/kg	<0.000135 %		<**LOD**
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		16	mg/kg	2.976	39.811	mg/kg	0.00398 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2	mg/kg	2.554	<5.108	mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		166	mg/kg	2.469	342.679	mg/kg	0.0343 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
20		pH			PH		7.5	pH		7.5	pH	7.5 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
28		pyrene		204-927-3	129-00-0		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
30		chrysene	601-048-00-0	205-923-4	218-01-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
34		indeno[123-cd]pyrene		205-893-2	193-39-5		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
											Total:	0.0576 %		

Key

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

Classification of sample: HP06

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

Sample details

Sample name:
HP06
Sample Depth:
0.10 - 0.20 m
Moisture content:
13%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		17	mg/kg	1.32	19.528	mg/kg	0.00195 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.5	mg/kg	2.775	1.207	mg/kg	0.000121 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1	mg/kg	3.22	<3.22	mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		9	mg/kg	1.142	8.944	mg/kg	0.000894 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10	mg/kg	1.462	12.716	mg/kg	0.00127 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2	mg/kg	2.27	<4.54	mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		60	mg/kg	1.126	58.771	mg/kg	0.00588 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	362	mg/kg	1.56	491.248	mg/kg	0.0315 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		1.1	mg/kg	1.353	1.295	mg/kg	0.00013 %	✓	
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		11	mg/kg	2.976	28.483	mg/kg	0.00285 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2	mg/kg	2.554	<5.108	mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		674	mg/kg	2.469	1447.946	mg/kg	0.145 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
20		pH			PH		7.5	pH		7.5	pH	7.5 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		0.13	mg/kg		0.113	mg/kg	0.0000113 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		0.4	mg/kg		0.348	mg/kg	0.0000348 %	✓	
28		pyrene		204-927-3	129-00-0		0.36	mg/kg		0.313	mg/kg	0.0000313 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.15	mg/kg		0.13	mg/kg	0.000013 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.26	mg/kg		0.226	mg/kg	0.0000226 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.29	mg/kg		0.252	mg/kg	0.0000252 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.22	mg/kg		0.191	mg/kg	0.0000191 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		0.17	mg/kg		0.148	mg/kg	0.0000148 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		0.14	mg/kg		0.122	mg/kg	0.0000122 %	✓	
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
											Total:	0.196 %		

Key

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

Classification of sample: HP07

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

Sample details

Sample name:
HP07
Sample Depth:
0.05 - 0.15 m
Moisture content:
11.5%
(wet weight correction)

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

Hazard properties

None identified

Determinands

Moisture content: 11.5% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		7 mg/kg	1.32	8.179 mg/kg	0.000818 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		0.6 mg/kg	2.775	1.474 mg/kg	0.000147 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		<1 mg/kg	3.22	<3.22 mg/kg	<0.000322 %		<**LOD**
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		2.9 mg/kg	1.142	2.932 mg/kg	0.000293 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		10 mg/kg	1.462	12.935 mg/kg	0.00129 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %		<**LOD**
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		49 mg/kg	1.126	48.824 mg/kg	0.00488 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	143 mg/kg	1.56	197.402 mg/kg	0.0127 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<**LOD**
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		10 mg/kg	2.976	26.34 mg/kg	0.00263 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %		<**LOD**
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		439 mg/kg	2.469	959.359 mg/kg	0.0959 %	✓	
13	TPH (C6 to C40) petroleum group			TPH		<42 mg/kg		<42 mg/kg	<0.0042 %		<**LOD**
14	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<**LOD**
15	benzene	601-020-00-8	200-753-7	71-43-2		<0.002 mg/kg		<0.002 mg/kg	<0.0000002 %		<**LOD**

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<**LOD**
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<**LOD**
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<**LOD**
20		pH			PH		7.5	pH		7.5	pH	7.5 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
25		phenanthrene		201-581-5	85-01-8		0.24	mg/kg		0.212	mg/kg	0.0000212 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
27		fluoranthene		205-912-4	206-44-0		0.73	mg/kg		0.646	mg/kg	0.0000646 %	✓	
28		pyrene		204-927-3	129-00-0		0.61	mg/kg		0.54	mg/kg	0.000054 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.19	mg/kg		0.168	mg/kg	0.0000168 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.35	mg/kg		0.31	mg/kg	0.000031 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.37	mg/kg		0.327	mg/kg	0.0000327 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.12	mg/kg		0.106	mg/kg	0.0000106 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.28	mg/kg		0.248	mg/kg	0.0000248 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		0.19	mg/kg		0.168	mg/kg	0.0000168 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<**LOD**
36		benzo[ghi]perylene		205-883-8	191-24-2		0.17	mg/kg		0.15	mg/kg	0.000015 %	✓	
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<**LOD**
											Total:	0.125 %		

Key

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

Classification of sample: HP08

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

Sample details

Sample name:
HP08
Sample Depth:
0.05 - 0.15 m
Moisture content:
30.3%
(wet weight correction)

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

Hazard properties

HP 14: Ecotoxic "waste which presents or may present immediate or delayed risks for one or more sectors of the environment"

Hazard Statements hit:

Aquatic Chronic 1; H410 "Very toxic to aquatic life with long lasting effects."

Because of determinand:

zinc sulphate: (compound conc.: 0.475%)

Determinands

Moisture content: 30.3% Wet Weight Moisture Correction applied (MC)

#	Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
1	arsenic { arsenic trioxide }	033-003-00-0	215-481-4	1327-53-3		46 mg/kg	1.32	42.332 mg/kg	0.00423 %	✓	
2	beryllium { beryllium oxide }	004-003-00-8	215-133-1	1304-56-9		1 mg/kg	2.775	1.934 mg/kg	0.000193 %	✓	
3	boron { diboron trioxide }	005-008-00-8	215-125-8	1303-86-2		2 mg/kg	3.22	4.489 mg/kg	0.000449 %	✓	
4	cadmium { cadmium oxide }	048-002-00-0	215-146-2	1306-19-0		13.2 mg/kg	1.142	10.51 mg/kg	0.00105 %	✓	
5	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }		215-160-9	1308-38-9		18 mg/kg	1.462	18.337 mg/kg	0.00183 %	✓	
6	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }	024-017-00-8				<2 mg/kg	2.27	<4.54 mg/kg	<0.000454 %		<LOD
7	copper { dicopper oxide; copper (I) oxide }	029-002-00-X	215-270-7	1317-39-1		169 mg/kg	1.126	132.622 mg/kg	0.0133 %	✓	
8	lead { lead chromate }	082-004-00-2	231-846-0	7758-97-6	1	685 mg/kg	1.56	744.726 mg/kg	0.0477 %	✓	
9	mercury { mercury dichloride }	080-010-00-X	231-299-8	7487-94-7		<1 mg/kg	1.353	<1.353 mg/kg	<0.000135 %		<LOD
10	nickel { nickel chromate }	028-035-00-7	238-766-5	14721-18-7		23 mg/kg	2.976	47.713 mg/kg	0.00477 %	✓	
11	selenium { nickel selenate }	028-031-00-5	239-125-2	15060-62-5		<2 mg/kg	2.554	<5.108 mg/kg	<0.000511 %		<LOD
12	zinc { zinc sulphate }	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]		2760 mg/kg	2.469	4750.235 mg/kg	0.475 %	✓	

#		Determinand	EU CLP index number	EC Number	CAS Number	CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
13		TPH (C6 to C40) petroleum group			TPH		<42	mg/kg		<42	mg/kg	<0.0042 %		<LOD
14		tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1	1634-04-4		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
15		benzene	601-020-00-8	200-753-7	71-43-2		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
16		toluene	601-021-00-3	203-625-9	108-88-3		<0.005	mg/kg		<0.005	mg/kg	<0.0000005 %		<LOD
17		ethylbenzene	601-023-00-4	202-849-4	100-41-4		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
18		xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]		<0.002	mg/kg		<0.002	mg/kg	<0.0000002 %		<LOD
19		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }	006-007-00-5				<1	mg/kg	1.884	<1.884	mg/kg	<0.000188 %		<LOD
20		pH			PH		7.4	pH		7.4	pH	7.4 pH		
21		naphthalene	601-052-00-2	202-049-5	91-20-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
22		acenaphthylene		205-917-1	208-96-8		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
23		acenaphthene		201-469-6	83-32-9		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
24		fluorene		201-695-5	86-73-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
25		phenanthrene		201-581-5	85-01-8		0.9	mg/kg		0.627	mg/kg	0.0000627 %	✓	
26		anthracene		204-371-1	120-12-7		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
27		fluoranthene		205-912-4	206-44-0		2.2	mg/kg		1.533	mg/kg	0.000153 %	✓	
28		pyrene		204-927-3	129-00-0		1.78	mg/kg		1.241	mg/kg	0.000124 %	✓	
29		benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3		0.55	mg/kg		0.383	mg/kg	0.0000383 %	✓	
30		chrysene	601-048-00-0	205-923-4	218-01-9		0.9	mg/kg		0.627	mg/kg	0.0000627 %	✓	
31		benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2		0.96	mg/kg		0.669	mg/kg	0.0000669 %	✓	
32		benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9		0.37	mg/kg		0.258	mg/kg	0.0000258 %	✓	
33		benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8		0.73	mg/kg		0.509	mg/kg	0.0000509 %	✓	
34		indeno[123-cd]pyrene		205-893-2	193-39-5		0.55	mg/kg		0.383	mg/kg	0.0000383 %	✓	
35		dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3		<0.1	mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
36		benzo[ghi]perylene		205-883-8	191-24-2		0.46	mg/kg		0.321	mg/kg	0.0000321 %	✓	
37		phenol	604-001-00-2	203-632-7	108-95-2		<2	mg/kg		<2	mg/kg	<0.0002 %		<LOD
											Total:	0.555 %		

Key

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

Appendix A: Classifier defined and non GB MCL determinands

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

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

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

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

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

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

- **salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex**

GB MCL index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Additional Hazard Statement(s): EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

- **pH** (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

beryllium {beryllium oxide}

Reasonable case CLP species based on hazard statements/molecular weight. Industrial sources include: most common (non alloy) form, used in ceramics (edit as required)

boron {diboron trioxide}

Reasonable case CLP species based on hazard statements/ molecular weight, physical form and low solubility. Industrial sources include: fluxing agent for glass/enamels; additive for fibre optics, borosilicate glass (edit as required)

cadmium {cadmium oxide}

Reasonable case CLP species based on hazard statements/molecular weight, very low solubility in water. Industrial sources include: electroplating baths, electrodes for storage batteries, catalysts, ceramic glazes, phosphors, pigments and nematocides. (edit as required) Worst case compounds in CLP: cadmium sulphate, chloride, fluoride & iodide not expected as either very soluble and/or compound's industrial usage not related to site history (edit as required)

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

Reasonable case species based on hazard statements/molecular weight. Industrial sources include: tanning, pigment in paint, inks and glass (edit as required)

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case species based on hazard statements/molecular weight (edit as required)

copper {dicopper oxide; copper (I) oxide}

Reasonable case CLP species based on hazard statements/molecular weight and insolubility in water. Industrial sources include: oxidised copper metal, brake pads, pigments, antifouling paints, fungicide. (edit as required) Worse case copper sulphate is very soluble and likely to have been leached away if ever present and/or not enough soluble sulphate detected. (edit as required)

lead {lead chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

mercury {mercury dichloride}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

nickel {nickel chromate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

selenium {nickel selenate}

Worst case CLP species based on hazard statements/molecular weight (edit as required)

zinc {zinc sulphate}

No staining, signs of contamination

cyanides {salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides, ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex}

Harmonised group entry used as most reasonable case as complex cyanides and those specified elsewhere in the annex are not likely to be present in this soil: [Note conversion factor based on a worst case compound: sodium cyanide] (edit as required)

Appendix C: Version

HazWasteOnline Classification Engine: WM3 1st Edition v1.2.GB - Oct 2021
HazWasteOnline Classification Engine Version: 2024.22.5926.10967 (22 Jan 2024)
HazWasteOnline Database: 2024.22.5926.10967 (22 Jan 2024)

This classification utilises the following guidance and legislation:
WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021
CLP Regulation - Regulation 1272/2008/EC of 16 December 2008
1st ATP - Regulation 790/2009/EC of 10 August 2009
2nd ATP - Regulation 286/2011/EC of 10 March 2011
3rd ATP - Regulation 618/2012/EU of 10 July 2012
4th ATP - Regulation 487/2013/EU of 8 May 2013
Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013
5th ATP - Regulation 944/2013/EU of 2 October 2013
6th ATP - Regulation 605/2014/EU of 5 June 2014
WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014
Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014
7th ATP - Regulation 2015/1221/EU of 24 July 2015
8th ATP - Regulation (EU) 2016/918 of 19 May 2016
9th ATP - Regulation (EU) 2016/1179 of 19 July 2016
10th ATP - Regulation (EU) 2017/776 of 4 May 2017
HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017
13th ATP - Regulation (EU) 2018/1480 of 4 October 2018
14th ATP - Regulation (EU) 2020/217 of 4 October 2019
15th ATP - Regulation (EU) 2020/1182 of 19 May 2020
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020
The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK: 2020 No. 1540 of 16th December 2020
GB MCL List - version 1.1 of 09 June 2021
GB MCL List v2.0 - version 2.0 of 20th October 2023

APPENDIX 7

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important factor in determining the scope and level of the services. Should the purpose for which the report is used, or the proposed use of the site change, this report will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2024 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth

Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.