



Phase I & II Geo-Environmental Assessment

1 Pirton Road

Hitchin
Hertfordshire
SG5 2BD

Prepared for:

Oak Developments (Bedfordshire) Ltd

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1 PIRTON ROAD, HITCHIN

NON-TECHNICAL CLIENT SUMMARY

This report presents the findings of a combined Phase I Desk Study and Phase II Intrusive Investigation undertaken to determine ground conditions, establish if there are any environmental risks associated with the site and its development and provide a geotechnical appraisal. Pertinent findings and conclusions may be summarised as follows:

- The site comprises a triangular shaped plot of land with a single detached dwelling to the west and soft landscaping to the east. Proposed development plans for the site involve the demolition of the existing dwelling and construction of nine new flats with associated communal garden areas.
- Geological mapping indicates chalk bedrock underlies the site, which is classified as a Principal Aquifer and is located within a Source Protection Zone for groundwater abstraction. As a result, the site is of moderate environmental sensitivity. The site has had a limited development history, only ever for residential purposes whilst the surrounding area is also mostly residential. As such, risks identified by the preliminary risk assessment were limited to the quality of potential made ground soils on site.
- Intrusive investigations involved the drilling of four window sample boreholes to a maximum depth of 2.0m below ground level (bgl) and one hand auger borehole. The ground conditions were generally found to comprise initial layers of topsoil and made ground overlying chalk bedrock, with sporadic thin layers of superficial clay between. No physical evidence of contamination was identified, nor was groundwater present in any location.
- Environmental laboratory testing has identified concentrations of lead and arsenic in shallow soils to exceed generic screening criteria protective of human health. On this basis, it is recommended that a clean topsoil cover system with a minimum thickness of 450mm should be implemented in all areas of soft landscaping and suitably verified.

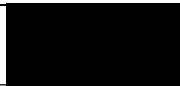
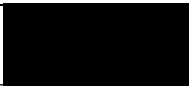
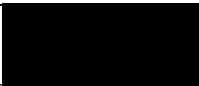
ENGINEERING SUMMARY

- The ground conditions are considered to be suitable for the use of spread foundations with an allowable bearing capacity of 150kN/m² considered suitable for the natural chalk soils beneath the site from approximately 0.75m below existing ground level.
- A Design Sulphate Class of DS1, with an aggressive chemical environment for concrete of AC-1 is considered suitable for shallow buried concrete.
- A design CBR value of 2% is considered appropriate at subgrade level.
- Falling head infiltration testing has identified infiltration rates of between 1.22x10⁻⁶ and 7.85x10⁻⁶ m/s.

The above points represent a simplified summary of the findings of this assessment and must not form the basis for key decisions for the proposed development. A thorough review of the details is contained within the following report, or alternatively get in touch and we'll talk you through it.



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Where ground investigations have been conducted, these have been limited to the level of detail required for the site in order to achieve the objectives of the investigation.

The report has been written, reviewed and authorised by the persons listed above. It has also undergone EPS' quality management inspection. Should you require any further assistance regarding the information provided within the report, please do not hesitate to contact us.

The National Planning Policy Framework requires a competent person to prepare site investigation information, which is defined as a person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation. EPS considers that it fulfils these criteria and would welcome any request for staff CVs or case studies to demonstrate it.

As stated within DEFRA's Contaminated Land Statutory Guidance, with any complex risk assessment it is possible that different suitably qualified people may reach slightly different conclusions when interpreting the same information. EPS recognises this and considers the conclusions presented within this report to be robust and appropriate but input from the Local Authority and their judgement in line with this guidance would still be welcomed.

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1 INTRODUCTION

In September 2024, Environmental Protection Strategies Ltd (EPS) was commissioned by Oak Developments to complete a Phase I and II Geo-Environmental Assessment Report at 1 Pirton Road, Hitchin, Hertfordshire, SG5 2BD ('the site'); see Figure 1.

The work was commissioned to help fulfil pre-planning requirements to demolish the existing dwelling and outbuildings and replace them with nine flats under North Hertfordshire Council planning reference 23/01446/FP. A copy of the proposed development plan is included as Appendix A.

This report presents the findings, conclusions, and recommendations of the Phase I Desk Study and subsequent Phase II Intrusive Investigation undertaken as instructed.

1.1 Objectives

The objectives of this investigation were as follows:

- a) Compile a Phase I Desk Study and Conceptual Site Model through a Preliminary Risk Assessment to evaluate the potential risks the site may pose to human and environmental receptors, both currently and in future.
- b) Investigate potential contaminant linkages identified in the CSM by means of investigating shallow soils.
- c) Determine the potential risks posed by the site and make recommendations for further work that may be required, to ensure safe development in accordance the Environment Agency's *Land Contamination: Risk Management* guidance (LC:RM) and the *National Planning Policy Framework*.
- d) Collect information on ground conditions and strength in order to make appropriate recommendations for geotechnical design.
- e) To provide preliminary information on the infiltration characteristics of the shallow soils.

1.2 Scope of Work

To perform an exploratory assessment of the site in accordance with the principles and requirements of DEFRA's *'Contaminated Land Statutory Guidance'* (2012), BS10175 – *'Investigation of Potentially Contaminated Sites'*, BS 5930:2015+A1:2020 *'Code of practice for ground investigations'* and BS EN 1997 *'Geotechnical Design'*, the following tasks were undertaken:

Desk Study:

- Collection of site records.
- Study of existing geological, hydrogeological and historic maps of the area.
- Consultation of environmental databases, including records held by the local authority (where available).
- Review of proposed development plans.

- Development of a Conceptual Site Model (CSM) through a Preliminary Risk Assessment.

Intrusive Investigation:

- Site walkover, inspection of any visual evidence of contamination at the site, obtaining photographic records.
- Health and safety briefing / site supervision.
- Drilling of four window sample boreholes to a maximum depth of 2.0m below ground level (bgl) using a track-mounted percussive rig, two of which were used to undertake falling head infiltration tests.
- Excavation of one hand excavated pit to a depth of 0.5m.
- Dynamic Cone Penetrometer (DCP) testing in six locations.
- Continual logging of ground conditions including inspection of samples for visual and olfactory contamination, and laboratory analysis of selected representative samples.

Reporting:

- Data collection
- Interpretation of data including completion of Generic Quantitative Risk Assessment

The findings and conclusions of these investigations are presented in the following sections.

1.3 Limitations and Constraints

The purpose of this report is to present the findings of a soil sampling investigation conducted at the location(s) specified. When examining the data collected from the investigations made during the assessment, Environmental Protection Strategies Ltd (EPS) makes the following statements:

No investigation method is capable of completely identifying all ground conditions that might be present in the soil or groundwater under a site. Where outlined in our report, we have examined the ground beneath a site by constructing a number of boreholes and to recover soil samples. The locations of these excavations and sampling points are considered representative of the condition of the whole site subsurface however, ground conditions are naturally variable and it may be possible that the conditions encountered may differ to those found during the investigation.

No visible evidence of Japanese Knotweed was identified during the site walkover. However, this plant can be difficult to identify in the early stages of growth and therefore it is not always possible to identify its' presence at certain times of the year. For this reason, EPS cannot confirm that Japanese Knotweed rhizomes do not exist and it is recommended that if it is suspected that this species, or other similarly invasive plants are present at the site, a specialist contractor should be commissioned to make a detailed assessment.

This report does not include specific investigation for the presence of Potential Asbestos Containing Material (PACM). Specialist contractors should be commissioned to make detailed assessments and recommendations if these materials are suspected.

The investigation was carried out to assess the significance of contamination resulting from the use of the site as identified in this report. Unless EPS has otherwise indicated, no assessment of potential impact of any other previous uses has been made.

2 SITE CHARACTERISATION

The following section provides a summary of the information collected in relation to the site location and history.

2.1 Site & Location Description

Detail	Description
Location	The site lies in western Hitchin, Hertfordshire at the junction of Pirton Road and the A505.
Grid Reference	517870, 228960
Topographic Elevation	Approximately 87-90m Above Ordnance Datum (AOD) and slopes gently up towards the west.
Description of Site	The site currently consists of a triangular shaped plot of land covering roughly 0.12ha. A single detached house is located towards the west, with a driveway leading from the north of the house onto Pirton Road and a garage is attached to the western wall of the dwelling. Immediately east of the house is an area of soft landscaping consisting of overgrown grass. A greenhouse was noted along the northern border of the site, which does not appear to be in use. Further east, the site consisted of more overgrown vegetation consisting of grass and shrubbery, whilst the site is bound in all directions by mature trees and bushes.
Surrounding Land Use	The site lies within Hitchin and is surrounded by residential dwellings in all directions.

A plan showing the site location is provided as Figure 1, the current site layout is detailed on Figure 2 and an aerial photograph is included as Figure 3. A proposed development plan is included as Appendix A, selected site photographs are included as Appendix B and relevant extracts of a Landmark Envirocheck report are included as Appendix C-F.

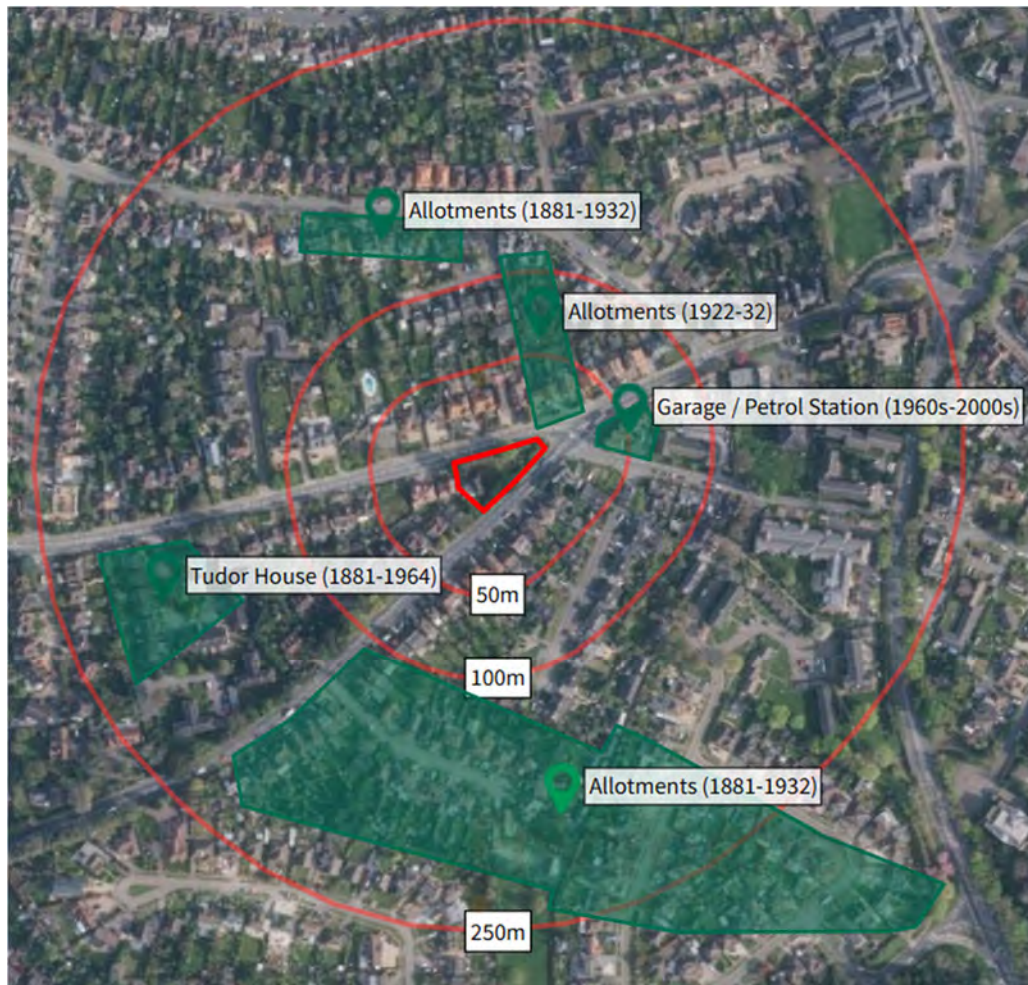
2.2 Geo-Environmental Setting

Detail	Description	
Geology	Geological mapping shows the site is directly underlain by Holywell Nodular Chalk Formation & New Pit Chalk Formation bedrock, without any overlying superficial deposits; although immediately bordering the western boundary of the site are Glaciofluvial superficial deposits consisting of sands and gravels. Information on the site’s geological context is included as Appendix D.	
Geological Hazards	Hazard	On Site Risk
	Mining (non-coal)	Rare
	Collapsible Ground	Very Low
	Compressible Ground	No Hazard
	Ground Dissolution	No Hazard
	Running Sand	No Hazard (Very Low 3m W)
	Landslide	No Hazard
	Shrinking / Swelling Clay	No Hazard
	There are six recorded mineral sites within 1km. The closest was located 524m northwest for the excavation of sand and gravel, however it has ceased operations.	
Radon	The Envirocheck indicates the site to lie in a location where the percentage of homes above the radon action level is between 1% and 3%. It further reports that the site will not require radon protection measures in the construction of new buildings.	
Hydrogeology	Groundwater vulnerability maps for the area show that the underlying bedrock geology is classified as a Principal Aquifer, and the site lies within a Zone 3 (Total Catchment) Source Protection Zone (SPZ) for local groundwater abstraction. Groundwater vulnerability maps are included as Appendix E. The Envirocheck report doesn’t list any groundwater abstractions within 1km.	
Hydrology & Flood Risk	The nearest surface water feature is a small unnamed drainage ditch located approximately 365m south.	
	The Envirocheck report does not list any discharge consents or surface water abstractions within a 500m radius.	
	Review of the EA Flood Zone Map for the area indicates that the site lies within Flood Zone 1, which is defined as the area with a low potential risk of flooding from fluvial or tidal sources. It should be noted that the EA maps do not take into account flooding from poor drainage or groundwater. A copy of the flood map for the site and surrounding area is also included within Appendix E.	

Detail	Description		
Landfill & Waste	There are no active or historic landfills located within 500m of the site, nor any recorded areas of infilled land.		
Industrial Land Use & Points of Interest	The Envirocheck report lists 33 industrial land uses/points of interest within 500m, the most pertinent of which are summarised below.		
	Land Use	Distance (Direction)	Status
	Tilehouse Service Station (Petrol Filling Stations)	59m (E)	Inactive
	Memco (Lift Manufacturers)	88m (E)	Inactive
	M S D A (Engineers-General)	75m (SW)	Active
	Tudor Processing (Printers)	167m (SW)	Inactive
	There are three fuel station entries within 500m of the site, the closest of which is Malthurst Tilehouse, which is 59m east, but has been noted as ‘obsolete’.		
Pollution Incidents	There have been seven pollution incidents within 500m. The closest incident occurred 300m east of the site when an accidental spillage of chemicals entered into a potential source of groundwater in 1993. The incident was noted as a category 3-minor incident. A Category 2- Significant Incident was noted 307m east from inert suspended solids entering a freshwater stream/river in 1998.		
Previous Investigation or Remediation	EPS are not aware of any previous ground investigations or remedial works undertaken at the site.		
Sensitive Land Use	The site lies within a Nitrate Vulnerable Zone where surface water and groundwater are identified as being at risk.		

2.3 Site History

A summary of historical map data from 1887 to 2023 is provided below. Key points are highlighted and copies of relevant historic maps and any others examined during the investigation are included in this report as Appendix F.



- Early historic mapping indicates the site to be within the grounds of 'Tudor House', which is noted approximately 170m southwest of the site boundary. Surrounding the site to the north were undeveloped agricultural fields and non-coniferous trees to the southwest and south. A rectangular plot of land was labelled as allotments from the early 1880s to 1932 approximately 220m north, and 100m south.
- The site remained unchanged until 1946, when an unnamed rectangular building was noted towards the northwestern boundary. From the mid-1960s, the original building appears to have been demolished and replaced with a larger house, presumably the same dwelling that remains on site today. Since the mid-1960s, the site appears to have remained unchanged. During this time, the land to the west of the site which appeared to also be part of the grounds of Tudor House was redeveloped into multiple detached houses.

- Allotments were recorded immediately adjacent to the northeastern corner of the site from the early 1920s to the 1930s, however this area of land was developed into housing from the mid-1960s. The wider surrounding area had been redeveloped for residential purposes by the 1960s, with the only notable feature comprising a garage around 60m east which is assumed to be the location of the former petrol station. The petrol station / garage seems to have been redeveloped into residential properties during the early 2000s.

3 PRELIMINARY RISK ASSESSMENT & CONCEPTUAL SITE MODEL

In accordance with the Environment Agency's Land Contamination: Risk Management, there are three stages to managing contaminated land (Risk Assessment, Remedial Options Appraisal / Remediation and Verification). This section outlines the first tier of Stage 1, the Preliminary Risk Assessment.

The following section provides a review of the contaminant linkages that may be active at the site, whereby EPS have examined the potential sources that may be present as a result of historic and / or current site activities and where potential interaction between these sources and the identified human / environmental receptors may occur.

3.1 Background

A Desk Study comprises the first stage of any geo-environmental assessment, the purpose of which is to determine what potentially contaminative activities may have occurred at the property or the surrounding area which may pose an environmental or geological risk to site users, the surrounding environment or proposed development, either at present or in the future.

The method used in this investigation to assess the environmental risk posed is based on the concept of 'contaminant linkage', which considers the following three factors:

Source	The location from which an environmentally hazardous / contaminative substance is, (or was,) derived.
Pathway	A route or mechanism via which a source could come into contact with a receptor to cause significant harm.
Receptor	An environmentally sensitive object or condition e.g. person, property, controlled water, or ecological system, which may be present now or in future.

If all three factors are identified, there is the potential for a 'contaminant linkage' to be active, which could result in significant harm being caused to the environment or human health.

3.2 Source Characterisation

The following potential contaminant sources have been identified at the site and in the surrounding area:

Potential Source	Source Description	Principal Contaminants of Concern
Current Site Use	In-fill material of unknown origin (Made Ground) used to level areas beneath the existing buildings / hardstanding.	PAH, Metals, ACM
Historic Surrounding Land Use	Former garage / petrol station 60m east.	TPH, BTEX, MTBE

Notes: PAH Polycyclic Aromatic Hydrocarbons ACM Asbestos Containing Material
 TPH Total Petroleum Hydrocarbons MTBE Methl Tert Butyl Ether
 BTEX Benzene, Toluene, Ethylbenzene, Xylenes

3.3 Potential Receptors

A framework for the assessment of risks arising from the presence of contamination in soils has been produced by the Environment Agency and the Department for the Environment, Food and Rural Affairs (DEFRA) and is presented with the report: '*Using Science to Create A Better Place: Updated Technical Background to the CLEA Model – Science Report SC050021/SR3*'. This guidance document defines a series of standard land-uses which have been further developed into six generic land uses in the Category 4 Screening Levels project for Land Affected by Contamination (DEFRA/Contaminated Land: Applications in Real Environments (CL:AIRE) Project Report SP1010, 2014) which form a basis for the development of the Conceptual Site Model.

Risks posed to controlled waters have been considered in line with the Environment Agency's *approach to groundwater protection* (v1.2, 2018) and associated position statements.

The proposed development plan includes the demolition of the existing building and construction of nine flats with communal garden areas. Therefore, the land use has been considered as:

- Residential (without homegrown produce)

In view of the environmental setting, current and potential future land use of the site and surrounding sites, the potential receptors for any contaminant impact are discussed in the table below:

Receptor	Site Specific Description
Human	Future site users, site workers involved in the site redevelopment, and those working and living in the surrounding area have the potential to be at risk from exposure to potential contaminants of concern (CoCs).
Groundwater	Geological mapping shows the site is directly underlain by Holywell Nodular Chalk Formation & New Pit Chalk Formation bedrock, without any overlying superficial deposits. The site also lies within Zone 3 of a SPZ for nearby groundwater abstraction. Therefore, the underlying geology is an important groundwater resource and should be considered as a potential receptor to site derived contaminants.
Surface Water	The nearest surface watercourse is a small unnamed drainage ditch located 365m south of the site. Given the distance of this feature from the boundary, this is not considered a potential receptor of site derived contaminants.
Flora and Fauna	The proposed development includes the provision communal garden areas. Some of the identified contaminants of concern are known to be phytotoxic and as such, the potential for this impact should be considered.
Buildings & Infrastructure	Subsurface structures are likely to be present at the site which may be adversely affected by the potential presence of the identified contaminants of concern. These include concrete used in building foundations, buried potable water supply pipes and other service lines and pipes.
Adjacent Land	Adjacent properties including private residential dwellings could also be at risk from potential contaminants found at the site.

3.4 Potential Pathways

Where contaminants may be present in soil, there are a number of potential pathways that enable human receptors to come into contact with or be exposed to them. The most direct pathways, considered under current UK legislation, can be summarised as follows:

- Direct ingestion of contaminated soil
- Ingestion of household dust
- Ingestion of contaminated vegetables
- Ingestion of soil attached to vegetables
- Dermal contact with contaminated soil
- Dermal contact with household dust
- Inhalation of fugitive soil dust
- Inhalation of fugitive household dust
- Inhalation of vapours outside
- Inhalation of vapours inside

Clearly, not all these potential pathways apply for every standard land-use. For example, ingestion of contaminated vegetables will not apply to land uses other than residential with plant uptake and allotments.

However, in addition to direct exposure pathways, a number of physical transport mechanisms / pathways may also exist at a site that allow remote or less accessible contaminants in soil or groundwater to reach human or environmental receptors both at a site and beyond the site boundary. These include the transport mechanisms listed below.

- Downward and lateral movement of contaminants in soil either by gravity or through being 'leached' by percolating rainwater
- Lateral migration of contaminants dissolved in groundwater.
- Direct seepage or leaching of contaminants from soil into subsurface drains or supply pipework.
- Volatilisation of contaminants from groundwater or unsaturated soils into buildings or outdoor air.

Through examination of the standard land use and environmental setting at each site, the presence of pathways and transport mechanisms described above must be considered when assessing whether a contaminant linkage may plausibly be active, and therefore be included in the conceptual site model.

3.5 Summary of Contaminant Linkages

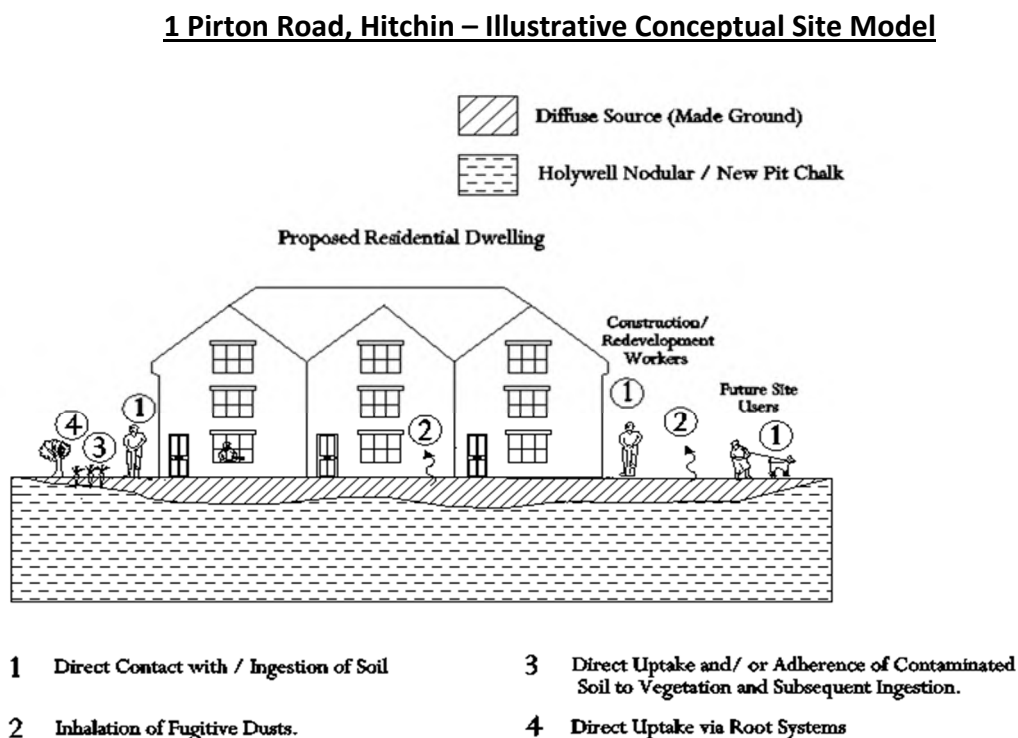
Considering the site use and environmental setting, and the proposed land use; the plausible contaminant linkages that require further investigation are summarised in the following table:

Source	Pathway	Receptor
Contaminated soil	Direct contact and inadvertent ingestion by eating or smoking with dirty hands	Construction workers during redevelopment & site users
	Inhalation of fugitive dusts	Site users
	Direct uptake and / or adherence of contaminated soil to vegetation and subsequent ingestion	Site users
	Direct uptake via root systems	Plants

The following comments are made with respect to contaminant linkages which have been considered through development of the conceptual model, but have not been concluded as 'plausible' – i.e. through which a significant possibility of significant harm could occur to an identified receptor:

- PAHs and metals have been identified as contaminants of concern associated with the historic on-site infill, however these contaminants are considered to be relatively immobile in the environment by virtue of their very low solubility and volatility. On this basis, plausible pathways by which these potential contaminants could pose a significant risk to the underlying groundwater are not considered to be active.
- Given the likely shallow nature of impacts to surface soils, no site derived contaminants of concern have been identified at the site which could pose a significant risk to the foundations of any on-site or adjacent buildings / infrastructure.
- Although a former garage / petrol filling station was located around 60m to the east, given the age since it was active, it is unlikely to pose an ongoing risk of contamination to the site via onsite migration of contaminants in groundwater. Moreover, the redevelopment of the site into residential properties is likely to have required remediation suitable to reduce risks to an acceptable level including removal of any below ground fuel infrastructure and grossly contaminated soils (if present).

The following diagram provides an illustration of the plausible contaminant linkages that may be active at the site and which may need further investigation or control to ensure safe development:



4 SUMMARY OF INTRUSIVE INVESTIGATIONS

Intrusive ground investigations were undertaken on the 26th September 2024 in accordance with EPS standard operating procedures, copies of which will be made available on request. A summary of all site activities is presented in the following sections:

4.1 Exploratory Hole Locations

Exploratory hole locations were selected through consideration of the findings of the conceptual model, the proposed development layout and the location of below ground utilities, as well as operational and health & safety considerations.

Four window sample boreholes (WS01 – WS04) were drilled to a maximum depth of 2.0m using a track-mounted percussive drilling rig, whilst one hand-dug pit (HA01) was excavated to 0.5m.

The overall objective in terms of exploratory hole locations was to provide an appropriate lateral and vertical coverage of the soils underlying the site to provide information relating to their quality and nature as well as provide information for geotechnical design.

A borehole location plan is presented as Figure 4.

4.2 In-Situ Testing & Soil Sampling

Each borehole was logged for ground conditions encountered and inspected for any physical evidence of contamination, such as soil staining, odour and the presence of separate phase liquids on a precautionary basis. Borehole logs are presented in Appendix G.

Standard or cone penetration tests (SPT / CPT) were carried out in all materials using an automatic trip hammer. The number of blows required to advance a standard split spoon, (or solid 60° nose cone for the CPT test) over the final 300mm of a 450mm total drive was recorded, and is shown on the borehole records at the penetration resistance (“N” value).

Dynamic Cone Penetrometer (DCP) tests were undertaken in six locations across the site in order to inform CBR values.

Falling Head Infiltration Testing was conducted in two locations to provide preliminary infiltration data.

4.3 Laboratory Testing

Samples obtained for analysis of identified contaminants of concern were submitted to Element Materials Technology, who hold appropriate UKAS / MCERT accreditation for the required testing. Samples were transported in laboratory supplied containers and delivered to the laboratory by approved courier.

Geotechnical testing was undertaken by Soil Property Testing, Huntingdon, a UKAS accredited laboratory. Copies of chain of custody documentation are held by EPS and will be made available on request.

A laboratory testing schedule is included as Table 1.

5 FINDINGS OF THE INVESTIGATION

This section of the report provides a summary of the findings of the various aspects of the ground investigation.

5.1 Ground Conditions

A total of four window sample boreholes and one hand pit were formed at the site and the ground conditions encountered, from surface level, were found to comprise:

- Topsoil/ Made Ground
- Superficial Deposits
- Holywell Nodular Chalk Formation & New Pit Chalk Formation

Site specific borehole logs are included as Appendix G and give descriptions and depths of strata encountered. A summary of the general strata encountered across the site is provided in the table below, with more detailed description given in the following sub sections.

Geological Strata	Maximum Depth to Base of Strata (m bgl)	Strata Thickness (m)
Topsoil/ Made Ground	1.0	>0.5-1.0
Superficial Deposits	1.0	0.2-0.4
Holywell Nodular Chalk Formation & New Pit Chalk Formation	>2.0	0.2->1.2

5.1.1 Topsoil/ Made Ground

A dark brown, slightly gravelly topsoil was noted in all locations apart from HA01 to maximum depth of 0.3m.

Made ground was recorded in all locations (underlying the topsoil in WS01-4 & HA01). This was recovered as a sandy gravelly clay containing fine to coarse angular brick and some rare roots.

5.1.2 Superficial Deposits (Clays, Sands & Gravels).

Superficial deposits were recorded in WS01 and WS02 underlying the made ground deposits. This was recovered as a sandy/gravelly clay.

5.1.3 Holywell Nodular Chalk Formation & New Pit Chalk Formation

A weak, white structureless chalk with occasional hard chalk fragments was recovered from below the made ground / superficial deposits in WS01-WS04 and extended to the base of the boreholes. This is interpreted to comprise the weathered top of the Holywell Nodular / New Pit Formation (Chalk).

5.2 Groundwater

Groundwater was not encountered during or upon completion of intrusive activities.

5.3 Physical Evidence of Contamination

Despite the presence of a limited thickness of made ground which contained fragments of common construction debris such as brick and concrete, there was no palpable evidence of contamination, waste or putrefiable material encountered in any of the sampling locations during the investigation including any visual or olfactory evidence of hydrocarbon staining.

5.4 Laboratory Analysis – Soil

A laboratory analysis testing schedule is presented as Table 1 and all environmental sample results obtained from the laboratory are included as Appendix H. The key results of laboratory testing on environmental soil samples are summarised below.

Contaminant	No. of Samples	No of Detections	Range of Detections (mg/kg)		Highest Location & Depth (m bgl)
			Min	Max	
Arsenic	6	6	6.7	41	HA01ES1 0.20-0.50
Cadmium	6	0	-		
Chromium	6	6	28.1	60.5	WS03ES1 0.40-0.70
Copper	6	6	8	2477	WS04ES1 0.30-0.60
Lead	6	6	13	1152	WS03ES1 0.40-0.70
Mercury	6	3	0.1	0.5	WS04ES1 0.30-0.60
Nickel	6	6	8	73.1	WS04ES1 0.30-0.60
Selenium	6	1	1		WS04ES1 0.30-0.60
Zinc	6	6	36	1826	WS04ES1 0.30-0.60
Naphthalene	6	0	-		
Benzo[a]pyrene	6	4	0.1	0.58	HA01ES1 0.20-0.50
Dibenz(ah)anthracene	6	4	0.07	0.09	HA01ES1 0.20-0.50
Phenols	6	0	-		
BTEX	2	0	-		
TPH CWG	2	0	-		
Asbestos (%)	6	0	-		

Notes:
 - Contaminant not found above laboratory detection limits
 BTEX Benzene, Toluene, Ethylbenzene, Xylenes
 TPH CWG Total Petroleum Hydrocarbons (Criteria Working Group)

5.5 Waste Classification

5.5.1 Preliminary Classification

Preliminary waste classification (i.e. hazardous or non-hazardous) was undertaken on samples of both made ground and natural soils, which included total concentrations of metals and hydrocarbons, using computer software provided by HazWaste Online™.

Waste Acceptance Criteria was subsequently undertaken on one sample of made ground and one sample of natural chalk.

Based on the initial results, the underlying natural soils should be considered as **Inert** for the purposes of off-site disposal, under waste code **17 05 04** whilst the made ground would be classified as **Hazardous** under the code **17 05 03** due to the presence of elevated concentrations of metals (copper and zinc) in one of the four samples collected (WS04ES1 0.3-0.6m).

5.5.2 Statistical Analysis

The failures of the hazardous threshold have been triggered by results in one sample of the made ground only and all other test results within this stratum fall fairly comfortably below the thresholds. WM3 outlines that the waste should be classified on the basis of the upper confidence interval of the mean of the sample population. WM3 states the following:

“The uncertainty of the mean is derived from the standard error (SE) of the mean calculated from the number of samples (n) and the standard deviation (s):

$$s/(\sqrt{n})$$

Therefore, to reduce the uncertainty, it is essential that the minimum number of samples (n) required to obtain a reliable estimate of the mean for a particular waste is determined prior to sampling.

The upper and lower confidence intervals for the mean are calculated from:

Sample Mean $\pm$ Margin of error (ME)

ME = SE x critical value of the t-distribution

The critical values of the t-distribution are determined using a one-tailed t-test using:

- (n-1) degrees of freedom
- probability = 0.95 / 0.05

This generates a 90% confidence interval (allowing for 5% above and 5% below the interval) around the sampling mean.

Where the upper 90% confidence interval is below the hazardous waste threshold, we can be 95% confident that further sampling would not generate a sampling mean at or above the threshold, and that μ also lies below the threshold.”

On this basis, for copper the mean of the data set is calculated as 516mg/kg with a margin of error of 721.34mg/kg. Therefore, the upper confidence interval of the dataset is 1,237.34mg/kg.

For zinc the mean of the data set is calculated as 466.4mg/kg with a margin of error of 500.32mg/kg. Therefore, the upper confidence interval of the dataset is 966.72mg/kg.

5.5.3 Final Waste Classification

On the basis of the above statistical analysis, the following table outlines the final waste classification for soils at the site. Within this, the upper confidence levels for copper and zinc have been used for each sample of the made ground.

Strata	Typical Depth (m bgl) and Description	Is it Hazardous? (number of hazardous samples)	Waste Acceptance Criteria	Appropriate Landfill
Made Ground	0.0-0.8- Sandy gravelly clay with fine to coarse angular brick	No	n/a	NON-HAZARDOUS
Holywell Nodular Chalk Formation & New Pit Chalk Formation	0.8-1.0 - White structureless chalk recovered as a silty gravel	No	Passed criteria for inert landfill	INERT

Therefore, the made ground at the site should be classified as **Non-Hazardous**, whilst the underlying natural deposits should be considered as **Inert** for the purposes of off-site disposal, under waste code **17 05 04**.

Although the soil sampling process did not identify potentially hazardous concentrations of Asbestos Containing Material (ACM) within the soil, it must be acknowledged that the material may exist within areas which were not sampled or accessible during the investigation. Any visually identifiable fragments of ACM can invalidate any non-hazardous waste classification, as such, the above waste classifications are made on the proviso that no visually identifiable fragments of ACM are present. Any ACM identified must be disposed of in accordance with the Control of Asbestos Regulations 2012.

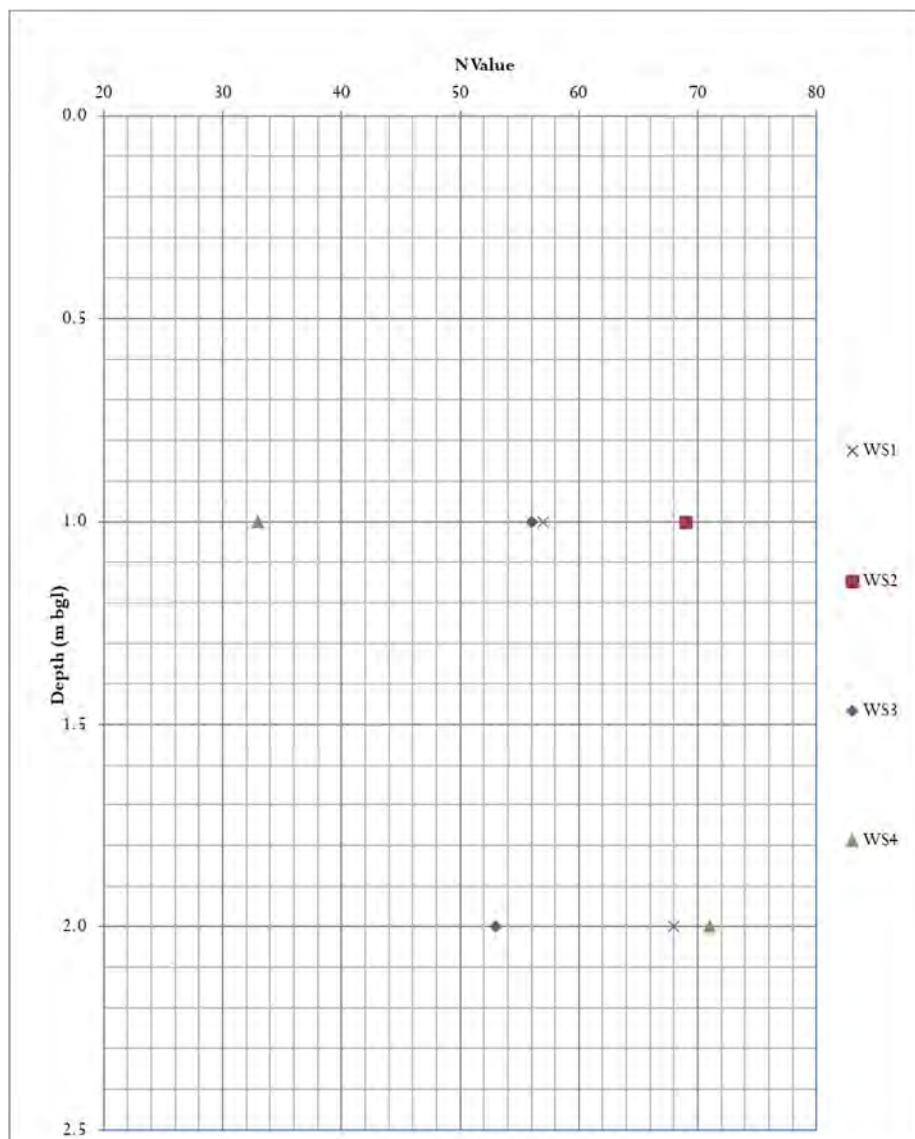
Input from the waste haulier should always be obtained to confirm the appropriate facility for disposal.

The results of the WAC analysis are included within Appendix H and the outputs from the software are included in a Waste Classification Report in Appendix I.

5.6 Geotechnical Testing

5.6.1 In-Situ Geotechnical Testing

Standard Penetration Testing (SPT) was undertaken at 1.0m intervals in WS01-4, within the natural soil, with the results shown on the below graph.



The results indicate that the natural soils were of consistently good strength (N values >30) within all locations formed across the site, with refusals at 2m in all locations.

5.6.2 Laboratory Geotechnical Testing

The results of geotechnical laboratory testing are summarised in the table below and all geotechnical sample results obtained from the laboratory are included as Appendix J. The key results of laboratory testing on geotechnical soil samples are summarised below.

Strata	Particle Size Distributions					
	Fines (%)		Sand (%)		Gravel (%)	
	Min	Max	Min	Max	Min	Max
Superficial Deposits	36		35		29	
Chalk	62	67	13	33	5	25

Particle size distribution was established for four samples of natural soils prepared according to BS1377: Part 2:1990, clause 9.2.

Sulphate contents and pH values determinations were carried out by the analytical laboratory, the results of which are included in Appendix H and summarised in section 6.7.

A laboratory analysis testing schedule is presented as Table 1.

6 GEOTECHNICAL APPRAISAL

The ground conditions have been found to comprise a limited thickness of topsoil or made ground overlying superficial gravelly/sandy clay in some locations. Beneath the superficial/made ground deposits lay weathered chalk bedrock.

6.1 Geotechnical Category

Geotechnical Category (BS EN 1997-1:2004)	Definition
GC1	Geotechnical Category 1 (GC1) should only include small and relatively simple structures for which it is possible to ensure that the fundamental requirements will be satisfied on the basis of experience and qualitative geotechnical investigations with negligible risk in terms of overall stability or ground movements and in ground conditions which are known.
GC2	Geotechnical Category 2 (GC2) should include conventional types of structure and foundation with no exceptional risk or difficult or loading conditions. Designs for structures in Geotechnical Category 2 should normally include quantitative geotechnical data and analysis.
GC3	Geotechnical Category 3 (GC3) should include structures or parts of structures, which fall outside the limits of Geotechnical Categories 1 and 2. This may include very large or unusual structures, structures involving abnormal risks, or unusual or exceptionally difficult ground or loading conditions, or structures in areas of probable site instability or persistent ground movements that require separate investigation or special measures.

The proposed development comprises the demolition of the existing dwelling, and the construction of nine new flats over three storeys. Therefore, the below assessment has been undertaken in accordance with Geotechnical Category 2 (GC2), including conventional types of structure and foundation with no exceptional risk or difficult ground or loading conditions, as defined by BS EN 1997-1:2004.

6.2 Structural Foundations

As detailed above, the development is understood to comprise the construction of nine apartments, with foundations being vertically loaded. The foundation assessment has been undertaken in accordance with BS EN 1997-1:2004 to take in to account;

- Bearing Pressure (Ultimate Limit State)
- Settlement (Serviceability Limit State)

The ground conditions are considered suitable for the use of conventional spread foundations, either strip footings or pad foundations bearing on the underlying natural chalk.

An allowable bearing capacity of 150kN/m^2 is considered suitable, bearing on the chalk soils. The allowable bearing capacity is the permissible increase in vertical stress at the level of the underside of the foundation, above existing overburden pressure, which may be calculated on the basis of a soil density of 19kN/m^3 .

At the above bearing capacity, total settlements in soils are unlikely to exceed approximately 10mm to 15mm.

A minimum foundation depth of 0.75m, below existing or proposed ground level is considered suitable for the site, subject to the following provisos: -

- a) Foundations must fully penetrate any made/disturbed ground and should extend a minimum of 150mm into undisturbed natural strata. It is acknowledged that a made ground has been encountered throughout the ground investigation works and this could become more common/ deeper at close proximity to and beneath the current buildings, which may result in increased foundation formation depth in areas which have been previously developed.

6.3 Ground Floor Construction

Given the nature of the proposed project (residential development), the use of suspended ground floor construction is suggested.

6.4 Groundworks

Whilst excavations in the natural clay and chalk may remain stable for short periods during construction the long-term stability of these and any excavations in made or disturbed ground should not be relied upon in unsupported excavations.

Heavy plant and stockpiles of materials should not be permitted close to the edges of unsupported excavations. Further reference may be made to CIRIA Report No. 97 '*Trenching Practice*' 1992.

On the basis of the findings of the ground investigation, significant quantities of groundwater are unlikely to be encountered within shallow excavations for foundations or drainage.

6.5 Pavement Design

Six dynamic cone penetrometer (DCP) tests were undertaken through the shallow profile in order to estimate CBR values for new areas of hardstanding.

The data is displayed graphically as part of Appendix K with DCP test locations highlighted on Figure 4. This testing returned variable CBR values between 0.8% and 12.1% within the shallow soils, although the vast majority of values fell between 1.5% and 6%.

On this basis, a design CBR value of 2% is considered appropriate for the subgrade (made ground and Superficial Deposits) below the site.

Once the formation level for the new pavement has been achieved, proof rolling should be carried out using a heavy roller, and any significant/ extensive soft areas revealed should be excavated and a greater depth of sub-base provided.

Exposed subgrades will likely deteriorate rapidly on exposure to wet weather and should be shaped to shed water. Sub-base should be placed as soon as possible to minimise the exposure of the subgrade to adverse weather conditions.

6.6 Drainage

Falling Head Infiltration tests were attempted within the shallow soils in WS01 and WS04 to provide preliminary infiltration data for the site. The results of the tests and the calculated infiltrations rates from these locations are given in the table below:

Test Location	Approximate Depth (m bgl)	Indicative Infiltration Rate (m/s)		
		Test 1	Test 2	Test 3
WS01	2.0	1.22×10^{-6}	6.08×10^{-6}	n/a
WS04	2.0	6.50×10^{-6}	7.85×10^{-6}	5.54×10^{-6}

n/a test not conducted

The results of the infiltration testing suggest the natural soils material may be suitable for the adoption of sustainable drainage features such as soakaways. However given the nature of the testing, these numbers should only be taken as indicative and it should be noted that in order to complete any design, full soakaway testing in accordance with BRE365 will be required.

6.7 Concrete Grade

Sulphate contents and pH values determinations were carried out for the by the analytical laboratory, the results of which are also included within Appendix H. Results for concrete grade are summarised within the following table:

Strata	Range of Parameters			
	Water-Soluble Sulphate (mg/l SO ₄)		pH	
	Min	Max	Min	Max
Made Ground	18.3	355.7	7.87	8.43
Superficial Deposits	19.9		8.39	
Chalk	10.7		8.88	

In accordance with Part 1 of the BRE Special Digest 1 '*Concrete in Aggressive Ground*' 2005, a Design Sulphate Class (DS) of DS-1 with an aggressive chemical environment for concrete (ACEC) of AC-1s is considered suitable for all soils below the site.

7 ENVIRONMENTAL APPRAISAL

The following section outlines the approach applied to assessing the risks posed to human health and controlled waters, then identifies any sample results found by this investigation which warrant further consideration. In accordance with the Environment Agency's Land Contamination: Risk Management, this section represents the second tier of Stage 1, the Generic Quantitative Risk Assessment.

7.1 Human Health

7.1.1 Land Use Setting

It is understood that development proposals for the site includes the demolition of the existing dwelling and the subsequent construction of an apartment building containing nine flats with communal garden areas. In order to screen laboratory data for concentrations of contaminants in soil with potential to cause harm to human health in these soft landscaped areas, relevant generic screening values most applicable to this land use have been utilised. A land use setting of Residential (with no home-grown produce) has been adopted as it is considered the most representative.

The technical framework used to derive DEFRA's Category 4 Screening Levels (Policy Companion Document '*SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*') outlines the relevant factors for determining land use selection in the application of the screening levels and the following key considerations have been taken into account.

7.1.2 Generic Screening – Soils

The technical framework used to derive the assessment criteria and the documents in which they are published are summarised as follows:

- *EA Science Reports* (SC050021/SR2, SC050021/SR3, and SC050021/SR7)
- *EA Soil Guideline Value Science Reports*
- *Suitable For Use Levels (S4ULs) for Human Health Risk Assessment* – LQM & CIEH (2015)
- *Soil Generic Assessment Criteria for Human Health Risk Assessment* - EIC/AGS/CL:AIRE (2010)

Category 4 Screening Levels (C4SLs) provide generic suitable for use screening values for common contaminants in a variety of land uses and are also utilised as appropriate generic screening criteria.

Where assessment of the risk to human health from asbestos in soil is concerned there is no nationally recognised suitable for use /generic screening value commonly referred to through the planning system. Due to this, it is necessary to take a more qualitative approach to the risks posed to future site users from asbestos on a site-specific basis.

The generic screening criteria are included as Appendix L.

7.1.3 Assessment of Results

The results of the screening process for on-site human receptors showed that generic screening criteria representative of risks to future site users were exceeded for the heavy metals Arsenic and Lead, details of which are provided in the table below.

Contaminant	Screening Criteria (mg/kg)	No. of Exceedances	Maximum Exceedance (mg/kg), Sampling Location & Depth
Lead	310	2	1152 (WS03ES1 0.4-0.7)
Arsenic	40	1	41 (WS05ES1 0.2-0.5)

The available made ground sample set of five is considered too small for comprehensive statistical analysis to be appropriate in accordance with the CL:AIRE guidance document '*Computing Soil Concentration Data with a Critical Concentration*' (2020), and there are inherent limitations in gathering data from a targeted sampling strategy with a relatively modest number of samples of varying depths, as opposed to a formal sampling pattern. As such, treating the widespread contaminated soil as a single diffuse source, with a single averaging area whereby the highest recorded contaminant concentration can be taken forwards for the design of remediation, is considered an appropriate approach.

Remedial control measures will therefore be required as part of the construction works to manage these risks sufficiently and make the site safe in the context of its proposed end use. Suitable measures are recommended in Section 7.2 of this report.

7.2 Recommendations

In the context of potentially unacceptable or acceptable risks as outlined within the Environment Agency's *Land Contamination: Risk Management* guidance, the risks identified by this work can be addressed through implementation of the following recommendations, which represents the Remedial Strategy for the site.

The most appropriate form of remedial action / control measure that will mitigate risks associated with the identified contamination in shallow soils to acceptable levels is considered to be the implementation of a clean topsoil cover system in all areas of proposed domestic gardens and soft landscaping within the redline planning boundary, as per the BRE publication: *Cover Systems for Land Regeneration: Thickness Design of Cover Systems for Contaminated Land* (BRE, Mar 2004). The minimum recommended thickness under this guidance has been calculated as **450mm** based on the worst-case laboratory data and designed to ensure a practical thickness can be implemented. Cover system calculations are included in Appendix M.

It should be noted that this recommendation is made only for areas of gardens and soft landscaping, and there is no such requirement for areas beneath any hard standing or building footprints. It is recognised that some shallow soils will need to be removed to achieve this cover thickness. Following the sufficient removal of shallow soils (to allow for the recommended cover system thickness), the excavations should then be made up with clean imported soils accompanied by appropriate laboratory analysis to demonstrate its chemical suitability for use. A Cover Soils Checklist which details these requirements further is presented as Appendix N.

These remedial works must be verified and EPS can assist in this process. All waste transfer documentation must be retained, with photographs of the excavations including any exposed clean natural soils and compiling the information outlined in the Cover Soils Checklist. If an established supplier such as British Sugar was used, then the soil is tested at source and no further analysis would typically be needed.

The following precautionary measures are also recommended to ensure safe development, as follows:

- a) All construction workers operating at the site should be advised of the potential for contact with made ground material within shallow soils, particularly beneath the existing buildings and hardstanding. Appropriate health and safety precautions should be adopted during any excavation works to avoid exposure to infilled soils. Reference should be made to relevant health & safety guidance including the following CIRIA document: *R132 Guide to Safe Working on Contaminated Sites*.

- b) Although the findings of the investigation would suggest that significant quantities of asbestos are unlikely to be encountered, the possibility of discrete pockets of this material existing within the made ground remains. If any evidence of visually identifiable ACM is suspected and is to be disturbed during the site development it is recommended that all works are postponed until suitable assessment and control measures (including a Safe Working Method (SWM)) are created. This SWM should be prepared in accordance with guidance from CIRIA as well as CL:AIRE and it will support the principal contractor in their duties under *The Construction (Design & Management) Regulations 2015* (CDM). EPS can assist with this SWM if required.
- c) Should any palpable evidence of unexpected contamination be encountered during the redevelopment work, it should be reported to EPS so that an inspection can be made and appropriate sampling and assessment work carried out, a method statement for this is provided as Appendix O.

It is recommended that a copy of this report be provided to the Environmental Health Department of North Hertfordshire District Council so that the information may be incorporated into their land quality records and used to support the current planning application. This report should satisfy the pre-commencement requirements of the planning process relating to contamination. A Verification Report will be required documenting the implementation of the remediation prior to completion.

FIGURES



Rev	Date	Drawn	Description	CHKD



The Geotechnical and Environmental Engineers
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Site
1 Pirton Road, Hitchin

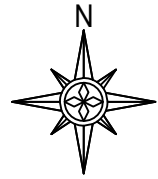
Client
Oak Developments

Title
Figure 1 - Site Location Plan

Surveyed by:	Drawn by:
Checked by: MJ	Date: 29/10/2024

Scale	Drawing Reference
Not to Scale	UK24.7112_001

Job No	Rev
UK24.7112	-



KEY:
— SITE BOUNDARY

Rev	Date	Drawn	Description	CW



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Site
1 Pirton Road, Hitchin

Client
Oak Developments

Title
Figure 2 - Current Site Layout

Surveyed by:	Drawn by:	BP
Checked by:	MJ	Date: 29/10/2024

Scale	(A4 Sheet)	Drawing Reference
Not to Scale		UK24.7112_002

Job No	Rev
UK24.7112	-



KEY:

— SITE BOUNDARY

Rev	Date	Drawn	Description	CHKD



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Site
1 Pilton Road, Hitchin

Client
Oak Developments

Title
Figure 3 - Aerial Photograph

Surveyed by:	Drawn by:	BP
Checked by:	MJ	Date: 29/10/2024

Scale	(At Sheet)	Drawing Reference
Not to Scale		UK24.7112_003

Job No	Rev
UK24.7112	-



- DCP's
- Hand Pit
- Window Sample
- Window Sample Borehole & Falling Head Test

Rev	Date	Drawn	Description	C2032	
 The Geotechnical and Environmental Engineers www.epstrategies.co.uk					
Site 1 Pirton Road, Hitchin					
Client Oak Developments					
Title Figure 4 - Exploratory Location Plan					
Surveyed by			Drawn by	BP	
Checked by	MJ		Date	29/10/2024	
Scale	(A4 Sheet)		Drawing Reference		
Not to Scale		UK24.7112_004			
Job No UK24.7112			Rev -		

TABLES

Table 1 – Laboratory Testing Schedule (Environmental)

Sample ID	Sample Depth (m bgl)	EPS Mini Suite	EPS Waste Suite
WS01ES1	0.3-0.6	-	x
WS02ES2	0.2-0.6	x	-
WS03ES1	0.4-0.7	x	-
WS04ES1	0.3-0.6	x	-
WS04ES2	1.3-1.5	-	x
WS05ES1	0.2-0.5	x	-

Notes:

mbgl

meters below ground level

1

Sample Taken

-

Sample Not Analysed

EPS Mini Suite

Organic Matter, Cyanide, Metals, PAH's, Phenols, Asbestos

EPS Waste Suite

Waste Characterisation Suite

Table 2 – Laboratory Testing Schedule (Geotechnical)

Sample ID	Sample Depth (m bgl)	Particle Size Distribution
WS01D1	1.2-1.5	X
WS03D1	1-1.3	X
WS03D2	1.7-2	X
WS04D1	0.8-1.0	X

Notes:

mbgl

meters below ground level

1

Sample Taken

-

Sample Not Analysed

APPENDICES

APPENDIX A

Proposed Development Plan



APPENDIX B

Selected Site Photographs

Photo 1: Area where WS04 was drilled, south of house.	Photo 2: Looking south
	
Photo 3: Area of concrete paving in the centre of the garden	Photo 4: view of the front of the house, looking west
	
Photo 5: Area where WS02 was drilled	Photo 6: Site access from Pirton Road.
	

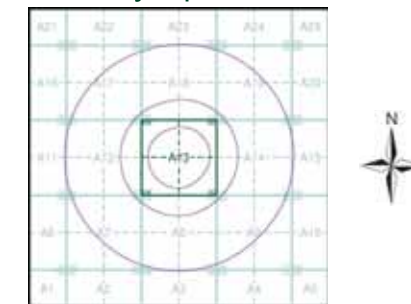
APPENDIX C

Surrounding Land Use



- General**
- Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition Notice
 - Integrated Pollution Control
 - Integrated Pollution Prevention Control
 - Local Authority Integrated Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control Enforcement
 - Pollution Incident to Controlled Waters
 - Provision Relating to Authorized Processes
 - Provision Relating to Controlled Waters
 - Registered Radioactive Substance
 - River Network or Water Feature
 - River Quality Sampling Point
 - Substantiated Pollution Incident Register
 - Water Abstraction
 - Water Industry Act Referral
- Hazardous Substances**
- COMAH Site
 - Explosive Site
 - HRHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
- Geological**
- BGS Recorded Mineral Site
- Waste**
- BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buried Peak)
 - EA Historic Landfill (Midge)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Receiver)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infiltrated Land (Non-water)
 - Potentially Infiltrated Land (Non-water)
 - Potentially Infiltrated Land (Water)
 - Potentially Infiltrated Land (Water)
 - Potentially Infiltrated Land (Water)
 - Registered Landfill Site
 - Registered Landfill Site (Location)
 - Registered Landfill Site (Peak Buried to 100m)
 - Registered Landfill Site (Peak Buried to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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



Industrial Land Use Map

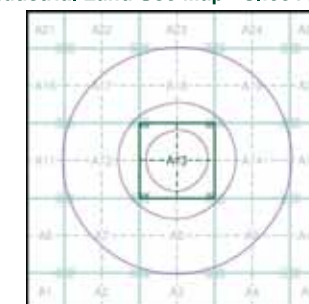
General

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

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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



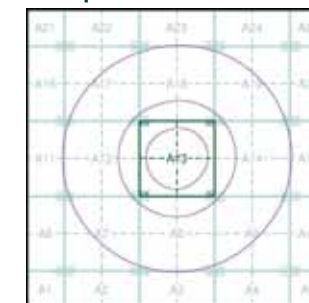
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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



General

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

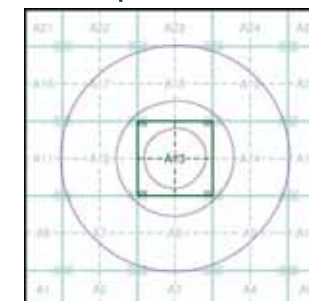
Agency and Hydrological (Boreholes)

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

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

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

Borehole Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
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General

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

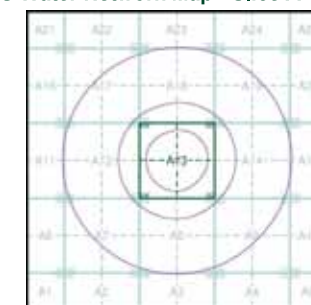
OS Water Network Data

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

Contours (height in meters)

- | | | |
|------------------|------|---------------------|
| Standard Contour | 1:50 | MLW Mean Low Water |
| Master Contour | 1:50 | MHW Mean High Water |
| Spot Height | 1:10 | |

OS Water Network Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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General

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

Risk of Flooding from Surface Water

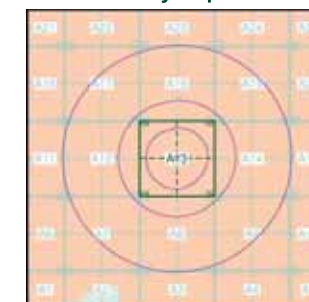
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

EA/NRW Suitability Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

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APPENDIX D

Geological Context

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	LOFT	Lowestoft Formation	Diamicton	Not Supplied - Anglian
	GFDMP	Glaciofluvial Deposits, Mid Pleistocene	Sand and Gravel	Not Supplied - Cromerian
	GLLMP	Glaciolacustrine Deposits, Mid Pleistocene	Clay and Silt	Not Supplied - Cromerian
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	PEAT	Peat	Peat	Not Supplied - Quaternary
	RTDU	River Terrace Deposits (Undifferentiated)	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	HNCK	Holywell Nodular Chalk Formation and New Pit Chalk Formation (Undifferentiated)	Chalk	Not Supplied - Cenomanian
	MR	Melbourn Rock Member	Chalk	Not Supplied - Cenomanian
	ZZCH	Zig Zag Chalk Formation	Chalk	Not Supplied - Cenomanian
	WMCH	West Melbury Marly Chalk Formation	Chalk	Not Supplied - Cenomanian
	TTST	Totternhoe Stone Member	Chalk	Not Supplied - Cenomanian
	GLT	Gault Formation	Mudstone	Not Supplied - Albian
		Faults		



Geology 1:50,000 Maps

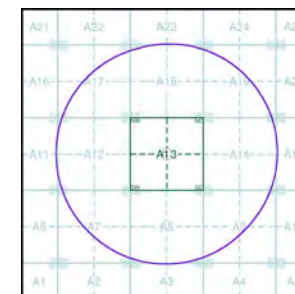
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	221
Map Name:	Hitchin
Map Date:	1995
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Available
Faults:	Not Supplied
Landslip:	Available
Rock Segments:	Not Supplied

Geology 1:50,000 Maps - Slice A



Order Details:

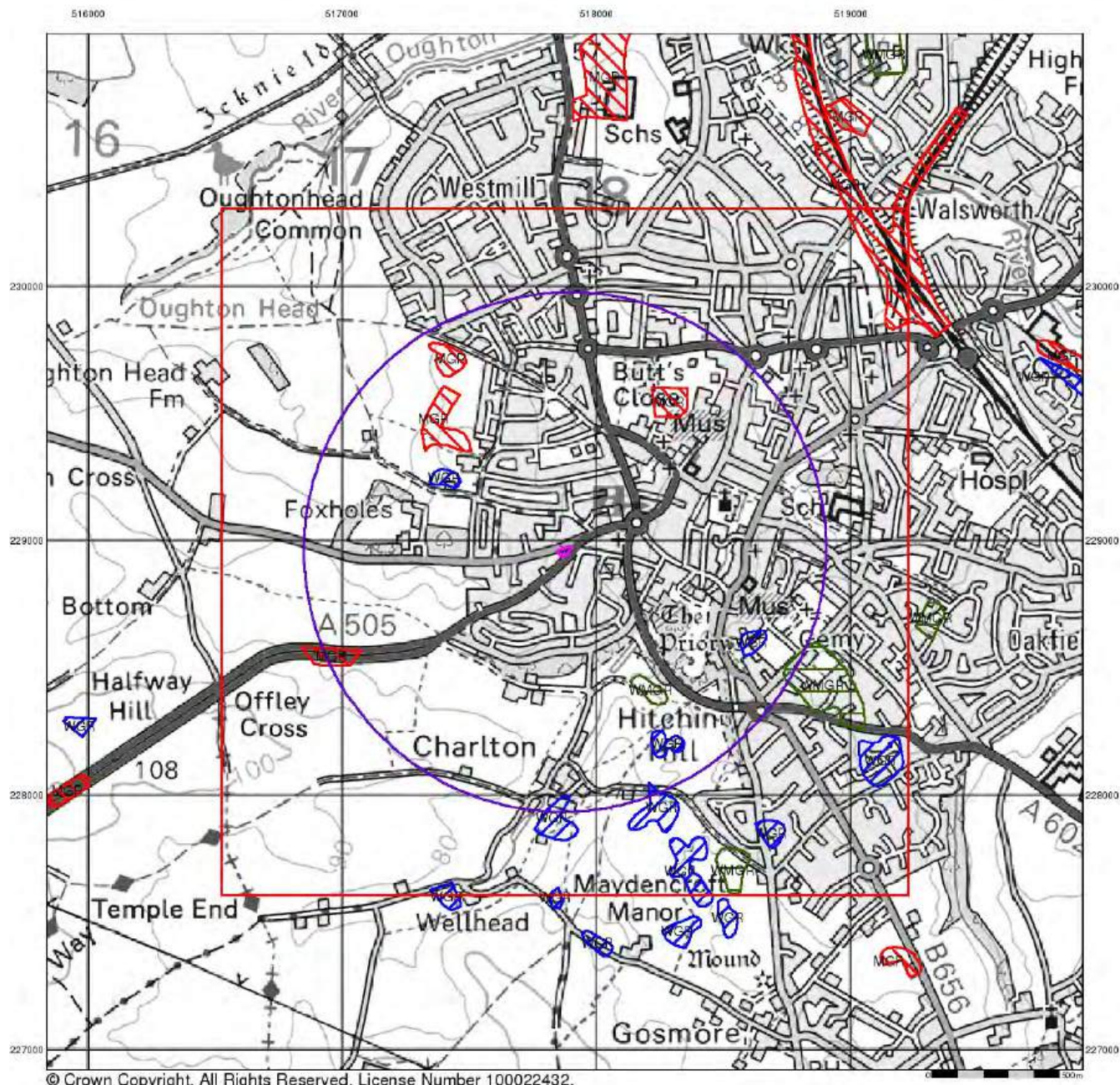
Order Number:	357249225_1_1
Customer Reference:	UK24.7112
National Grid Reference:	517870, 228960
Slice:	A
Site Area (Ha):	0.12
Search Buffer (m):	1000

Site Details:

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Artificial Ground and Landslip

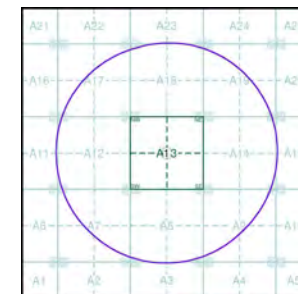
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details:

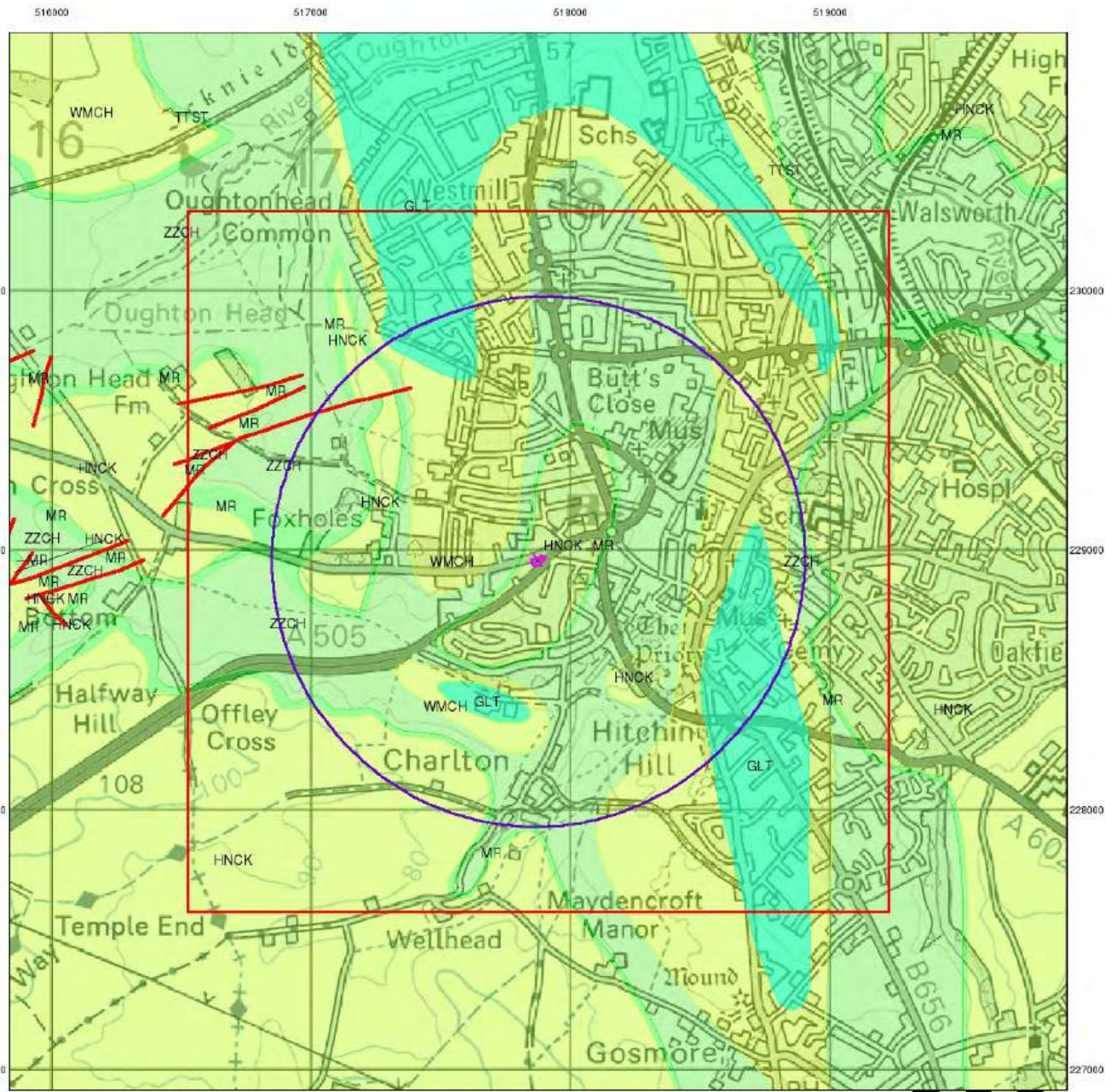
Order Number: 357249225_1_1
 Customer Reference: UK24.7112
 National Grid Reference: 517870, 228960
 Slice: A
 Site Area (Ha): 0.12
 Search Buffer (m): 1000

Site Details:

Site at 517890, 228970

Landmark
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Bedrock and Faults

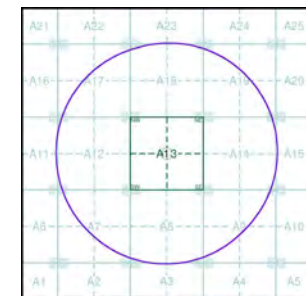
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



Order Details:

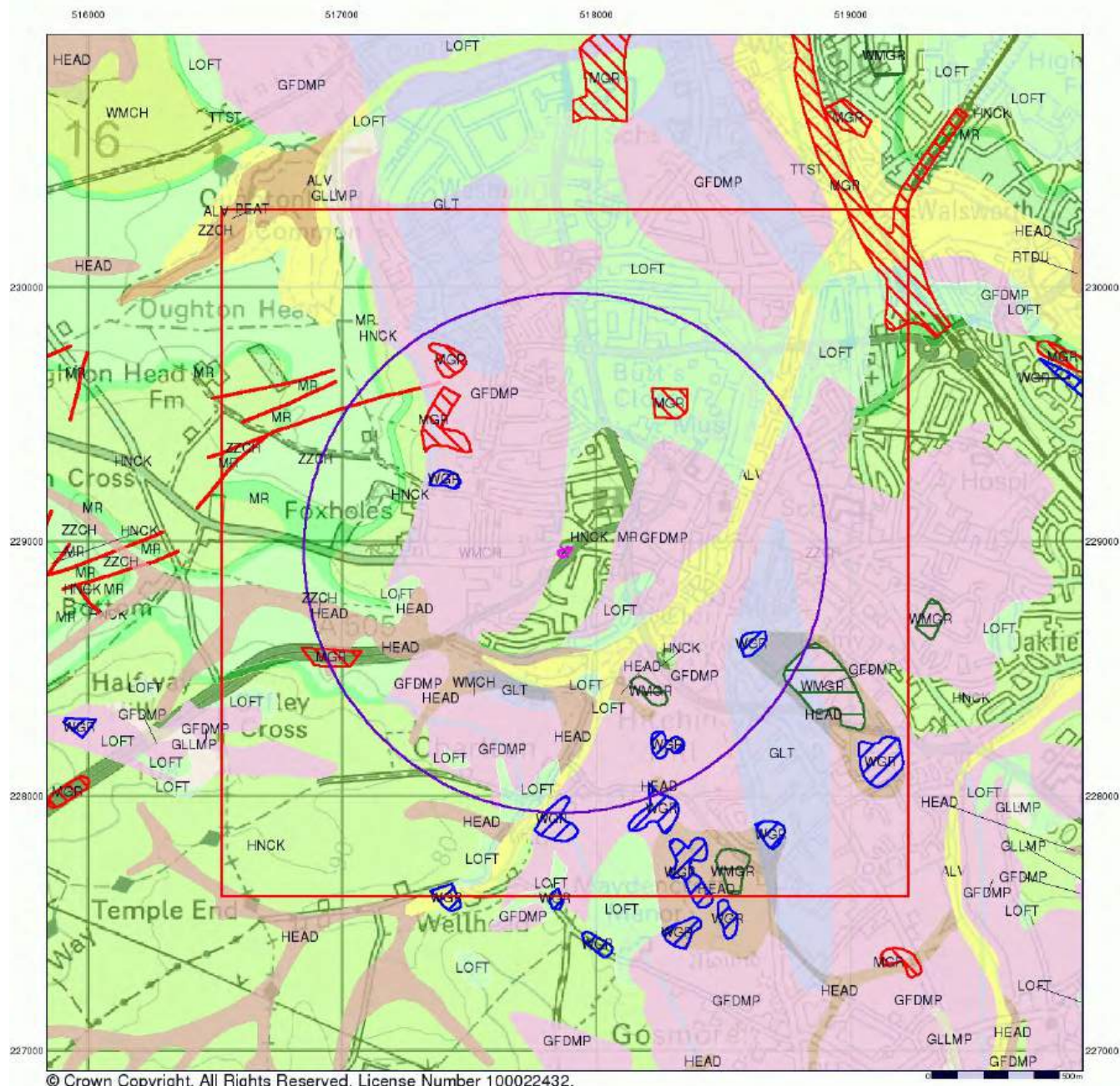
Order Number: 357249225_1_1
Customer Reference: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details:

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

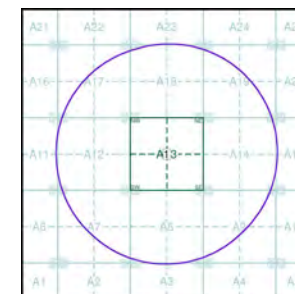
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number: 357249225_1_1
Customer Reference: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details:

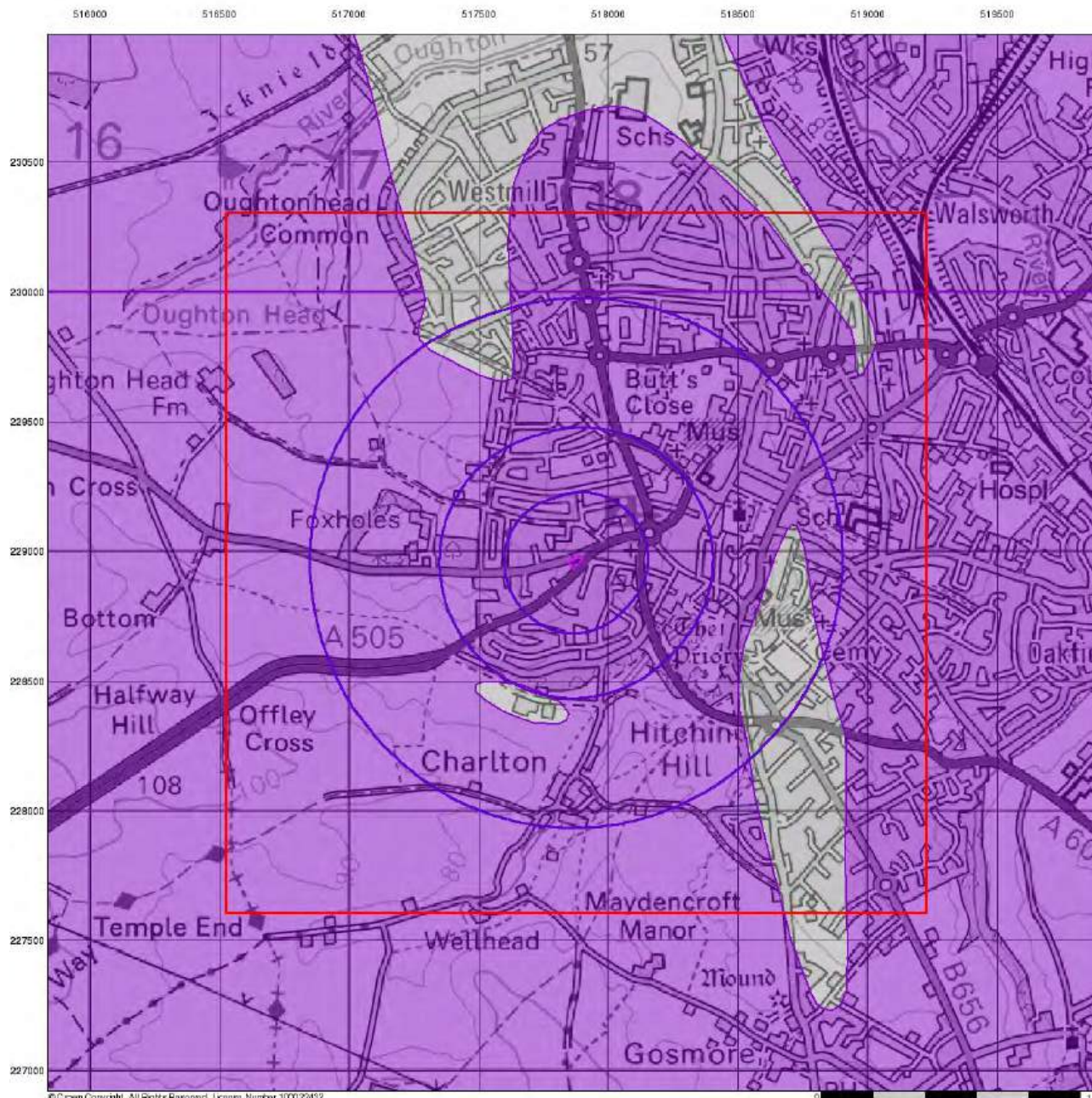
Site at 517890, 228970



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APPENDIX E

Groundwater Vulnerability and Flood Maps



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Bedrock Aquifer Designation

General

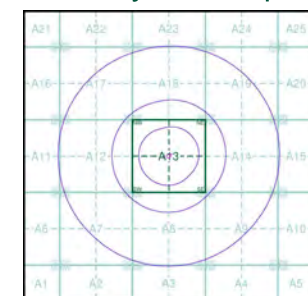
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

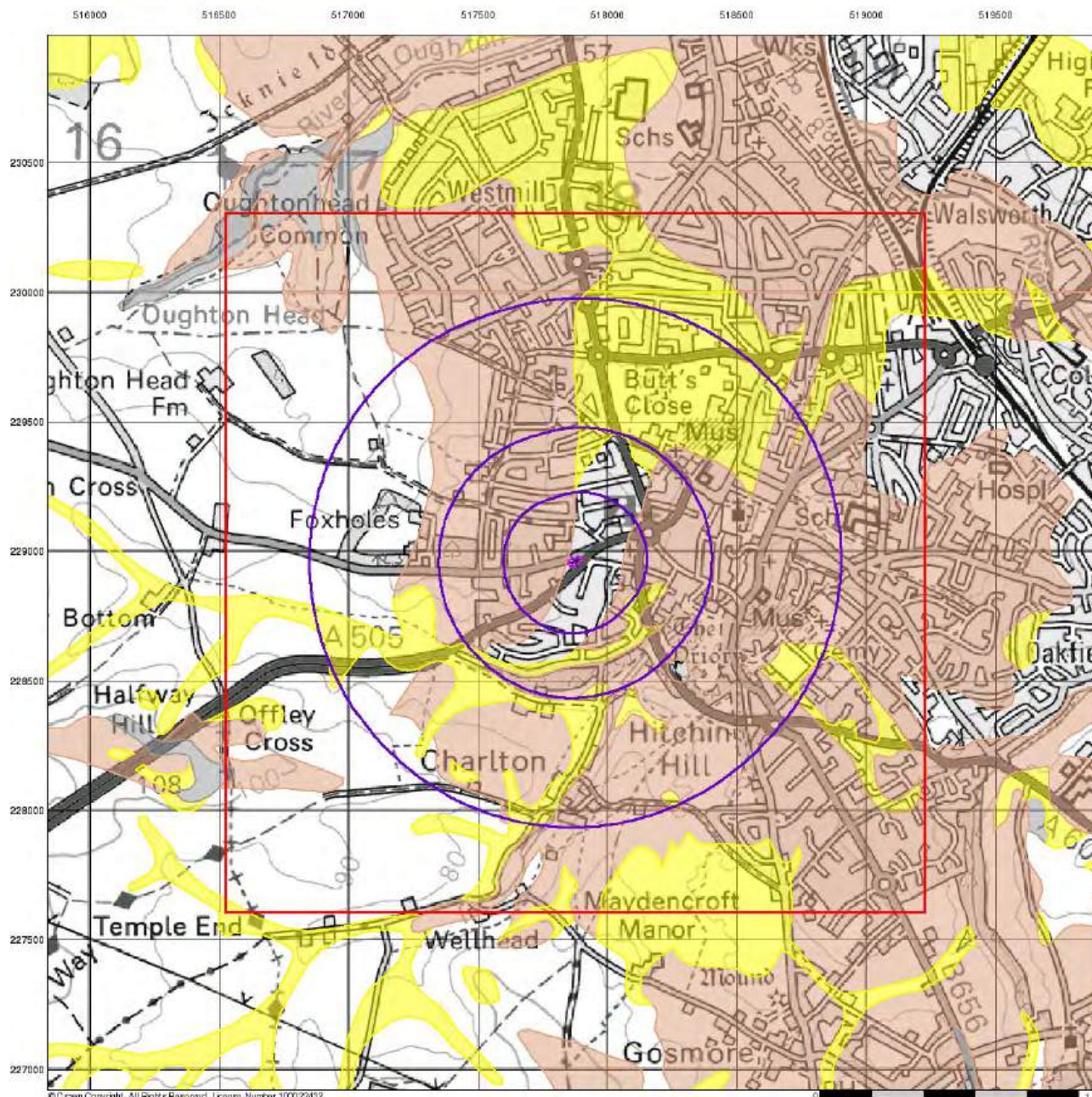
Order Number: 357249225_1_1
 Customer Ref: UK24.7112
 National Grid Reference: 517870, 228960
 Slice: A
 Site Area (Ha): 0.12
 Search Buffer (m): 1000

Site Details

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Superficial Aquifer Designation

General

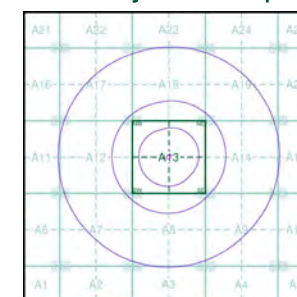
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

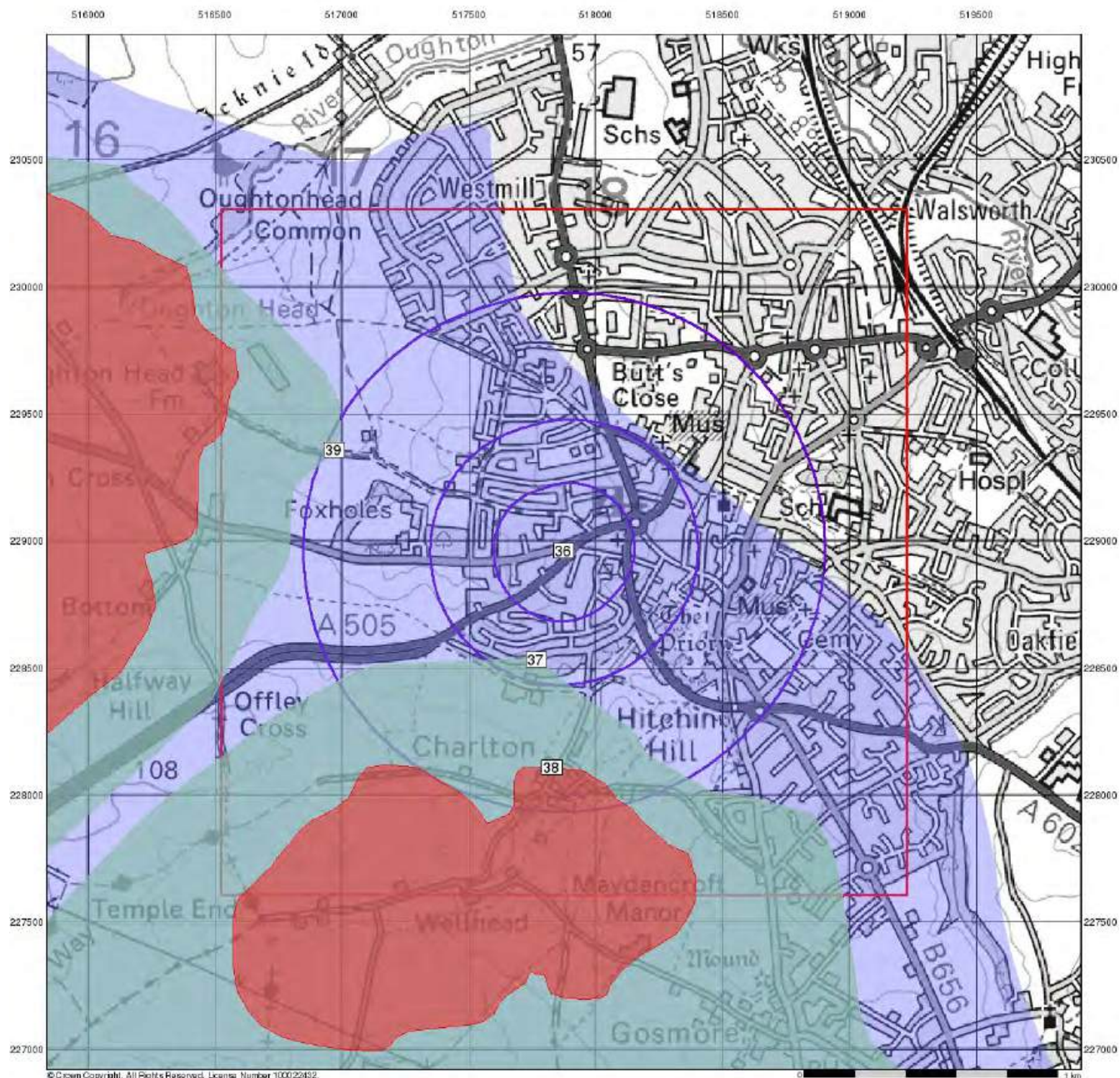
Order Number: 357249225_1_1
 Customer Ref: UK24.7112
 National Grid Reference: 517870, 228960
 Slice: A
 Site Area (Ha): 0.12
 Search Buffer (m): 1000

Site Details

Site at 517890, 228970



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Source Protection Zones

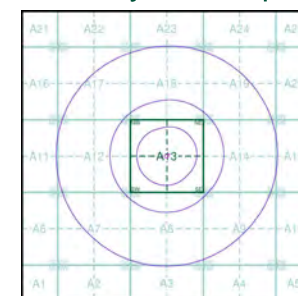
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



Order Details

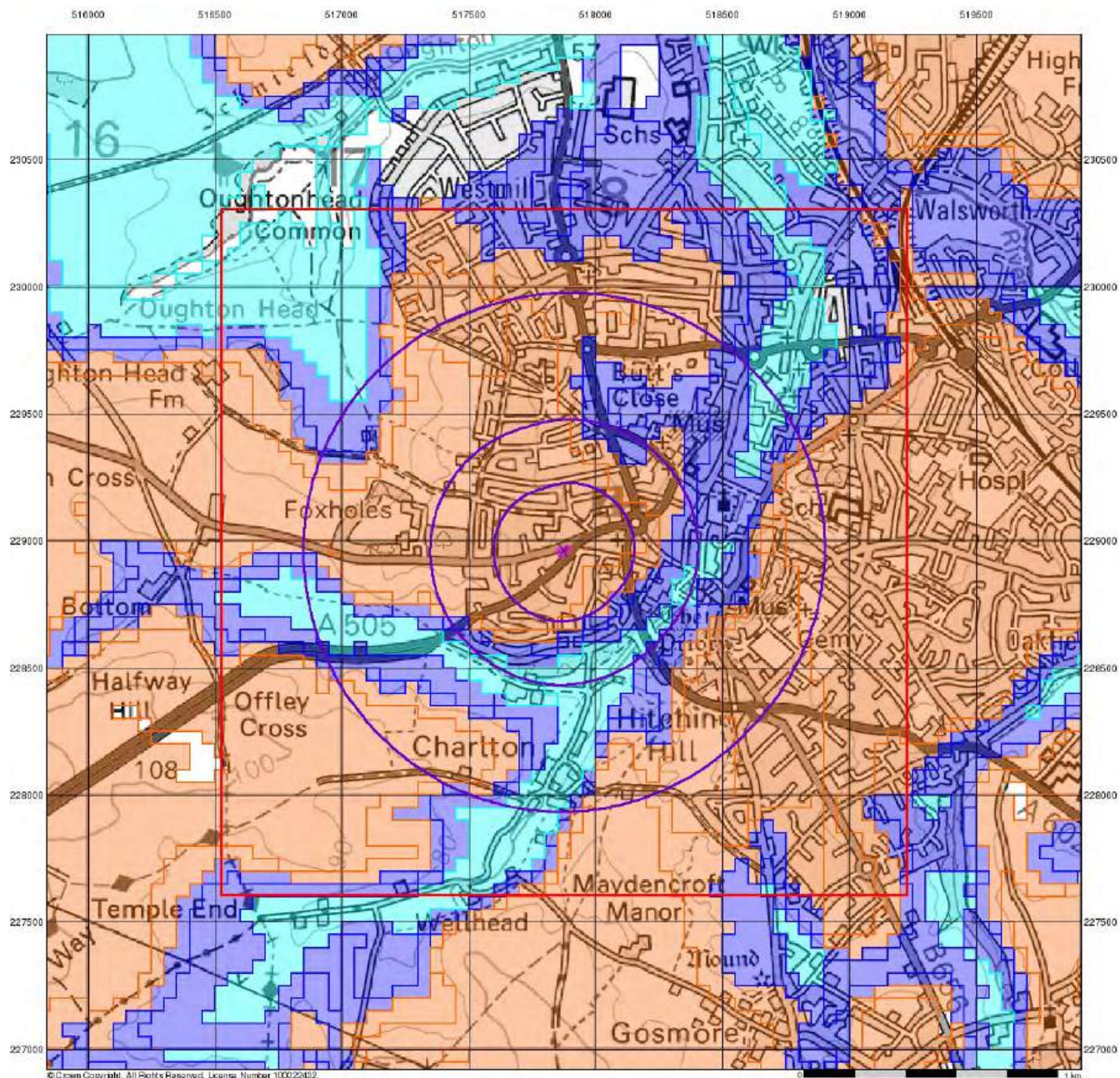
Order Number: 357249225_1_1
 Customer Ref: UK24.7112
 National Grid Reference: 517870, 228960
 Slice: A
 Site Area (Ha): 0.12
 Search Buffer (m): 1000

Site Details

Site at 517890, 228970



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BGS Flood GFS Data

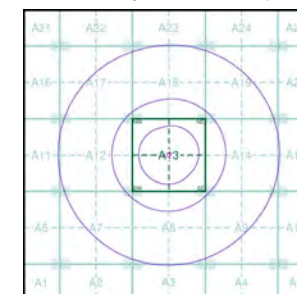
General

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

Agency and Hydrological (Flood)

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 357249225_1_1
 Customer Ref: UK24.7112
 National Grid Reference: 517870, 228960
 Slice: A
 Site Area (Ha): 0.12
 Search Buffer (m): 1000

Site Details

Site at 517890, 228970



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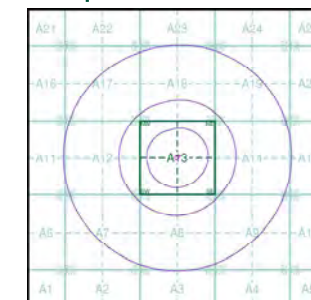
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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APPENDIX F

A Selection of Historic Maps



Hertfordshire

Published 1881

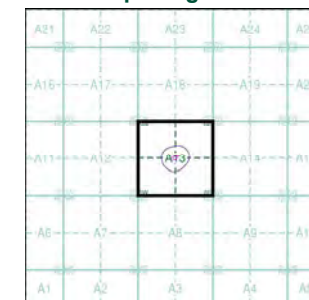
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

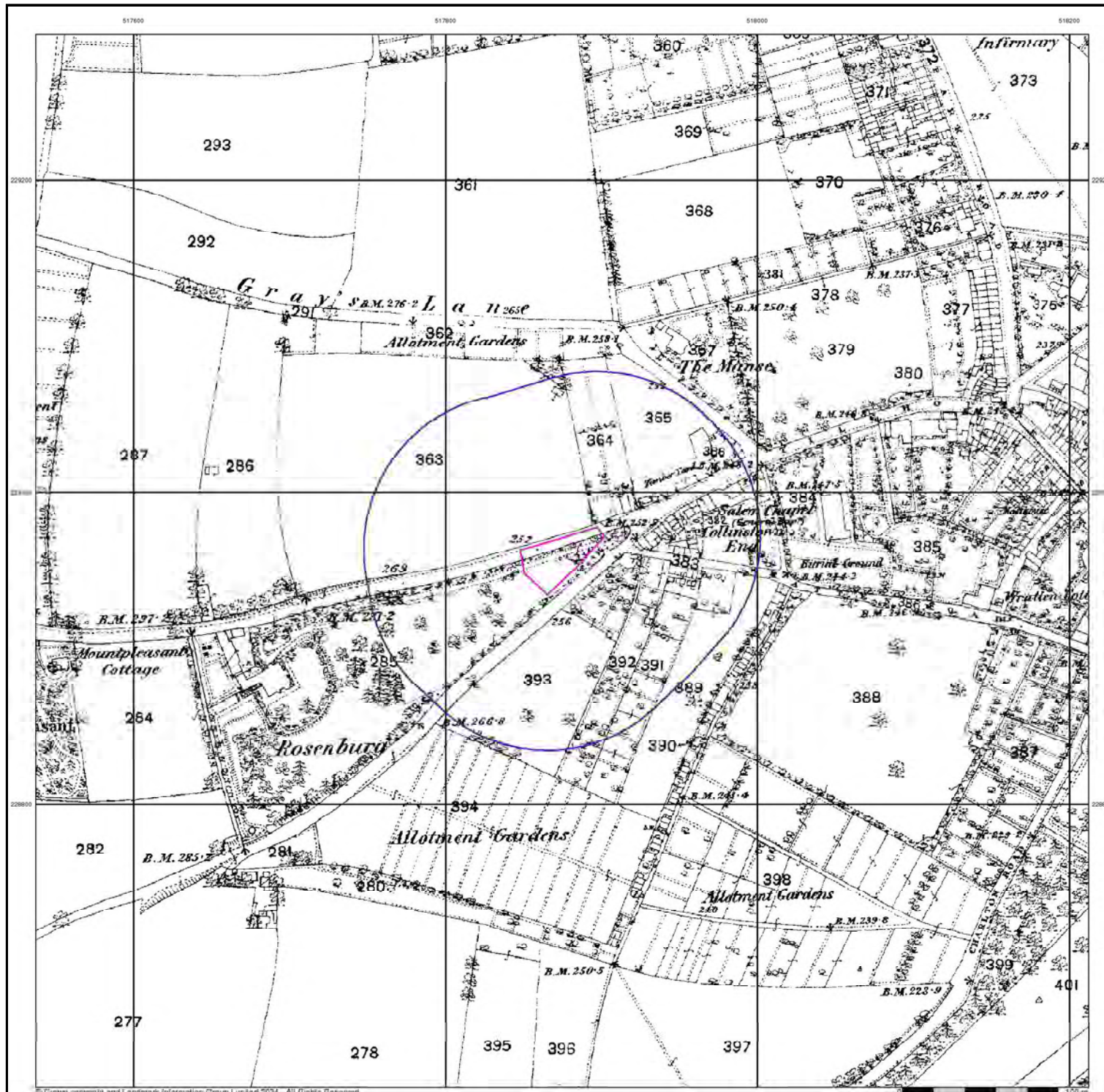
Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 100

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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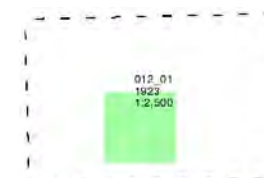
Hertfordshire

Published 1923

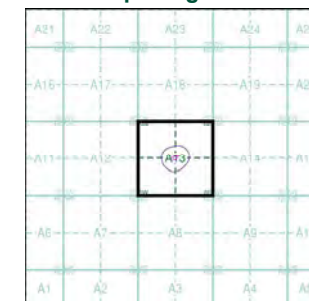
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

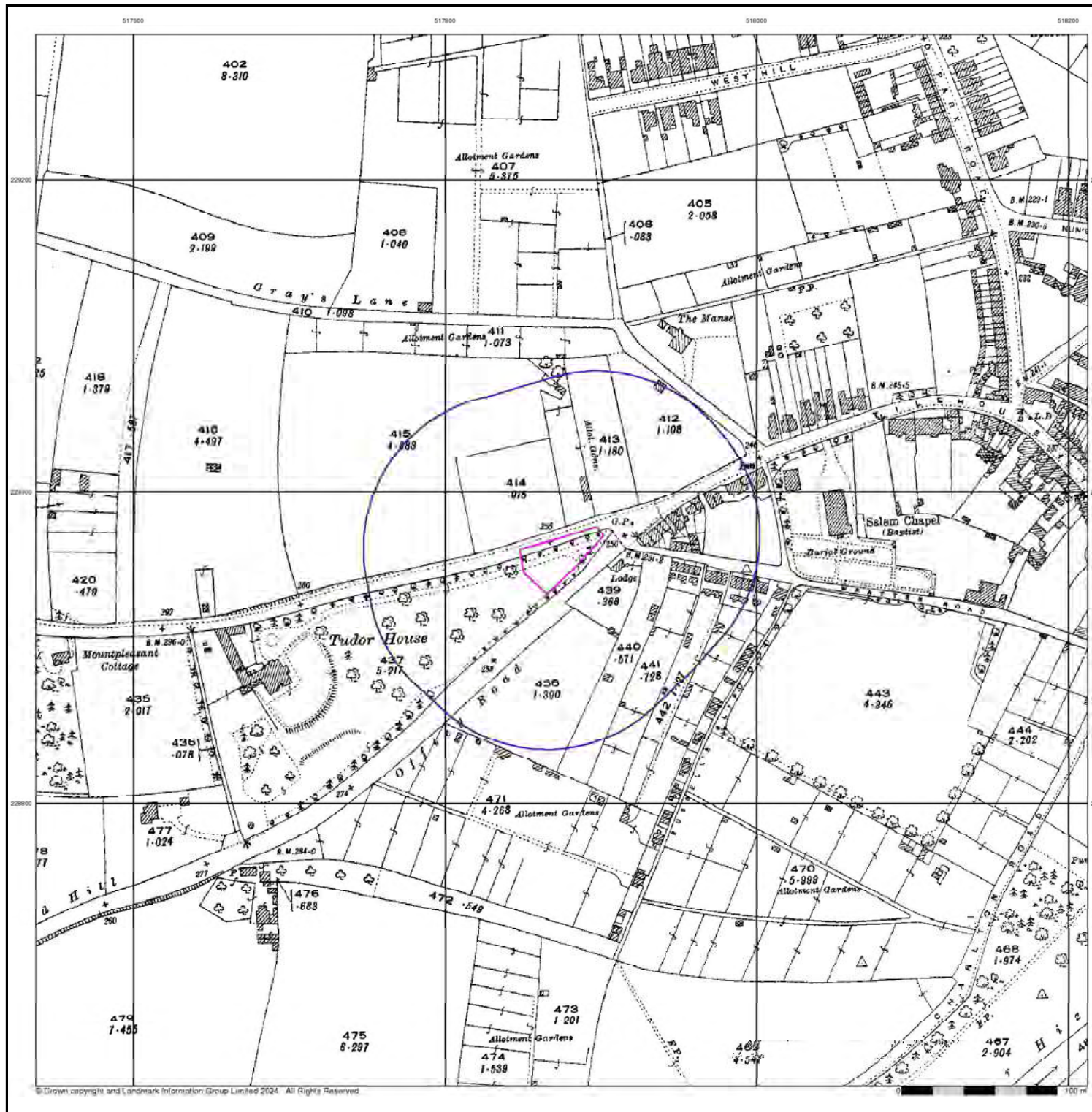
Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 100

Site Details

Site at 517890, 228970

Landmark
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Ordnance Survey Plan

Published 1964 - 1965

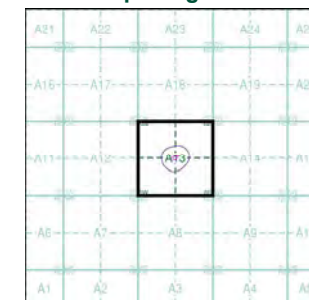
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

TL1729SE	TL1829SW
1964	1965
1:1,250	1:1,250
TL1729NE	TL1828NW
1964	1965
1:1,250	1:1,250

Historical Map - Segment A13



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 100

Site Details

Site at 517890, 228970

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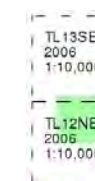
10k Raster Mapping

Published 2006

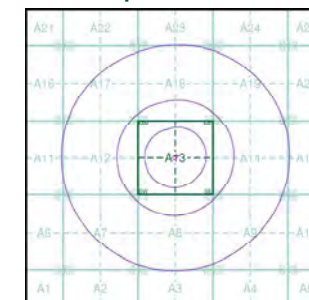
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

Landmark
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk

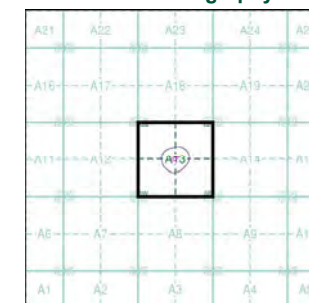


Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 100

Site Details

Site at 517890, 228970

Landmark
INFORMATION GROUP

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



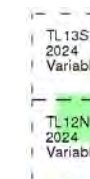
VectorMap Local

Published 2024

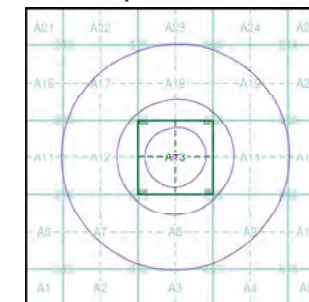
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

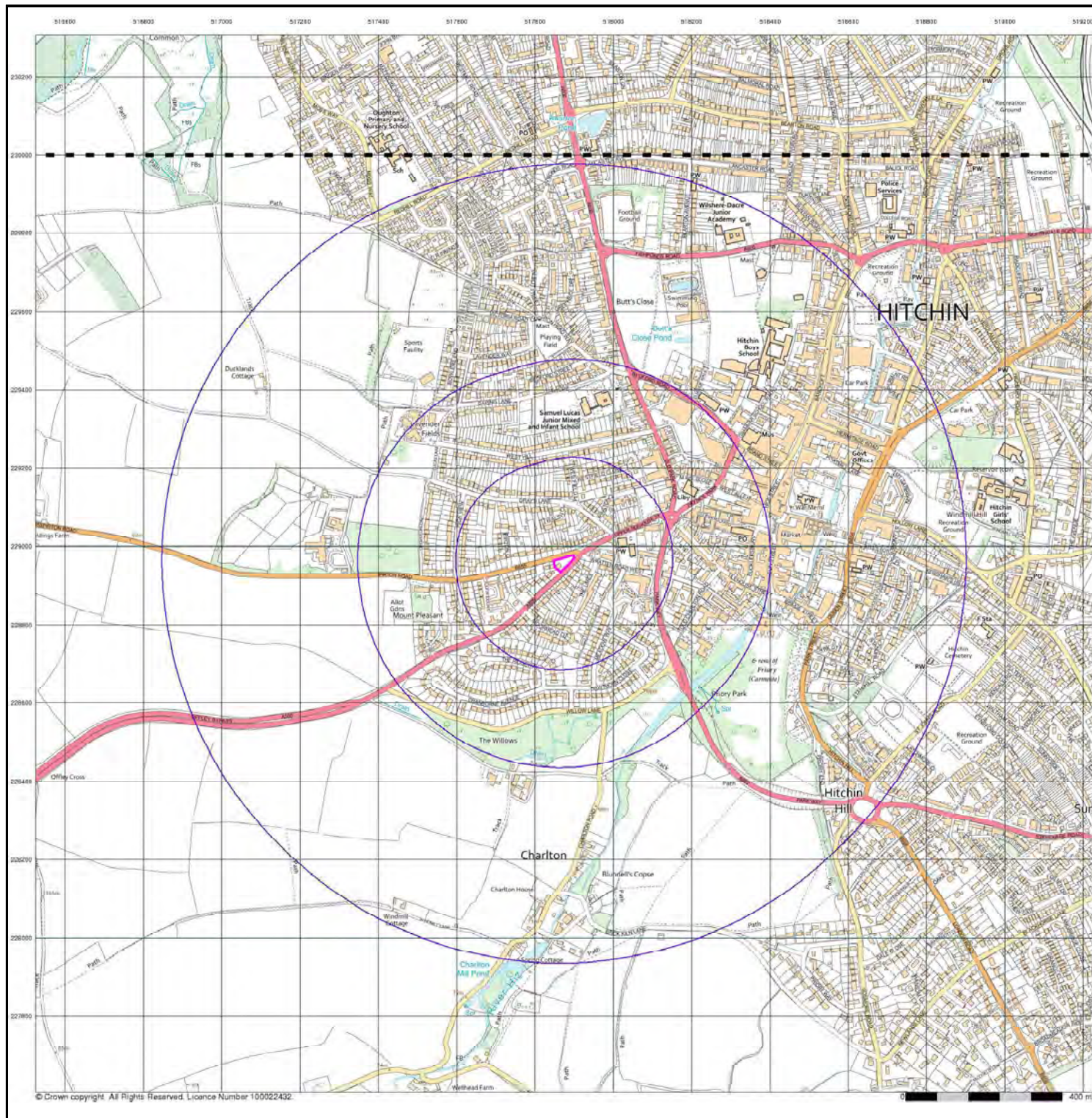
Order Number: 357249225_1_1
Customer Ref: UK24.7112
National Grid Reference: 517870, 228960
Slice: A
Site Area (Ha): 0.12
Search Buffer (m): 1000

Site Details

Site at 517890, 228970

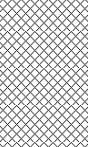
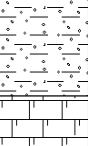
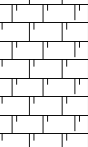


Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



APPENDIX G

Site Specific Borehole Logs

				Borehole Log				Borehole No. WS01 Sheet 1 of 1	
Project Name: 1 Pirton Road, Hitchin				Project No. UK24.7112		Co-ords: 517868E - 228964N		Hole Type WS	
Location: 1 Pirton Road, Hitchin, SG5 2BD				Level:				Scale 1:15	
Client: Oak Developments Ltd				Dates: 26/09/2024				Logged By	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	In Situ Results					
		0.30 - 0.60	ES	N=57 (12,18/14,17,14,12)	0.30			Dark brown slightly gravelly TOPSOIL. Gravel consists of fine angular flint.	1
					0.60			MADE GROUND: Brown slightly gravelly CLAY. Gravel consists of fine to medium angular to sub angular brick, flint and chert.	
					0.80			Brown slightly gravelly CLAY. Gravel consists of medium sub rounded chalk.	
								Weak, white structureless CHALK with occasional harder intact chalk fragments in a sandy gravel matrix.	
				1.00	SPT				
		1.20 - 1.50	D	68 (14,17/21,23,24,)					2
		2.00	SPT		2.00			End of Borehole at 2.000m	3
Remarks No Groundwater Encountered & Refusal at 2.0m due to dense chalk.									



Borehole Log

Borehole No.

WS02

Sheet 1 of 1

Project Name: 1 Pirton Road, Hitchin

Project No.
UK24.7112

Co-ords: 517889E - 228969N

Hole Type
WS

Location: 1 Pirton Road, Hitchin, SG5 2BD

Level:

Scale
1:15

Client: Oak Developments Ltd

Dates: 26/09/2024

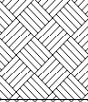
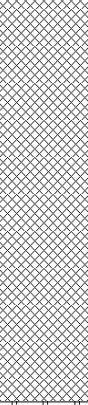
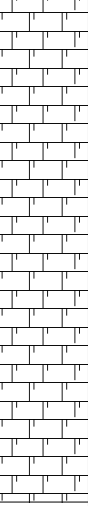
Logged By

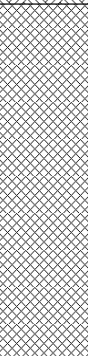
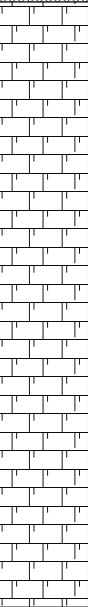
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	In Situ Results					
		0.20 - 0.60	ES		0.20			Dark brown slightly gravelly TOPSOIL. Gravel consists of fine angular flint.	
		0.60 - 0.90	ES		0.60			MADE GROUND: Brown slightly gravelly CLAY. Gravel consists of fine to medium angular to sub angular brick, flint and chert.	
		0.90 - 1.00			0.90			Brown slightly sandy CLAY.	
		1.00	SPT	N=69 (3,4/7,12,22,28)	1.00			Brown and white sandy gravelly CLAY. Gravel consists of fine to medium angular chert.	1
					1.20			Weak, white structureless CHALK with occasional harder intact chalk fragments in a sandy gravel matrix.	
								End of Borehole at 1.200m	

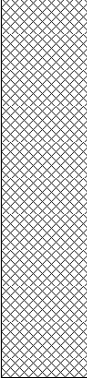
Remarks

No Groundwater Encountered and Refusal at 1.2m due to dense gravels.



				Borehole Log				Borehole No. WS03 Sheet 1 of 1	
Project Name: 1 Pirton Road, Hitchin				Project No. UK24.7112		Co-ords: 517872E - 228953N		Hole Type WS	
Location: 1 Pirton Road, Hitchin, SG5 2BD				Level:				Scale 1:15	
Client: Oak Developments Ltd				Dates: 26/09/2024				Logged By	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	In Situ Results					
		0.40 - 0.70	ES	N=56 (4,6/9,15,14,18)	0.20			Dark brown slightly gravelly TOPSOIL. Gravel consists of fine angular flint.	1
								MADE GROUND: Dark brown sandy gravelly CLAY. Gravel consists of fine to medium angular brick.	
		1.00 - 1.30 1.00	D SPT		1.00			Weak, pale yellowish brown and white structureless CHALK with occasional harder intact chalk fragments in a sandy gravel matrix	
		1.70 - 2.00	D						
		2.00	SPT	53 (7,9/12,18,23,)	2.00			End of Borehole at 2.000m	2
									3
Remarks No Groundwater Encountered and Refusal at 2.0m due to dense gravels.									

				Borehole Log				Borehole No. WS04 Sheet 1 of 1	
Project Name: 1 Pirton Road, Hitchin				Project No. UK24.7112		Co-ords: 517866E - 228945N		Hole Type WS	
Location: 1 Pirton Road, Hitchin, SG5 2BD				Level:				Scale 1:15	
Client: Oak Developments Ltd				Dates: 26/09/2024				Logged By	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	In Situ Results					
		0.30 - 0.60	ES		0.10			Dark brown slightly gravelly TOPSOIL. Gravel consists of fine angular flint.	1
								MADE GROUND: Dark brown sandy gravelly CLAY. Gravel consists of fine to coarse angular brick and rare roots.	
		0.80 - 1.00	D	N=33 (3,5/9,8,9,7)	0.80			Weak, white structureless CHALK with occasional harder intact chalk fragments in a sandy gravel matrix.	2
		1.00	SPT						
		1.30 - 1.50	ES	N=71 (8,10/12,14,19,26)	2.00			End of Borehole at 2.000m	3
		2.00	SPT						
Remarks No Groundwater Encountered and Refusal at 2.0m due to dense chalk									

					Borehole Log			Borehole No. HA01 Sheet 1 of 1	
Project Name: 1 Pirton Road, Hitchin					Project No. UK24.7112		Co-ords: 517855.00 - 228962.00		Hole Type HA
Location: 1 Pirton Road, Hitchin, SG5 2BD					Level:			Scale 1:10	
Client: Oak Developments Ltd					Dates: 26/09/2024 - 26/09/2024			Logged By	
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.50	ES		0.50			MADE GROUND: Dark brown sandy gravelly CLAY. Gravel consists of fine to medium angular brick and rare roots.	
								End of borehole at 0.50 m	
1									
2									
Remarks No Groundwater Encountered & Refusal due to large tree roots providing obstructions									

APPENDIX H

Laboratory Results – Environmental

EPS Ltd
7B Caxton House
Broad Street
Cambourne
Cambridgeshire
United Kingdom
CB23 6JN



Attention : Bryony Palmer
Date : 1st November, 2024
Your reference : UK24.7112
Our reference : Test Report 24/16658 Batch 1
Location : 1 Pirton Road, Hitchin
Date samples received : 28th September, 2024
Status : Final Report
Issue : 202411010844

Six samples were received for analysis on 28th September, 2024 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 22.878 kg of CO2

Scope 1&2&3 emissions - 54.068 kg of CO2

Authorised By:



Phil Sommerton BSc
Senior Project Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: EPS Ltd
Reference: UK24.7112
Location: 1 Pirton Road, Hitchin
Contact: Bryony Palmer
EMT Job No: 24/16658

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-7	8-10	11-13	14-17	18-20					Please see attached notes for all abbreviations and acronyms		
Sample ID	WS01ES1	WS02ES2	WS03ES1	WS04ES1	WS04ES2	WS05ES1							
Depth	0.30-0.60	0.60-0.90	0.40-0.70	0.30-0.60	1.30-1.50	0.20-0.50							
COC No / misc													
Containers	V J T	J T	J T	J T	V J T	J T							
Sample Date	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024							
Sample Type	Clay	Clay	Clayey Loam	Clay	Clay	Loam							
Batch Number	1	1	1	1	1	1							
Date of Receipt	28/09/2024	28/09/2024	28/09/2024	28/09/2024	28/09/2024	28/09/2024					LOD/LOR	Units	Method No.
Arsenic ^{#M}	23.7	35.5	23.9	28.1	6.7	41.0					<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Chromium ^{#M}	51.5	49.3	60.5	58.6	28.1	50.8					<0.5	mg/kg	TM30/PM15
Copper ^{#M}	38	20	26	2477 ^{AA}	8	19					<1	mg/kg	TM30/PM15
Lead ^{#M}	77	44	1152	579	13	37					<5	mg/kg	TM30/PM15
Mercury ^{#M}	0.1	<0.1	0.2	0.5	<0.1	<0.1					<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	26.7	36.9	26.2	73.1	8.0	39.9					<0.7	mg/kg	TM30/PM15
Selenium ^{#M}	<1	<1	<1	1	<1	<1					<1	mg/kg	TM30/PM15
Total Sulphate as SO ₄ ^{#M}	-	408	1049	2882	-	429					<50	mg/kg	TM50/PM29
Zinc ^{#M}	133	144	89	1826	36	140					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	0.04	<0.03	<0.03	0.04					<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	0.06	<0.03	0.20	0.08	<0.03	0.26					<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	0.07	<0.04	<0.04	0.08					<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	0.15	<0.03	0.57	0.23	0.05	1.01					<0.03	mg/kg	TM4/PM8
Pyrene [#]	0.13	<0.03	0.49	0.19	0.03	0.85					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.10	<0.06	0.37	0.13	<0.06	0.49					<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.09	<0.02	0.38	0.13	<0.02	0.55					<0.02	mg/kg	TM4/PM8
Benzo(b)fluoranthene ^{#M}	0.17	<0.07	0.68	0.24	<0.07	0.96					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.10	<0.04	0.39	0.14	<0.04	0.58					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.08	<0.04	0.28	0.10	<0.04	0.39					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	<0.04	<0.04	0.07	<0.04	<0.04	0.09					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.07	<0.04	0.26	0.10	<0.04	0.38					<0.04	mg/kg	TM4/PM8
Coronene	<0.04	-	-	-	<0.04	-					<0.04	mg/kg	TM4/PM8
PAH 16 Total	1.0	<0.6	3.8	1.3	<0.6	5.7					<0.6	mg/kg	TM4/PM8
PAH 17 Total	0.95	-	-	-	<0.64	-					<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.12	<0.05	0.49	0.17	<0.05	0.69					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.05	<0.02	0.19	0.07	<0.02	0.27					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	102	99	95	97	99					<0	%	TM4/PM8
Mineral Oil (C10-C40) (EH_CU_1D_AL)	<30	-	-	-	<30	-					<30	mg/kg	TM5/PM8/PM16

Element Materials Technology

Client Name: EPS Ltd
Reference: UK24.7112
Location: 1 Pirton Road, Hitchin
Contact: Bryony Palmer
EMT Job No: 24/16658

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-4	5-7	8-10	11-13	14-17	18-20					Please see attached notes for all abbreviations and acronyms		
Sample ID	WS01ES1	WS02ES2	WS03ES1	WS04ES1	WS04ES2	WS05ES1							
Depth	0.30-0.60	0.60-0.90	0.40-0.70	0.30-0.60	1.30-1.50	0.20-0.50							
COC No / misc													
Containers	V J T	J T	J T	J T	V J T	J T							
Sample Date	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024	26/09/2024							
Sample Type	Clay	Clay	Clayey Loam	Clay	Clay	Loam							
Batch Number	1	1	1	1	1	1							
Date of Receipt	28/09/2024	28/09/2024	28/09/2024	28/09/2024	28/09/2024	28/09/2024					LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) ^{#M}	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) ^{#M}	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL)	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) ^{#M}	<0.2	-	-	-	<0.2	-					<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) ^{#M}	<4	-	-	-	<4	-					<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) ^{#M}	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) ^{#M}	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_CU_1D_AL)	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH_CU+HS_1D_AL)	<26	-	-	-	<26	-					<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) [#]	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) [#]	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) ^{#M}	<0.1	-	-	-	<0.1	-					<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) [#]	<0.2	-	-	-	<0.2	-					<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) [#]	<4	-	-	-	<4	-					<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) [#]	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) [#]	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_CU_1D_AR)	<7	-	-	-	<7	-					<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH_CU+HS_1D_AR)	<26	-	-	-	<26	-					<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-40) (EH_CU+HS_1D_Total)	<52	-	-	-	<52	-					<52	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
Benzene [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
Toluene [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
Ethylbenzene [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
m/p-Xylene [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
o-Xylene [#]	<5	-	-	-	<5	-					<5	ug/kg	TM36/PM12
PCB 28 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 52 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 101 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 118 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 138 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 153 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
PCB 180 [#]	<5	-	-	-	<5	-					<5	ug/kg	TM17/PM8
Total 7 PCBs [#]	<35	-	-	-	<35	-					<35	ug/kg	TM17/PM8
Total Phenols HPLC	-	<0.15	<0.15	<0.15	-	<0.15					<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	14.8	9.5	11.4	18.8	16.3	9.6					<0.1	%	PM4/PM0
Hexavalent Chromium [#]	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20

Element Materials Technology

Client Name: EPS Ltd
Reference: UK24.7112
Location: 1 Pirton Road, Hitchin
Contact: Bryony Palmer
EMT Job No: 24/16658

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Element Materials Technology

Client Name: EPS Ltd
Reference: UK24.7112
Location: 1 Pirton Road, Hitchin
Contact: Bryony Palmer
EMT Job No: 24/16658

Report: CEN 10:1 1 Batch

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Mass of sample taken (kg)	0.1009	Moisture Content Ratio (%) =	12.3
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	89.1
Particle Size <4mm =	>95%		
EMT Job No	24/16658	Landfill Waste Acceptance Criteria Limits	
Sample No	3		
Client Sample No	WS01ES1		
Depth/Other	0.30-0.60		
Sample Date	26/09/2024		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	1.04	3	5
Loss on Ignition (%)	4.4	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	<30	500	-
PAH Sum of 17(mg/kg)	0.95	100	-
pH (pH Units)	8.43	-	>6
ANC to pH 7 (mol/kg)	-	-	to be evaluated
ANC to pH 4 (mol/kg)	-	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	0.0029	0.029	0.5
Barium	<0.003	<0.03	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	<0.002	<0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	<0.003	<0.03	4
Chloride	<0.3	<3	800
Fluoride	0.4	4	10
Sulphate as SO ₄	<0.5	<5	1000
Total Dissolved Solids	58	580	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	3	30	500

Mass of sample taken (kg)	0.105	Moisture Content Ratio (%) =	17.1
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	85.4
Particle Size <4mm =	>95%		
EMT Job No	24/16658	Landfill Waste Acceptance Criteria Limits	
Sample No	16		
Client Sample No	WS04ES2		
Depth/Other	1.30-1.50		
Sample Date	26/09/2024		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	0.30	3	5
Loss on Ignition (%)	1.5	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg) (EH_CU_1D_AL)	<30	500	-
PAH Sum of 17(mg/kg)	<0.64	100	-
pH (pH Units)	8.88	-	>6
ANC to pH 7 (mol/kg)	-	-	to be evaluated
ANC to pH 4 (mol/kg)	-	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	<0.0025	<0.025	0.5
Barium	<0.003	<0.03	20
Cadmium	<0.0005	<0.005	0.04
Chromium	<0.0015	<0.015	0.5
Copper	<0.007	<0.07	2
Mercury	0.001	0.01	0.01
Molybdenum	<0.002	<0.02	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	<0.002	<0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	<0.003	<0.03	4
Chloride	<0.3	<3	800
Fluoride	<0.3	<3	10
Sulphate as SO ₄	2.4	24	1000
Total Dissolved Solids	<35	<350	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	<2	<20	500

Matrix : Solid

8 of 18

Note:

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

Where trace asbestos is reported the amount of asbestos will be <0.1%.

QF-PM 3.1.15 v10

Client Name:	EPS Ltd
Reference:	UK24.7112
Location:	1 Pirton Road, Hitchin
Contact:	Bryony Palmer

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 24/16658

SOILS and ASH

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x20 Dilution

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 24/16658

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No

EMT Job No: 24/16658

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM17	Modified US EPA method 8270D v5:2014. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3:1990/USEPA 160.1/3 (TDS/TS: 1971) Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

EMT Job No: 24/16658

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM0	No preparation is required.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060A (2002), APHA SMEWW 5310B:1999 22nd Edition, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No

EMT Job No: 24/16658

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes	Yes	AR	Yes
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 9214 - 340.2 (EPA 1998)	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes
NONE	No Method Code	PM17	Modified method BS EN12457-2:2002 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.				
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.			AR	

APPENDIX I

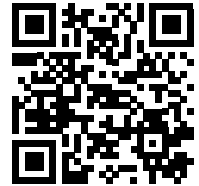
Waste Classification Report



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:

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



DL2OD-FP430-SF105

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

Job name

UK24.7112 1 Pirton Road, Hitchin

Description/Comments

Project

UK24.7112

Site

1 Pirton Road, Hitchin

Classified by

Name:

Michael Judson

Date:

30 Oct 2024 08:02 GMT

Telephone:

01954 710 666

Company:

Environmental Strategies Ltd EPS

7B Caxton House, Broad Street, Cambourne

Cambridge

CB23 6JN

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:

CERTIFIED

Course

Hazardous Waste Classification

Most recent 3 year Refresher

Date

08 Dec 2016

03 Dec 2024 *

Next 3 year Refresher due by Dec 2024
* training course booked

Purpose of classification

2 - Material Characterisation

Address of the waste

1 Pirton Road, Hitchin

Post Code SG5 2BD

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 to include the demolition of existing dwelling to and construction of 9No. new flats

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

Waste created during redevelopment including excavation of any foundations

Description of the waste

Soils persisting beneath site, for full details please ref to EPS report ref: UK24.7112



Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	WS01ES1-26/09/2024-0.30-0.60m	0.30-0.60	Non Hazardous		3
2	WS02ES2-26/09/2024-0.60-0.90m	0.60-0.90	Non Hazardous		5
3	WS03ES1-26/09/2024-0.40-0.70m	0.40-0.70	Non Hazardous		7
4	WS04ES1-26/09/2024-0.30-0.60m	0.30-0.60	Non Hazardous		9
5	WS04ES2-26/09/2024-1.30-1.50m	1.30-1.50	Non Hazardous		11
6	WS05ES1-26/09/2024-0.20-0.50m	0.20-0.50	Non Hazardous		13

Related documents

#	Name	Description
1	EMT-24-16658-Batch-1-202410081519.HWOL	Element .hwol file used to populate the Job
2	EPS Waste Stream	waste stream template used to create this Job

Report

Created by: Michael Judson

Created date: 30 Oct 2024 08:02 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	15
Appendix B: Rationale for selection of metal species	16
Appendix C: Version	17



Classification of sample: WS01ES1-26/09/2024-0.30-0.60m

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

Sample details

Sample name: **WS01ES1-26/09/2024-0.30-0.60m** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.30-0.60 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **14.8%** (dry weight correction)

Hazard properties

None identified

Determinands

Moisture content: 14.8% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				23.7 mg/kg	1.534	31.666 mg/kg	0.00317 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				51.5 mg/kg	1.462	65.566 mg/kg	0.00656 %	✓	
		215-160-9	1308-38-9							
3	copper { dicopper oxide; copper (I) oxide }				1237 mg/kg	1.126	1213.174 mg/kg	0.121 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	77 mg/kg		67.073 mg/kg	0.00671 %	✓	
	082-001-00-6									
5	mercury { mercury }				0.1 mg/kg		0.0871 mg/kg	0.00000871 %	✓	
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel }			7	26.7 mg/kg		23.258 mg/kg	0.00233 %	✓	
	028-002-00-7	231-111-4	7440-02-0							
7	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
8	zinc { zinc powder - zinc dust (stabilised) }				967 mg/kg		842.334 mg/kg	0.0842 %	✓	
	030-001-01-9	231-175-3	7440-66-6							
9	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
10	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
11	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
12	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
13	phenanthrene				0.06 mg/kg		0.0523 mg/kg	0.00000523 %	✓	
		201-581-5	85-01-8							
14	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
15	fluoranthene				0.15 mg/kg		0.131 mg/kg	0.0000131 %	✓	
		205-912-4	206-44-0							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	pyrene	204-927-3	129-00-0		0.13 mg/kg		0.113 mg/kg	0.0000113 %	✓	
17	benzo[a]anthracene	601-033-00-9	200-280-6		0.1 mg/kg		0.0871 mg/kg	0.00000871 %	✓	
18	chrysene	601-048-00-0	205-923-4		0.09 mg/kg		0.0784 mg/kg	0.00000784 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.1 mg/kg		0.0871 mg/kg	0.00000871 %	✓	
20	indeno[123-cd]pyrene	205-893-2	193-39-5		0.08 mg/kg		0.0697 mg/kg	0.00000697 %	✓	
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
22	benzo[ghi]perylene	205-883-8	191-24-2		0.07 mg/kg		0.061 mg/kg	0.0000061 %	✓	
23	coronene	205-881-7	191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.12 mg/kg		0.105 mg/kg	0.0000105 %	✓	
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.05 mg/kg		0.0436 mg/kg	0.00000436 %	✓	
26	TPH (C6 to C40) petroleum group		TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
27	polychlorobiphenyls; PCB	602-039-00-4	215-648-1		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
28	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
31	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
33	pH		PH		8.43 pH		8.43 pH	8.43 pH		
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
35	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.23 %		

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 Determinand - 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: WS02ES2-26/09/2024-0.60-0.90m

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

Sample details

Sample name:	LoW Code:
WS02ES2-26/09/2024-0.60-0.90m	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.60-0.90 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
9.5%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 9.5% Dry Weight Moisture Correction applied (MC)

#		Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
		EU CLP index number	EC Number	CAS Number							
1		arsenic { arsenic pentoxide }				35.5 mg/kg	1.534	49.728 mg/kg	0.00497 %	✓	
		033-004-00-6	215-116-9	1303-28-2							
2		chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				49.3 mg/kg	1.462	65.803 mg/kg	0.00658 %	✓	
			215-160-9	1308-38-9							
3		copper { dicopper oxide; copper (I) oxide }				1237 mg/kg	1.126	1271.894 mg/kg	0.127 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
4		lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	44 mg/kg		40.183 mg/kg	0.00402 %	✓	
		082-001-00-6									
5		mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		080-001-00-0	231-106-7	7439-97-6							
6		nickel { nickel }			7	36.9 mg/kg		33.699 mg/kg	0.00337 %	✓	
		028-002-00-7	231-111-4	7440-02-0							
7		selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
		034-002-00-8									
8		zinc { zinc powder - zinc dust (stabilised) }				967 mg/kg		883.105 mg/kg	0.0883 %	✓	
		030-001-01-9	231-175-3	7440-66-6							
9		naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		601-052-00-2	202-049-5	91-20-3							
10		acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
			205-917-1	208-96-8							
11		acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
			201-469-6	83-32-9							
12		fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
			201-695-5	86-73-7							
13		phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
			201-581-5	85-01-8							
14		anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
			204-371-1	120-12-7							
15		fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
			205-912-4	206-44-0							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
16	pyrene	204-927-3	129-00-0		<0.03 mg/kg		<0.03 mg/kg	<0.000003 %			<LOD
17	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	<0.06 mg/kg		<0.06 mg/kg	<0.000006 %			<LOD
18	chrysene	601-048-00-0	205-923-4	218-01-9	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
20	indeno[123-cd]pyrene		205-893-2	193-39-5	<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
22	benzo[ghi]perylene		205-883-8	191-24-2	<0.04 mg/kg		<0.04 mg/kg	<0.000004 %			<LOD
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	<0.05 mg/kg		<0.05 mg/kg	<0.000005 %			<LOD
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	<0.02 mg/kg		<0.02 mg/kg	<0.000002 %			<LOD
25	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %			<LOD
26	pH		PH		8.39 pH		8.39 pH	8.39 pH			
27	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]	7440-43-9 [1] 1306-19-0 [2]	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %			<LOD
28	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			<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %			<LOD
Total:									0.235 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: WS03ES1-26/09/2024-0.40-0.70m

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

Sample details

Sample name:	LoW Code:
WS03ES1-26/09/2024-0.40-0.70m	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.40-0.70 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
11.4%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 11.4% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				23.9 mg/kg	1.534	32.908 mg/kg	0.00329 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				60.5 mg/kg	1.462	79.375 mg/kg	0.00794 %	✓	
		215-160-9	1308-38-9							
3	copper { dicopper oxide; copper (I) oxide }				1237 mg/kg	1.126	1250.201 mg/kg	0.125 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	1152 mg/kg		1034.111 mg/kg	0.103 %	✓	
	082-001-00-6									
5	mercury { mercury }				0.2 mg/kg		0.18 mg/kg	0.000018 %	✓	
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel }			7	26.2 mg/kg		23.519 mg/kg	0.00235 %	✓	
	028-002-00-7	231-111-4	7440-02-0							
7	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
8	zinc { zinc powder - zinc dust (stabilised) }				967 mg/kg		868.043 mg/kg	0.0868 %	✓	
	030-001-01-9	231-175-3	7440-66-6							
9	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
10	acenaphthylene				0.04 mg/kg		0.0359 mg/kg	0.00000359 %	✓	
		205-917-1	208-96-8							
11	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
12	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
13	phenanthrene				0.2 mg/kg		0.18 mg/kg	0.000018 %	✓	
		201-581-5	85-01-8							
14	anthracene				0.07 mg/kg		0.0628 mg/kg	0.00000628 %	✓	
		204-371-1	120-12-7							
15	fluoranthene				0.57 mg/kg		0.512 mg/kg	0.0000512 %	✓	
		205-912-4	206-44-0							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	pyrene	204-927-3	129-00-0		0.49 mg/kg		0.44 mg/kg	0.000044 %	✓	
17	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.37 mg/kg		0.332 mg/kg	0.0000332 %	✓	
18	chrysene	601-048-00-0	205-923-4	218-01-9	0.38 mg/kg		0.341 mg/kg	0.0000341 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.39 mg/kg		0.35 mg/kg	0.000035 %	✓	
20	indeno[123-cd]pyrene	205-893-2	193-39-5		0.28 mg/kg		0.251 mg/kg	0.0000251 %	✓	
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.07 mg/kg		0.0628 mg/kg	0.00000628 %	✓	
22	benzo[ghi]perylene	205-883-8	191-24-2		0.26 mg/kg		0.233 mg/kg	0.0000233 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.49 mg/kg		0.44 mg/kg	0.000044 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.19 mg/kg		0.171 mg/kg	0.0000171 %	✓	
25	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
26	pH		PH		7.87 pH		7.87 pH	7.87 pH		
27	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]	7440-43-9 [1] 1306-19-0 [2]	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	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			<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
Total:								0.329 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: WS04ES1-26/09/2024-0.30-0.60m

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

Sample details

Sample name:	LoW Code:
WS04ES1-26/09/2024-0.30-0.60m	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
0.30-0.60 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
18.8%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 18.8% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				28.1 mg/kg	1.534	36.281 mg/kg	0.00363 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				58.6 mg/kg	1.462	72.094 mg/kg	0.00721 %	✓	
		215-160-9	1308-38-9							
3	copper { dicopper oxide; copper (I) oxide }				1237 mg/kg	1.126	1172.326 mg/kg	0.117 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	579 mg/kg		487.374 mg/kg	0.0487 %	✓	
	082-001-00-6									
5	mercury { mercury }				0.5 mg/kg		0.421 mg/kg	0.0000421 %	✓	
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel }			7	73.1 mg/kg		61.532 mg/kg	0.00615 %	✓	
	028-002-00-7	231-111-4	7440-02-0							
7	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				1 mg/kg	1.405	1.183 mg/kg	0.000118 %	✓	
	034-002-00-8									
8	zinc { zinc powder - zinc dust (stabilised) }				967 mg/kg		813.973 mg/kg	0.0814 %	✓	
	030-001-01-9	231-175-3	7440-66-6							
9	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
10	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
11	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
12	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
13	phenanthrene				0.08 mg/kg		0.0673 mg/kg	0.00000673 %	✓	
		201-581-5	85-01-8							
14	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
15	fluoranthene				0.23 mg/kg		0.194 mg/kg	0.0000194 %	✓	
		205-912-4	206-44-0							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	pyrene	204-927-3	129-00-0		0.19 mg/kg		0.16 mg/kg	0.000016 %	✓	
17	benzo[a]anthracene	601-033-00-9	200-280-6		0.13 mg/kg		0.109 mg/kg	0.0000109 %	✓	
18	chrysene	601-048-00-0	205-923-4		0.13 mg/kg		0.109 mg/kg	0.0000109 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		0.14 mg/kg		0.118 mg/kg	0.0000118 %	✓	
20	indeno[123-cd]pyrene	205-893-2	193-39-5		0.1 mg/kg		0.0842 mg/kg	0.00000842 %	✓	
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
22	benzo[ghi]perylene	205-883-8	191-24-2		0.1 mg/kg		0.0842 mg/kg	0.00000842 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9		0.17 mg/kg		0.143 mg/kg	0.0000143 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6		0.07 mg/kg		0.0589 mg/kg	0.00000589 %	✓	
25	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
26	pH		PH		8.45 pH		8.45 pH	8.45 pH		
27	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	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			<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
Total:								0.265 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
	This determinand is defined in the EU CLP Table 3
<LOD	Below limit of detection
CLP: Note 1	Only the metal concentration has been used for classification



Classification of sample: WS04ES2-26/09/2024-1.30-1.50m

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

Sample details

Sample name:	LoW Code:
WS04ES2-26/09/2024-1.30-1.50m	Chapter:
Sample Depth:	17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
1.30-1.50 m	Entry:
Moisture content:	17 05 04 (Soil and stones other than those mentioned in 17 05 03)
16.3%	
(dry weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 16.3% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
1	arsenic { arsenic pentoxide }				6.7 mg/kg	1.534	8.837 mg/kg	0.000884 %	✓	
	033-004-00-6	215-116-9	1303-28-2							
2	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				28.1 mg/kg	1.462	35.314 mg/kg	0.00353 %	✓	
		215-160-9	1308-38-9							
3	copper { dicopper oxide; copper (I) oxide }				8 mg/kg	1.126	7.745 mg/kg	0.000774 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
4	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	13 mg/kg		11.178 mg/kg	0.00112 %	✓	
	082-001-00-6									
5	mercury { mercury }				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6							
6	nickel { nickel }			7	8 mg/kg		6.879 mg/kg	0.000688 %	✓	
	028-002-00-7	231-111-4	7440-02-0							
7	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405 mg/kg	<0.000141 %		<LOD
	034-002-00-8									
8	zinc { zinc powder - zinc dust (stabilised) }				36 mg/kg		30.954 mg/kg	0.0031 %	✓	
	030-001-01-9	231-175-3	7440-66-6							
9	naphthalene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
10	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
11	acenaphthene				<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9							
12	fluorene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7							
13	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
14	anthracene				<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
		204-371-1	120-12-7							
15	fluoranthene				0.05 mg/kg		0.043 mg/kg	0.0000043 %	✓	
		205-912-4	206-44-0							



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	pyrene	204-927-3	129-00-0		0.03 mg/kg		0.0258 mg/kg	0.00000258 %	✓	
17	benzo[a]anthracene	601-033-00-9	200-280-6		<0.06 mg/kg		<0.06 mg/kg	<0.000006 %		<LOD
18	chrysene	601-048-00-0	205-923-4		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
20	indeno[123-cd]pyrene	205-893-2	193-39-5		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
22	benzo[ghi]perylene	205-883-8	191-24-2		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
23	coronene	205-881-7	191-07-1		<0.04 mg/kg		<0.04 mg/kg	<0.000004 %		<LOD
24	benzo[b]fluoranthene	601-034-00-4	205-911-9		<0.05 mg/kg		<0.05 mg/kg	<0.000005 %		<LOD
25	benzo[k]fluoranthene	601-036-00-5	205-916-6		<0.02 mg/kg		<0.02 mg/kg	<0.000002 %		<LOD
26	TPH (C6 to C40) petroleum group		TPH		<52 mg/kg		<52 mg/kg	<0.0052 %		<LOD
27	polychlorobiphenyls; PCB	602-039-00-4	215-648-1		<0.035 mg/kg		<0.035 mg/kg	<0.0000035 %		<LOD
28	benzene	601-020-00-8	200-753-7		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
29	toluene	601-021-00-3	203-625-9		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
30	ethylbenzene	601-023-00-4	202-849-4		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
31	xylene	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]		<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
32	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8		<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
33	pH		PH		8.88 pH		8.88 pH	8.88 pH		
34	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane	603-181-00-X	216-653-1		<0.005 mg/kg		<0.005 mg/kg	<0.0000005 %		<LOD
35	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]		<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
Total:								0.0156 %		

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 Determinand - 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: WS05ES1-26/09/2024-0.20-0.50m

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

Sample details

Sample name: **WS05ES1-26/09/2024-0.20-0.50m** LoW Code: **17: Construction and Demolition Wastes (including excavated soil from contaminated sites)**
Sample Depth: **0.20-0.50 m** Chapter: **17 05 04 (Soil and stones other than those mentioned in 17 05 03)**
Moisture content: **9.6%** (dry weight correction)

Hazard properties

None identified

Determinands

Moisture content: 9.6% Dry Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number								
1	arsenic { arsenic pentoxide }				41 mg/kg	1.534	57.38	mg/kg	0.00574 %	✓	
	033-004-00-6	215-116-9	1303-28-2								
2	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				50.8 mg/kg	1.462	67.744	mg/kg	0.00677 %	✓	
		215-160-9	1308-38-9								
3	copper { dicopper oxide; copper (I) oxide }				1237 mg/kg	1.126	1270.733	mg/kg	0.127 %	✓	
	029-002-00-X	215-270-7	1317-39-1								
4	lead { lead compounds with the exception of those specified elsewhere in this Annex }			1	37 mg/kg		33.759	mg/kg	0.00338 %	✓	
	082-001-00-6										
5	mercury { mercury }				<0.1 mg/kg		<0.1	mg/kg	<0.00001 %		<LOD
	080-001-00-0	231-106-7	7439-97-6								
6	nickel { nickel }			7	39.9 mg/kg		36.405	mg/kg	0.00364 %	✓	
	028-002-00-7	231-111-4	7440-02-0								
7	selenium { selenium compounds with the exception of cadmium sulphoselenide and those specified elsewhere in this Annex }				<1 mg/kg	1.405	<1.405	mg/kg	<0.000141 %		<LOD
	034-002-00-8										
8	zinc { zinc powder - zinc dust (stabilised) }				967 mg/kg		882.299	mg/kg	0.0882 %	✓	
	030-001-01-9	231-175-3	7440-66-6								
9	naphthalene				<0.04 mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
	601-052-00-2	202-049-5	91-20-3								
10	acenaphthylene				0.04 mg/kg		0.0365	mg/kg	0.00000365 %	✓	
		205-917-1	208-96-8								
11	acenaphthene				<0.05 mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9								
12	fluorene				<0.04 mg/kg		<0.04	mg/kg	<0.000004 %		<LOD
		201-695-5	86-73-7								
13	phenanthrene				0.26 mg/kg		0.237	mg/kg	0.0000237 %	✓	
		201-581-5	85-01-8								
14	anthracene				0.08 mg/kg		0.073	mg/kg	0.0000073 %	✓	
		204-371-1	120-12-7								
15	fluoranthene				1.01 mg/kg		0.922	mg/kg	0.0000922 %	✓	
		205-912-4	206-44-0								



#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
16	pyrene	204-927-3	129-00-0		0.85 mg/kg		0.776 mg/kg	0.0000776 %	✓	
17	benzo[a]anthracene	601-033-00-9	200-280-6	56-55-3	0.49 mg/kg		0.447 mg/kg	0.0000447 %	✓	
18	chrysene	601-048-00-0	205-923-4	218-01-9	0.55 mg/kg		0.502 mg/kg	0.0000502 %	✓	
19	benzo[a]pyrene; benzo[def]chrysene	601-032-00-3	200-028-5	50-32-8	0.58 mg/kg		0.529 mg/kg	0.0000529 %	✓	
20	indeno[123-cd]pyrene	205-893-2	193-39-5		0.39 mg/kg		0.356 mg/kg	0.0000356 %	✓	
21	dibenz[a,h]anthracene	601-041-00-2	200-181-8	53-70-3	0.09 mg/kg		0.0821 mg/kg	0.00000821 %	✓	
22	benzo[ghi]perylene	205-883-8	191-24-2		0.38 mg/kg		0.347 mg/kg	0.0000347 %	✓	
23	benzo[b]fluoranthene	601-034-00-4	205-911-9	205-99-2	0.69 mg/kg		0.63 mg/kg	0.000063 %	✓	
24	benzo[k]fluoranthene	601-036-00-5	205-916-6	207-08-9	0.27 mg/kg		0.246 mg/kg	0.0000246 %	✓	
25	chromium in chromium(VI) compounds { chromium(VI) oxide }	024-001-00-0	215-607-8	1333-82-0	<0.3 mg/kg	1.923	<0.577 mg/kg	<0.0000577 %		<LOD
26	pH		PH		8.37 pH		8.37 pH	8.37 pH		
27	cadmium (non-pyrophoric); [1] cadmium oxide (non-pyrophoric) [2]	048-002-00-0	231-152-8 [1] 215-146-2 [2]	7440-43-9 [1] 1306-19-0 [2]	<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
28	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			<0.5 mg/kg	1.884	<0.942 mg/kg	<0.0000942 %		<LOD
Total:								0.236 %		

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 Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
•	This determinand is defined in the EU CLP Table 3
<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

■ **lead compounds with the exception of those specified elsewhere in this Annex**

GB MCL index number: 082-001-00-6

Description/Comments: Least-worst case: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2

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 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

■ **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

■ **coronene** (EC Number: 205-881-7, CAS Number: 191-07-1)

Description/Comments: Data from C&L Inventory Database; no entries in Registered Substances or Pesticides Properties databases; SDS: Sigma Aldrich, 1907/2006 compliant, dated 2012 - no entries; IARC – Group 3, not carcinogenic.
Data source: <http://clp-inventory.echa.europa.eu/SummaryOfClassAndLabelling.aspx?SubstanceID=17010&HarmOnly=no?fc=true&lang=en>
Data source date: 16 Jun 2014
Hazard Statements: STOT SE 2; H371

■ **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

■ **polychlorobiphenyls; PCB** (EC Number: 215-648-1, CAS Number: 1336-36-3)

GB MCL index number: 602-039-00-4
Description/Comments: Worst Case: IARC considers PCB Group 1; Carcinogenic to humans;

POP specific threshold from ATP1 (Regulation 756/2010/EU) to POPs Regulation (Regulation 850/2004/EC). Where applicable, the calculation method laid down in European standards EN 12766-1 and EN 12766-2 shall be applied.
Additional Hazard Statement(s): Carc. 1A; H350
Reason for additional Hazards Statement(s):
20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

■ **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

■ **pH** (CAS Number: PH)

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

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

EU CLP index number: 006-007-00-5
Description/Comments: Conversion factor based on a worst case compound: sodium cyanide
Data source: Commission Regulation (EC) No 790/2009 - 1st Adaptation to Technical Progress for Regulation (EC) No 1272/2008. (ATP1)
)
Hazard Statements: Acute Tox. 2; H330 , Acute Tox. 1; H310 , Acute Tox. 2; H300 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , EUH032 , EUH032 >= 0.2 %
Reason for additional Hazards Statement(s):
14 Dec 2015 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

Appendix B: Rationale for selection of metal species

arsenic {arsenic pentoxide}

Worst Case

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

Worst case species

copper {dicopper oxide; copper (I) oxide}

.

lead {lead compounds with the exception of those specified elsewhere in this Annex}

Worst case species



mercury {mercury}

Worst case species

nickel {nickel}

Worst case species

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

Worst case species

zinc {zinc powder - zinc dust (stabilised)}

.

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

Worst case species

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}

Standard Approach

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2024.303.6317.11571 (29 Oct 2024)

HazWasteOnline Database: 2024.303.6317.11571 (29 Oct 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

GB MCL List v3.0 - version 3.0 of 11th January 2024

GB MCL List v4.0 - version 4.0 of 2nd March 2024

GB MCL List v5.0 - version 5.0 of 26th June 2024

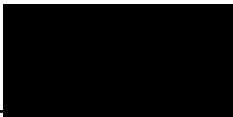
APPENDIX J

Laboratory Results – Geotechnical



TEST REPORT
ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024



Contract	UK24.7112 1 Pirton Road		
Serial No.	45825_1		
Client: Environmental Protection Strategies Ltd Unit 7 Caxton House Broad Street Great Cambourne Cambridge CB23 6JN		Soil Property Testing Ltd 15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG Tel: 01480 455579 Email: enquiries@soilpropertytesting.com Website: www.soilpropertytesting.com	
Samples Submitted By: Environmental Protection Strategies Ltd Samples Labelled: UK24.7112 1 Pirton Road		Approved Signatories: ☒ J.C. Garner B.Eng (Hons) FGS Technical Director & Quality Manager ☐ W. Johnstone Materials Lab Manager 	
Date Received: 30/09/2024		Samples Tested Between: 30/09/2024 and 11/10/2024	
Remarks: For the attention of Bryony Palmer Your Reference No: UK24.7112 Your Order No: 36147			
Notes: 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary. 2 Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory. 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory. 5 The results within this report only relate to the items tested or sampled.			



TEST REPORT
ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024



Contract		UK24.7112 1 Pirton Road																		
Serial No.		45825_1										Target Date		14/10/2024						
Scheduled By		Environmental Protection Strategies Ltd																		
Schedule Remarks																				
Bore Hole No.	Type	Sample Ref.	Top Depth	Particle Size Distribution (BS1377)																Sample Remarks
WS01	D	1	1.20	1																
WS03	D	1	1.00	1																
WS03	D	2	1.70	1																
WS04	D	1	0.80	1																
Totals				4															End of Schedule	



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024



Contract	UK24.7112 1 Pirton Road
Serial No.	45825_1

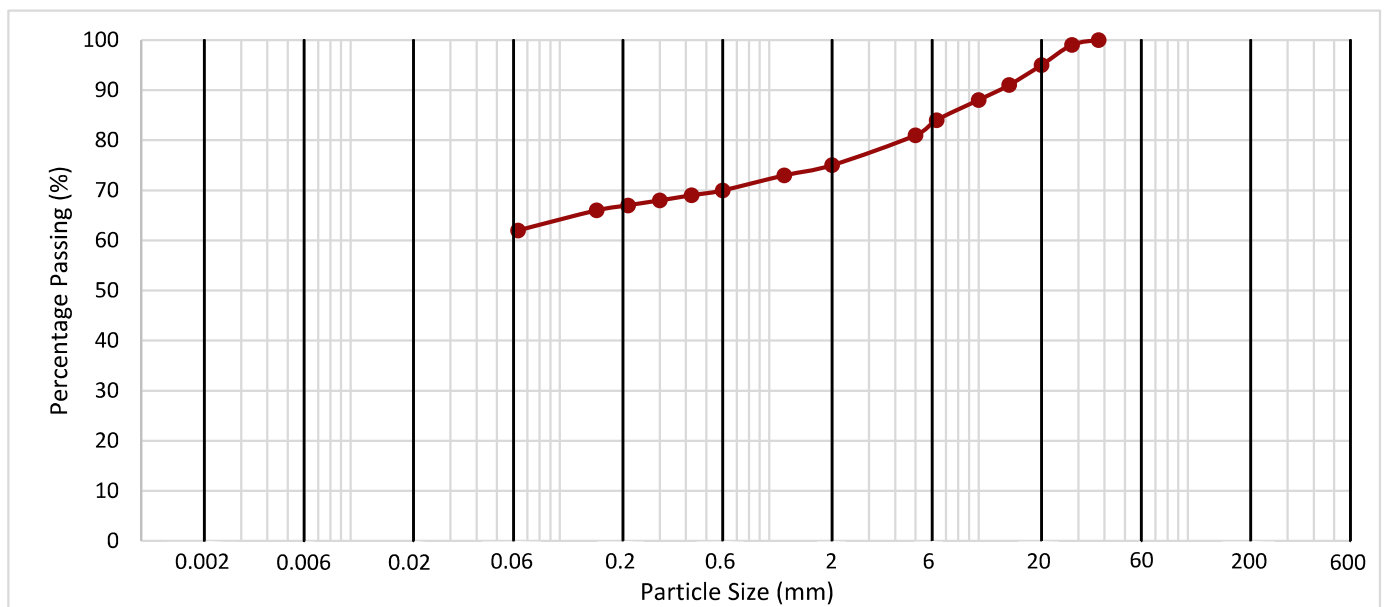
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample		Description	Remarks
		Type	Reference		
WS01	1.20 - 1.50	D	1	White structureless CHALK with occasional harder intact chalk fragments	

Method of Test: **Wet Sieve**

Method of Pretreatment:

Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

H y d r o m e t e r	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.075		
	0.15		
	0.3		
	0.6		
	1.2		
	2.5		
	5		
			Clay by Dry Mass (%)
	0.075		
	0.15		
	0.3		
	0.6		
	1.2		
	2.5		
	5		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	75	13
1.18	73	
0.600	70	
0.425	69	
0.300	68	
0.212	67	
0.150	66	
0.063	62	

Fines By Dry Mass (%)	
<0.063mm	62

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		25
125		
90		
63		
50		
37.5	100	
28	99	
20	95	
14	91	
10	88	
6.3	84	
5	81	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024

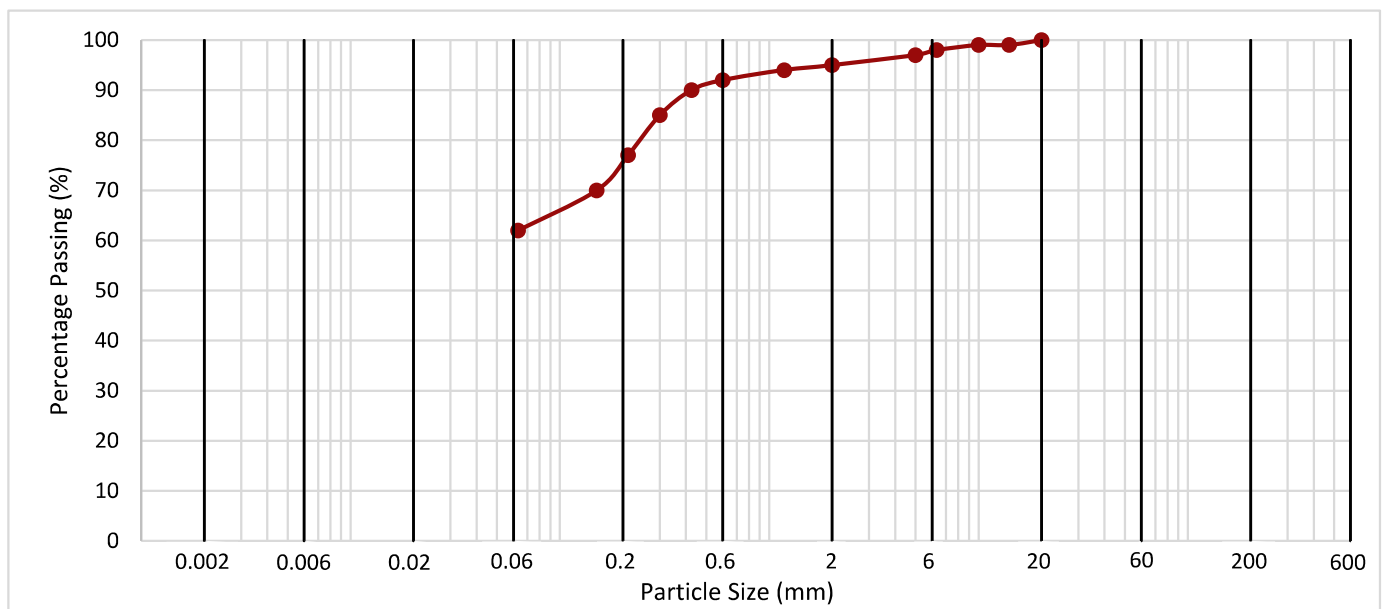


Contract	UK24.7112 1 Pirton Road
Serial No.	45825_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample		Description	Remarks
		Type	Reference		
WS03	1.00 - 1.30	D	1	Pale yellowish brown and white structureless CHALK/marly CHALK with occasional harder intact chalk fragments	

Method of Test: **Wet Sieve** Method of Pretreatment: **Not required**



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

H y d r o m e t e r	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.075		
	0.15		
	0.3		
	0.6		
	1.2		
	2.5		
	5.0		
			Clay by Dry Mass (%)
	0.075		
	0.15		
	0.3		
	0.6		
	1.2		
	2.5		
	5.0		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	95	33
1.18	94	
0.600	92	
0.425	90	
0.300	85	
0.212	77	
0.150	70	
0.063	62	

Fines By Dry Mass (%)	
<0.063mm	62

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		5
125		
90		
63		
50		
37.5		
28		
20	100	
14	99	
10	99	
6.3	98	
5	97	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024



Contract	UK24.7112 1 Pirton Road
Serial No.	45825_1

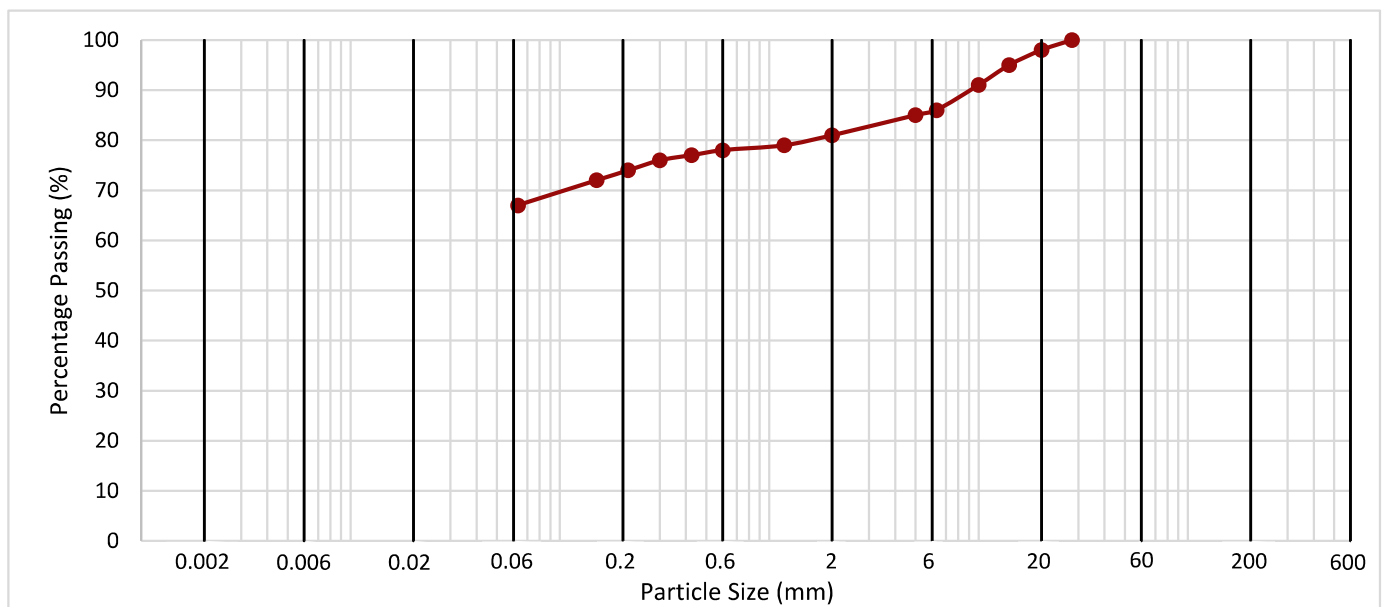
DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample		Description	Remarks
		Type	Reference		
WS03	1.70 - 2.00	D	2	White structureless CHALK with occasional harder intact chalk fragments	

Method of Test: Wet Sieve

Method of Pretreatment:

Not required



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.075		
	0.15		
	0.3		
	0.6		
	1.2		
	2.5		
	5.0		
			Clay by Dry Mass (%)
	0.002		
	0.004		
	0.0075		
	0.015		
	0.03		
	0.06		
	0.12		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	81	14
1.18	79	
0.600	78	
0.425	77	
0.300	76	
0.212	74	
0.150	72	
0.063	67	

Fines By Dry Mass (%)	
<0.063mm	67

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		19
125		
90		
63		
50		
37.5		
28	100	
20	98	
14	95	
10	91	
6.3	86	
5	85	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 11/10/2024

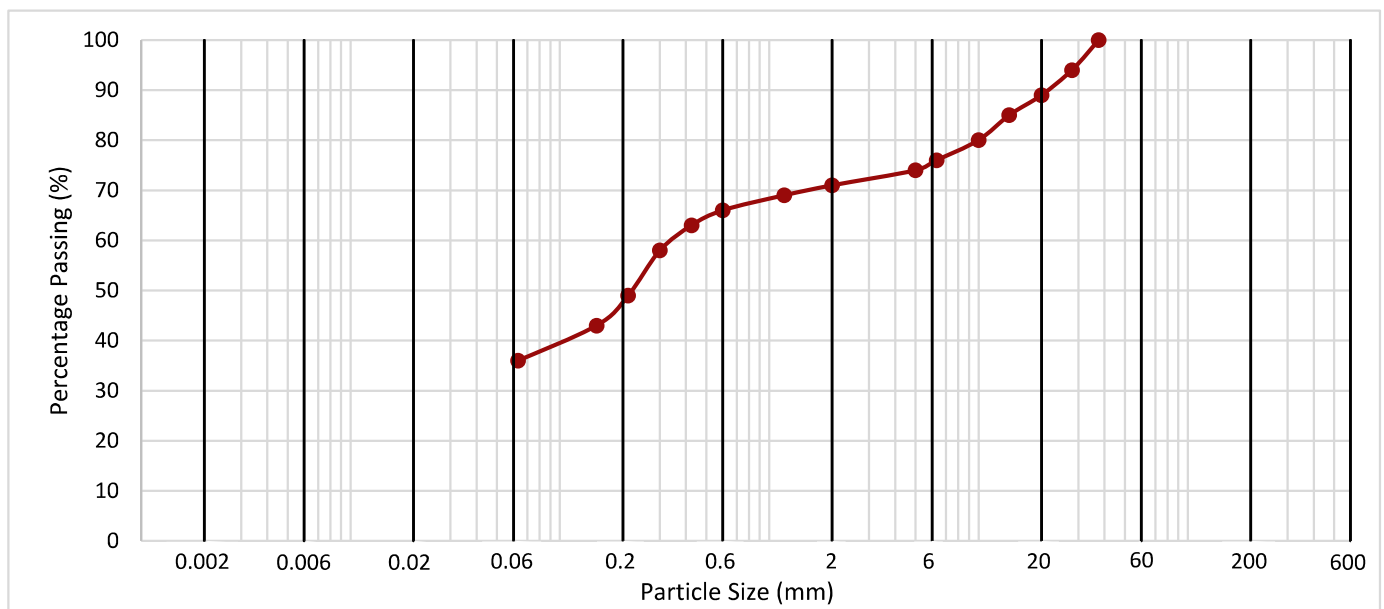


Contract	UK24.7112 1 Pirton Road
Serial No.	45825_1

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Pit No.	Depth (m)	Sample		Description	Remarks
		Type	Reference		
WS04	0.80 - 1.00	D	1	Brown slightly gravelly sandy silty CLAY with rare recently active roots. Gravel is white chalk and rare brick fragments	

Method of Test: **Wet Sieve** Method of Pretreatment: **Not required**



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Hydrometer	Particle Size (mm)	Passing (%)	Silt by Dry Mass (%)
	0.075		
	0.15		
	0.25		
	0.425		
	0.6		
	0.85		
	1.18		
	Particle Size (mm)	Passing (%)	Clay by Dry Mass (%)
	0.075		
	0.15		
	0.25		
	0.425		
	0.6		
	0.85		
	1.18		

Sieve Size (mm)	Passing (%)	Sand By Dry Mass (%)
2.00	71	35
1.18	69	
0.600	66	
0.425	63	
0.300	58	
0.212	49	
0.150	43	
0.063	36	

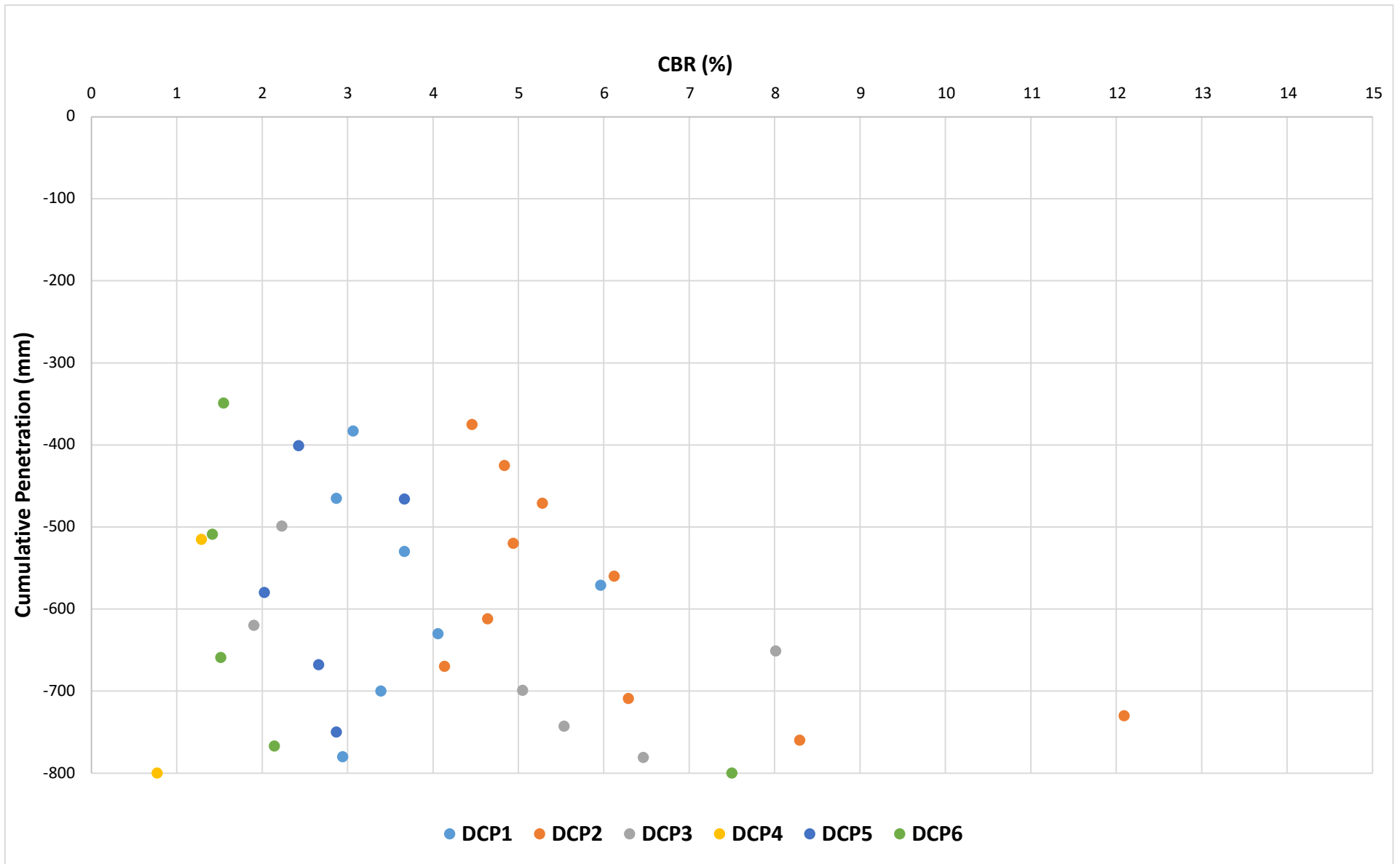
Fines By Dry Mass (%)	
<0.063mm	36

Sieve Size (mm)	Passing (%)	2mm+ By Dry Mass (%)
300		29
125		
90		
63		
50		
37.5	100	
28	94	
20	89	
14	85	
10	80	
6.3	76	
5	74	

Method of Preparation: BS1377: Part 1: 2016: 8.3 & 8.4.5
Method of test: BS1377: Part 2: 1990: 9.2
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter
Comments:

APPENDIX K

DCP Results



APPENDIX L

Generic Screening Criteria



EPS Generic Quantitative Risk Assessment

Generic Screening Criteria (C4SLs) - All Land Uses

	Soil Targets					
Contaminant	Residential		Allotments	Commercial	Public Open Spaces	
	With Home Grown Produce	Without Home Grown Produce			Residential	Parks
Unit	mg/kg					
Arsenic	37	40	49	640	79	168
Benzene	0.87	3.3	0.18	98	140	230
Benzo(a)pyrene	5	5.3	5.7	76	10	21
Cadmium	26	149	4.9	410	220	880
Chromium (VI)	21	21	170	49	23	250
Lead	200	310	80	2330	630	1300
Chloroethene (Vinyl Chloride)	0.0064	0.015	0.0017	1.1	7.8	18
Trichloroethene (TCE)	0.0093	0.097	0.032	0.73	76	41
Tetrachloroethene (PCE)	0.31	0.32	2	24	3200	1400
cis-1,2 Dichloroethene	0.46	0.5	0.89	38	3800	2000
Naphthalene	15	15	65	1600	11000	800
PFOS	0.013	0.041	0.0027	0.6	0.079	0.17
PFOA	0.0076	0.041	0.0014	0.6	0.079	0.17

Notes:

Targets for Human Health have been taken from the publicly available Category 4 Screening Levels (C4SLs) for assessment of land affected by contamination issued by DEFRA/CL:AIRE between December 2013 and May 2024.

Within the modelling for the original six C4SLs (Arsenic, Benzene, Benzo(a)pyrene, Cadmium, Chromium VI, Lead), a Soil Organic Matter content of 6% was used. This differs from the older Suitable for Use Levels (S4ULs) which modelled contaminants with 1%, 2.5% and 6% SOM, with the latter the least conservative. These numbers are therefore not particularly conservative, however sensitivity analysis has shown that a change in SOM only makes a notable difference for Benzene and therefore caution should be taken when using the value for Benzene. For the remaining, newer C4SLs, these were modelled in all SOM and therefore the most conservative 1% values have been used. Reference to site-specific data should be made where possible.

EPS Generic Quantitative Risk Assessment - Residential Land Use (without plant uptake)

Contaminant	Soil Targets			Groundwater Targets		
	Human Health	Controlled Waters		Human Health	Controlled Waters	
		Surface Water	Groundwater		Surface Water	Groundwater
Unit	mg/kg			µg/l		
Arsenic	See C4SL	n/c	n/c	n/c	50	10
Cadmium	See C4SL	n/c	n/c	n/c	1.5	5
Chromium III	910	n/c	n/c	n/c	15	50
Chromium VI	See C4SL	n/c	n/c	n/c	3.4	
Copper	7100	n/c	n/c	n/c	93.1#	2000
Mercury (elemental)	1.2	0.085	1.22	1.1	0.07	1
Nickel	180	n/c	n/c	n/c	14.8#	20
Lead	See C4SL	n/c	n/c	n/c	27.7#	10
Selenium	430	n/c	n/c	n/c	10	10
Zinc	40000	n/c	n/c	n/c	373#	3000
Benzene	See C4SL	0.064	0.0064	500	10	1
Toluene	880 (869)*	1.33	12.6	230,000	74	700
Ethylbenzene	83	0.77	11.5	10,000	20	300
Xylene (para)	79	1.18	19.6	9,900	30	500
MTBE	73	4.41	0.026	83,000	15	15
Benzo(a)Pyrene	See C4SL	n/c	n/c	n/c	0.27	0.01
Naphthalene	See C4SL	0.11	0.11	1400	2	2
Aliphatic C5-C6	42	4.06	0.81	1,900	300†	300†
Aliphatic C6-C8	100	17.8	3.57	1,500	300†	300†
Aliphatic C8-C10	27	n/c	n/c	57	300	300
Aliphatic C10-C12	130(48)*	n/c	n/c	37	300	300
Aliphatic C12-C16	1100(8.48)**	n/c	n/c	n/c	300	300
Aliphatic C16-C35	65000 (8.48)**	n/c	n/c	n/c	-	-
Aromatic C8-C10	47	6.71	1.34	1,900	300	300
Aromatic C10-C12	250	10.6	2.13	6,800	90	90
Aromatic C12-C16	1800	21.2	4.23	39,000	90	90
Aromatic C16-C21	1900f	n/c	n/c	n/c	90	90
Aromatic C21-C35	1900f	n/c	n/c	n/c	90	90
Tetrachloroethene	See C4SL	0.24	0.24	61	10	10
Trichloroethene	See C4SL	0.13	0.13	3.2	10	10
cis-1,2 Dichloroethene	See C4SL	0.21	0.21	370	-	-
Vinyl Chloride	See C4SL	0.0012	0.0012	12	0.5	0.5
PFOS	See C4SL	-	-	n/c	0.1	0.1
PFOA	See C4SL	-	-	n/c	0.1	0.1
Asbestos##	0.001%	-	-	-	-	-

Notes:

* = S4UL exceeds vapour saturation limit (in brackets) ** = S4UL exceeds solubility saturation limit (in brackets)

n/c = not calculated. Under normal conditions contaminant exhibits low solubility /volatility, therefore risks from leaching and or vapour pathways are considered low.

To establish suitable compliance criteria for Surface Water, review of baseline groundwater quality in England and Wales was completed following research reported in Shand, P, Edmunds, W M, Lawrence, A R, Smedley, P L, and Burke, S. 2007. The natural (baseline) quality of groundwater in England and Wales. British Geological Survey Research Report No. RR/07/06. Where compliance criteria was found below the 97.7 percentile of baseline value, the latter was adopted as GAC.

Where assessment of the risk to human health from asbestos in soil is concerned there is no nationally recognised suitable for use /generic screening value commonly referred to through the planning system. As such, EPS has adopted a conservative value of 0.001% as a screening tool for initial risk assessment, although this should be supplemented with a qualitative assessment of the risk.

Soil Targets

Targets for Human Health have been taken from S4ULs 'Suitable For Use Levels for Human Health Risk Assessment' – LQM and CIEH (2014) derived using standard sandy loam soil with 1% SOM, except (*) = EIC/AGS/CL/AIRE GAC 'Soil Generic Assessment Criteria' (2010). For sites where ground conditions differ significantly from sandy loam or site-specific SOM and pH are available, the generic human health targets may be revised.

Targets for Controlled Waters have been derived using EA Remedial Targets Worksheet (v3.1) - using standard Sandy Loam ground conditions as described in Science Report SC050021/SR3, assuming no degradation for a 10m compliance distance with criteria of EQS or UKDWS for Surface Water and Groundwater respectively (see notes for GW targets).

Groundwater Targets

For Surface Water, targets have been taken as Freshwater EQS, using the annual average where available, or else the maximum allowable concentration. For MTBE, in the absence of UK EQS, the UKDWS has been used. For individual TPH fractions, in absence of UK EQS, the WHO Drinking Water Standards have been used.

For Groundwater, targets have been taken as UKDWS where available. In the absence of UK targets internationally recognised criteria were adopted, notably WHO Drinking Water Standards for individual TPH fractions, BTEX and MTBE. † = Aliphatic C5-C8 ranges have utilised the longer chain values on a conservative basis (300µg/l compared to the published 15,000µg/l).

Targets for Human Health have been taken from Society of Brownfield Risk Assessment (SoBRA) 'Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater' - Version 1.0, February 2017, derived using sandy soil and 1%SOM. GAC were set up assuming source at 50cm below typical ground bearing slab of 15cm thickness. GAC were derived for vapour pathways only. For sites where ground conditions, or differ significantly from described above, the generic human health targets may be revised.

APPENDIX M

Cover System Calculator

Calculations based on mixed zone (M)	600	mm
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[illegible]

Summary		
	Target Guideline Value 1	Target Guideline Value 2
Number of contaminants	2	2
Number of contaminants with no thickness calculation	0	2
Breakdown - Number for which no TV specified	0	2
Breakdown - Number for which no soil specified	0	0
Breakdown - Number for which no cover specified	0	0
Breakdown - Number for which cover > TV	0	0
Number of contaminants with thickness calculation	2	0
Breakdown - Number for which no cover required	0	0
Breakdown - Number for which cover required	2	0
Overall thickness of cover required	450	0

APPENDIX N

Cover Soils Checklist



ADVISORY NOTE

SOILS FOR USE IN COVER SYSTEMS

This note applies where there is a need for a control measure in the form of a defined thickness of clean soil to be used in gardens and soft landscaped areas in order to reduce risks from underlying contamination (a 'cover system'). Where a specific thickness has been presented, it is what EPS consider sufficient provided the soil forming the cover system is good quality, as it is assumed that over time this soil will become intermixed with the underlying soils and therefore needs to have the necessary 'dilution' effect. The aim being that an acceptable reduction in exposure to contamination is achieved, rather than absolute prevention.

These simple cover systems are designed in general accordance with the BRE 2004 guidance '*Cover Systems for Land Regeneration, Thickness of Cover Systems for Contaminated Land*'. In many cases guidance from a Local Planning Authority or NHBC/Approved Inspector may also apply and need to be taken into account. In most cases, to design the cover system EPS have to assume a certain quality of cover soils in advance. In these circumstances, we utilise what we consider to represent 'good quality soil' in that the soil could never be considered 'contaminated' but is also pragmatic and does not represent an unrealistic or unsustainable objective for much of the soils in the UK. In numerical terms, this standard typically equates to soil containing contaminants at around 25% of their adopted screening values in the risk assessment.

For the cover system itself, EPS would usually carry out a verification process of your site to demonstrate the control measure has been implemented as intended to satisfy all interested parties such as planning authorities, the NHBC and the future property owner. To document this process, EPS will prepare a Verification Report. If you wish for EPS to do this, we will need the following points confirmed relating to the soils preferably before they are installed in gardens.

If there are any queries, please contact EPS before purchasing any soil.

EPS Contact Details:

Tel: 01954 710666

Email: info@epstrategies.co.uk



Pre-Verification Cover System Checklist		Yes?
Soil Source	The soil must not be a waste. Has it been confirmed that the soil is not a waste and has never been deemed as such in the past?	
	Has the source of the soil been provided?	
	Have all the delivery notes confirming the source, volume and type of soil been provided for all that is to be used? Where suppliers such as British Sugar are used, the soils should be delivered direct to site (not via an intermediary depot).	
Soil Quality	The soils are free of invasive plant species such as Japanese Knotweed, and have not been sourced from an affected area?	
	Do the soils look clean and of a high quality? I.e. the soil must not have an odour or contain any visual evidence of contamination, including oils, asbestos, glass, plastic, rubble, metal, ash, sharp objects or tarmac/bitumen?	
	Testing to 'BS 3882:2015 <i>Specification for topsoil and requirements for use</i> ' is preferable but generally not essential for public health regulation, provided you can confirm the soils comply with the above points, are suitable for their intended purpose and will provide an adequate growing medium?	
	Has the soil been chemically tested prior to it arriving at site? Any soil test results presented to EPS by a third party must be current and clearly relate to the soil used, i.e. the testing must generally be dated within 6 weeks of delivery. The quantity of testing will be dependent on how much confidence is generated in the quality of the material, as well any specific local regulatory requirements. If the soil is clean soil from an established source such as British Sugar, the testing they provide at source may be sufficient alone without further testing (by EPS). For other soils, EPS can advise on the likely testing frequencies but as a rule of thumb, anticipate at least one sample per average-sized plot. The testing would usually comprise the following: Heavy Metals, Poly Aromatic Hydrocarbons, Asbestos and Total Petroleum Hydrocarbons at an accredited lab. If adequate testing has not been completed, then EPS will need to test it from stockpiles prior to installation. Installing the soils into gardens without any testing data is not advised, as it may need to all be removed later.	
Cover Thickness	Are all excavations ready which will allow the necessary thickness of cover soils to be installed?	
	If yes, can you provide waste transfer documentation for any excavated soils?	

APPENDIX O

Method Statement for Encountering Unexpected Contamination



METHOD STATEMENT

ACTIONS TO BE TAKEN IN THE EVENT OF DISCOVERING UNEXPECTED CONTAMINATION DURING INTRUSIVE GROUNDWORKS

If at any point during intrusive groundworks at a site, evidence of unforeseen contamination is encountered in the form of significant noxious odours, discolouration, or instability within soils or sheen/ discolouration in groundwater, the following actions will be taken:

- Intrusive works in the immediate area of the impacted ground will be suspended and the continuation of work in other areas of the site will be considered within the context of the site specific health & safety plan.
- Environmental Protection Strategies Ltd (EPS) will be contacted and appraised of the situation so that arrangements can be made to characterise the impact and determine what action may be necessary in addition to the scheduled site works. Where possible / health & safety plan permits, digital photographs of the impacted ground will be taken and emailed to EPS at the address below to assist in the initial assessment
- It may well be necessary for EPS to attend site to undertake visual inspection and obtain samples for field and/or laboratory analysis, although the actions taken will be dependent on the nature of what is encountered
- In cases where EPS consider the unforeseen contamination likely to pose a significant risk of significant harm to adjacent site users or local environmental receptors, the local authority and the Environment Agency will be informed of the situation and the actions being taken
- Once appropriate action has been agreed and undertaken, a written summary will be produced by EPS for submission to the Local Authority, (and where relevant, the Environment Agency) in accordance with planning requirements. The submission will include details of work undertaken, analytical results of investigative and validation samples obtained and conclusions and recommendations for any further actions considered necessary
- Where regulatory bodies have been involved, site works should only recommence following their agreement and in all cases should only recommence when the site manager considers it safe to do so within the context of the site specific health & safety plan.

EPS Contact Details:

Marcus Bell	Director	Tel: 0787 206 9979
Will Evans	Director	Tel: 0781 253 9655
Steve Bullock	Director	Tel: 0786 694 9221

Email: info@epstrategies.co.uk (Automatically forwarded to the above and office-based personnel)



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