

create



Paul Cripps

LAND OFF HEXTON ROAD, LILLEY

Contaminated Land Assessment

Independent, multidisciplinary engineering
and environmental consultants

LAND OFF HEXTON ROAD, LILLEY

Contaminated Land Assessment

Document Reference: TB/CC/P25-3557/01

Client: Paul Cripps

Engineer: Create Consulting Engineers (Create) Limited
109 – 112 Temple Chambers
3 – 7 Temple Avenue
London
EC4Y 0HP

Tel: 0207 822 2300

Email: enquiries@createce.co.uk

Website: www.createce.co.uk

Date: July 2025

DOCUMENT AND QUALITY CONTROL

Revision/Date	Writer	Approver	Nature of Revision
First Issue July 2025	Thomas Bennett MSc (Hons), FGS	Colin Buchanan BSc (Hons), FGS	

CONTENTS

1.0	INTRODUCTION
2.0	SITE LOCATION AND DESCRIPTION
3.0	REVIEW OF EXISTING INFORMATION
4.0	GROUND INVESTIGATION
5.0	GROUND CONDITIONS
6.0	SOIL CONTAMINATION ASSESSMENT
7.0	CONCLUSIONS & RECOMMENDATIONS
8.0	REFERENCES

FIGURES

1.1	Existing Site Layout
1.2	Proposed Development Layout
2.1	Site Location Plan

TABLES

6.1	Updated Conceptual Site Model
-----	-------------------------------

APPENDICES

A.	Exploratory Hole Location Plan
B.	Exploratory Hole Logs
C.	Chemical Test Certificates
D.	Waste Classification Report
E.	Ground Gas Monitoring
F.	Risk Tables

1.0 INTRODUCTION

Brief

- 1.1 Create Consulting Engineers Ltd (CCE) was instructed by Paul Cripps (the 'Client') to undertake a Phase 2 Contaminated Land Ste Assessment for a proposed new build residential property on land at Hexton Road, Lilley, LU2 9NA (the 'Site').

Project and Planning Context

- 1.2 The Site location plan is provided as Figure 1.1, below:



Figure 1.1: Site Location Plan

- 1.3 The development proposal is provided in Figure 1.2, below:



Figure 1.2: Proposed Development Layout

- 1.4 Planning was granted by North Hertfordshire District Council (Planning Reference 20/01905/FP, superseded by Planning Reference 22/01841/S73) in October 2020 / August 2022 for the *Erection of one detached 4-bed dwelling including new vehicular crossover onto Hexton Road*, subject to a number of Planning Conditions.
- 1.5 With regard to Contaminated Land, the following condition was applied:

Condition 13: Land Contamination:

(a) No development approved by this permission shall be commenced prior to the submission to, and agreement of the Local Planning Authority of written information allowing a preliminary environmental risk assessment to be undertaken, which allows the creation of a Conceptual Site Model which indicates sources, pathways and receptors. It should identify the current and past land uses of this site (and adjacent sites), with a view to determining the presence of contamination likely to be harmful to human health, and the built and natural environment.

(b) If the Local Planning Authority is of the opinion that the report which discharges condition (a), above, indicates a reasonable likelihood of harmful contamination then no development approved by this permission shall be commenced until a Site Investigation (Phase II environmental risk assessment) report has been submitted to and approved by the Local Planning Authority which includes:

(i) A full identification of the location and concentration of all pollutants on this site and the presence of relevant receptors, and;

(ii) The results from the application of an appropriate risk assessment methodology

(c) No development approved by this permission (other than that necessary for the discharge of this condition) shall be commenced until a Remediation Method Statement report; if required as a result of (b), above; has been submitted to and approved by the Local Planning Authority.

(d) This site shall not be occupied, or brought into use, until:

(i) All works which form part of the Remediation Method Statement report pursuant to the discharge of condition (c) above have been fully completed and if required a formal agreement is submitted that commits to ongoing monitoring and/or maintenance of the remediation scheme.

(ii) A Remediation Verification Report confirming that the site is suitable for use has been submitted to, and agreed by, the Local Planning Authority.

(e) Any contamination, other than that reported by virtue of condition (a) and (b), encountered during the development of this site shall be brought to the attention of the Local Planning Authority as soon as practically possible; a scheme to render this contamination harmless shall be submitted to and agreed by, the Local Planning Authority and subsequently fully implemented prior to the occupation of this site.

Reason: To ensure that any contamination affecting the site is dealt with in a manner that safeguards human health, the built and natural environment and controlled waters

- 1.6 The Client submitted a Phase 1 Contaminated Land Assessment (CLA) undertaken by others (STM Environmental Consultants Ltd, Report Reference PHI-2022-000066), which recommended further intrusive investigation be undertaken to quantify the risks to future end-users.
- 1.7 A partial discharge of Condition 13 was granted in March 2025, discharging Part (a) of Condition 13, with parts (b) to (e) remaining to be approved.
- 1.8 A geotechnical site investigation was carried out by others in 2023 in order to provide foundation information for the proposed development. This comprised boreholes and the installation of a monitoring well, although limited environmental laboratory testing and no interpretation of the results. A full review of this report is included in Section 3 of this Report.

Objective

- 1.9 The objective of this assessment was to determine the environmental condition of the Site, assess the potential risks to future end users and local environmental receptors identified in the Phase 1 Preliminary Risk Assessment completed by others and to discharge Planning Condition 13(b).
- 1.10 The investigation works were carried out in accordance with best practice and planning guidance such as that set out in the National Planning Policy Framework (2025), Environment Agency's Land Contamination Risk Management guidance (2025), BS5930:2015+A1:2020 – Code of practice for ground investigations and NHBC Standards 2011 Chapter 4.1: Land quality – managing ground conditions.

Scope of Work

1.11 The scope of the assessment is outlined below.

- Review the findings of the Geotechnical Site Investigation undertaken at the Site in 2023 and incorporate any relevant findings and results in the contaminated land risk assessment;
- Drill 4No. windowless sampler boreholes to a maximum depth of 5.45metres below ground level (m bgl) (or refusal) across the Site with hand-dug excavation pits to 1.0m, *in situ* SPTs and sample collection for environmental testing;
- Install monitoring wells with a bung and raised cover to enable subsequent monitoring of ground gas and groundwater levels (if present);
- Measure ground gas concentrations (and gas flow rate) present in the existing monitoring well (WS1) installed by others in 2023;
- Chemical testing for a standard suite of organic and inorganic parameters as well as Waste Acceptance Criteria (WAC) tests for waste classification analysis; and
- 2No. return site visits to measure ground gas concentrations, gas flow rates and groundwater levels.

Constraints and Limitations

1.12 The copyright of this report is vested in Create Consulting Engineers Limited and the Client, Paul Cripps. The Client, or their appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Limited or the Client.

1.13 Create Consulting Engineers Limited accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

1.14 Create Consulting Engineers Limited has endeavoured to assess all information provided to them during this appraisal. Should additional information become available which may affect the opinions expressed in this report, Create Consulting reserves the right to review this information and, if warranted, to modify the opinions presented in the report accordingly.

1.15 The report summarises information from a number of external sources and is unable to offer any guarantees or warranties for the completeness or accuracy of information relied upon. Information from third parties has not been verified by Create Consulting Engineers Limited unless otherwise stated in this report.

1.16 The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

2.0 SITE LOCATION AND DESCRIPTION

Site Location

- 2.1 The Site is located off Hexton Road to the north of Lilley, at approximate National Grid Reference 511298E, 227565N and the nearest postcode for the Site is LU2 9NA.
- 2.2 The Site location is shown in Figure 2.1, below:

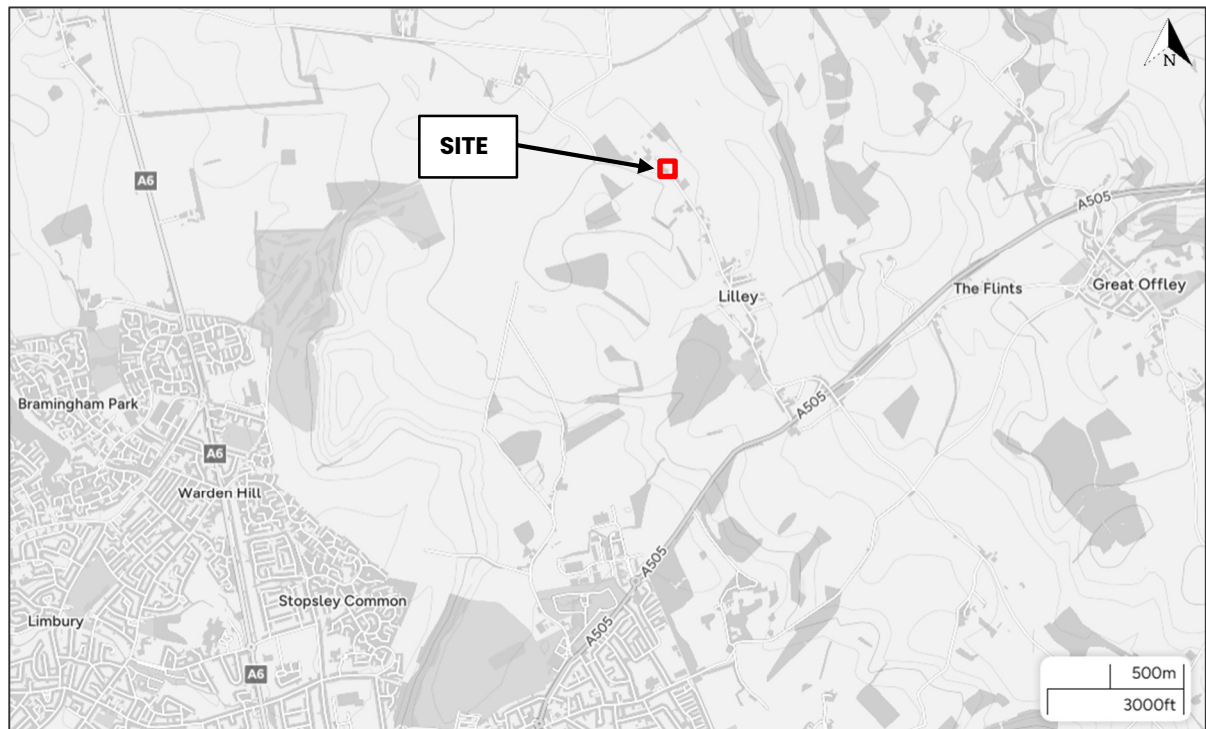


Figure 2.1: Site Location Plan

Site Description

- 2.3 The Site was accessed off Hexton Road, to the south west.
- 2.4 The Site was an undeveloped roughly rectangular plot that sloped down to the north east. Low-lying vegetation and scrub covered the Site, with mature trees along the northern, southern and south eastern boundaries.
- 2.5 An old shed was present in the north east corner of the Site.
- 2.6 No ironworks were present, indicating that buried services were unlikely to be present across the Site.

3.0 REVIEW OF EXISTING INFORMATION

Phase 1 Contaminated Land Risk Assessment – STM Environmental Consultants Ltd

Report Reference: PHI-2022-000066, 2022

- 3.1 A Phase 1 Contaminated Land Assessment was carried out by STM Environmental Consultants Ltd in 2022 in support of a planning application for the Site.
- 3.2 The Report outlined the following potential pollutant linkages for the Site:
- Former Unspecified Pit on earliest OS Map Edition (1897 – 1900) encompassing the Site and part of the surrounding area, infilled by the 1898 OS Edition;
 - Agricultural Land adjacent in all directions; and
 - 3No. infilled ponds, the closest being approximately 60m to the north of the Site.
- 3.3 The potential pollutant linkages were categorized as having a moderate/low risk to end-users.
- 3.4 It was recommended that an intrusive Phase 2 Site Investigation be undertaken to quantify the extent of contamination and the potential risks to end-users.

Geotechnical Report – Herts & Essex Site Investigations (HESI)

Report Reference: 18239

- 3.5 A Geotechnical Site Investigation was carried out by HESI in 2023 in order to provide foundation information for the proposed development.
- 3.6 A total of 3No. windowless sampler boreholes were undertaken across the Site, to a maximum depth of 5.20m bgl and a monitoring well was installed in one of the boreholes (WS1). The location of these boreholes are included in the Exploratory Hole Location Plan provided in Appendix A.
- 3.7 Soils interpreted as Made Ground, possibly infill, were recorded to a maximum depth of 4.40m bgl though no specific detail of the Made Ground was provided.
- 3.8 A single shallow soil sample was taken from the front of the Site, from a depth of 0.30m to 0.40m bgl (WS1) and subjected to environmental laboratory testing.
- 3.9 No interpretation of the results was provided and the results from this testing have been incorporated into Section 6 of this Report.

4.0 GROUND INVESTIGATION

4.1 Ground investigation works at the Site were undertaken by CCE in two stages, on the 24 June 2025 and 18th July 2025, as outlined in the following paragraphs.

Description of Fieldwork

4.2 The initial scope works undertaken was as follows:

- 4No. windowless sampler boreholes (WS101 to WS104) to a maximum depth of 5.45m bgl with hand-dug excavation pits to 1.0m, *in situ* SPTs and sample collection for environmental testing;
- Monitoring wells were installed with a bung and raised cover at borehole locations WS101, WS103 and WS104;
- Chemical testing for a standard suite of organic and inorganic parameters from across the extent of the made Ground as well as WAC testing for waste classification purposes;
- Ground gas monitoring of existing installation from 2023 investigation (WS1); and
- 2No. return site visits to measure ground gas and groundwater levels in order to provide a preliminary ground gas risk assessment.

4.3 Due to a sample recording the presence of asbestos in shallow soils in the initial site investigation, a supplementary investigation was carried out on 18 July 2025 with the scope of the investigation as follows:

- 7No. hand-dug trial pits in proposed areas of gardens and soft landscaping to a maximum depth of 0.60m bgl, with sample collection for environmental testing; and
- Asbestos testing of 14No. samples;

4.4 An Exploratory Hole Location Plan is presented within Appendix A.

4.5 The soil arisings from each borehole and trial pit were logged by a suitably qualified Engineer, in line with the relevant British Standard (BS 5930 and Eurocode 7). Exploratory hole logs are included within Appendix B.

4.6 All works were undertaken in accordance with the CCE Health and Safety Policy and within the framework of a Health and Safety plan.

Environmental Laboratory Testing

4.7 Soil samples were collected from the Made Ground at various locations and depths across the Site and submitted for chemical testing at a UKAS/MCERTS accredited laboratory.

4.8 Samples for contamination analysis were collected in suitable amber glass 250ml jars and 60ml vials, as well as 1ltr plastic tubs, using clean nitrile gloves to avoid any cross-contamination between samples.

4.9 All samples were transported under chain of custody documentation and tested for a range of inorganic and organic compounds. Cool boxes were kept cool (<4°C) with ice packs during sample collection and subsequent transportation by courier to the testing laboratory.

- 4.10 The contamination analysis for the Site Investigation comprised a range of organic and inorganic parameters including asbestos, metals, total petroleum hydrocarbons (TPH CWG), speciated polycyclic aromatic hydrocarbons (PAHs) and phenolic compounds. Due to the depth of material likely to be removed from Site to accommodate a basement as part of the development, a deeper sample of the Made Ground was also submitted for WAC analysis.
- 4.11 The laboratory test certificates are provided in Appendix C.

Site Monitoring

- 4.12 During the initial investigation, the existing monitoring well installed in 2023 (WS1) was monitored to confirm the presence / absence of groundwater and presence of ground gas at the Site. On completion of the investigation, the Site was revisited on 2No. occasions (4 July and 18 July 2025) in order to monitor all existing and newly installed wells and to confirm the presence / absence of groundwater and ground gas across the Site.
- 4.13 Measurements of methane, carbon dioxide, oxygen as well as gas flow were taken from each monitoring well using a GA5000 infra-red gas analyser with flow pod.
- 4.14 Following measurement of ground gas concentration and flow levels, standing groundwater levels and the total depth of selected monitoring wells were recorded using a dipmeter.
- 4.15 The ground gas monitoring and groundwater level measurements are presented in Appendix E and discussed in Section 6.

5.0 GROUND CONDITIONS

- 5.1 The encountered ground conditions are summarised below and provided in detail within the exploratory hole logs (Appendix B).

General

- 5.2 A total of 11No. exploratory holes, WS101 to WS104 and TP101 to TP107, were formed across the Site. An exploratory hole location plan is presented within Appendix A.
- 5.3 The ground investigation was designed to provide an assessment of ground conditions across the Site, determine the depth, composition and environmental condition of potentially infilled ground and install monitoring standpipes to enable subsequent ground gas and groundwater monitoring (WS101, WS103 and WS104).
- 5.4 The following paragraphs provide a summary of ground conditions encountered during the ground investigation.

Made Ground

- 5.5 Made Ground was recorded across the Site, to depths of between 1.30m bgl (WS104) and 4.50m bgl (WS102), interpreted as infilled material within the former *Unspecified Pit* identified by historical mapping.
- 5.6 The Made Ground was recorded to be variable in nature though generally described as a 'sandy gravelly clay'. A band of 'Reworked chalk' was recorded at WS101 (0.60m to 1.90m bgl) and WS103 (1.40m to 2.50m bgl).
- 5.7 Anthropogenic material within the Made Ground comprised occasional fragments of brick and charcoal.
- 5.8 Organic fragments (fragments of woody material) were recorded at WS102 at a depth of 0.80m bgl and within WS103 at 1.25m bgl and between 2.50m and 2.80m bgl, with a very slight organic odour noted.
- 5.9 The Made Ground was found to be more extensive within the centre/north of the Site.

Superficial Deposits: Glaciofluvial Deposits

- 5.10 Superficial Glaciofluvial Deposits were recorded underlying the Made Ground and to the extents of the exploratory holes (5.45m bgl).
- 5.11 These superficial deposits were found to be interbedded horizons of CLAY, SAND and SILT, with example descriptions including 'Light brown mottled orange brown SILT/CLAY', 'Orange brown silty fine to medium SAND' and 'Light brown clayey sandy SILT'.

Groundwater

- 5.12 No groundwater was recorded during the investigation. Deep deposits of SILT and CLAY horizons were noted as being '*damp*' at 3.00m bgl (WS104), 3.60m bgl (WS103), 4.00m bgl (WS101) and 4.80m bgl (WS102), though no groundwater was recorded during subsequent Site monitoring.

6.0 SOIL CONTAMINATION ASSESSMENT

Soil Contamination

- 6.1 The soil characteristics have been assessed with reference to Land Quality Management (LQM)/Chartered Institute of Environmental Health (CIEH) 'Suitable 4 Use Levels' (S4ULs) for human health risk assessment 2015). In the case of lead a DEFRA Category 4 Screening Level has been adopted.
- 6.2 A Tier 1 (semi-quantitative) risk assessment has been undertaken comparing soil chemical testing results against current and appropriate published guidelines for residential end-use, using the minimum soil organic matter (SOM) result (minimum recorded value from across the Site was 1.1%) for quantifying the assessment criteria for organic components. In the case of heavy metals, the 1.0% SOM criteria has been utilised.
- 6.3 This assessment, along with the laboratory test certificates, are provided in Appendix C.

Tier 1 Human Health Assessment

- 6.4 All contaminants of concern within both the shallow and deep Made Ground were confirmed as being less than the Site Specific Assessment Criteria (SSAC) for the most sensitive end-use of residential with plant uptake.
- 6.5 A single fragment of cement-bound chrysotile asbestos was detected in the shallow sample from WS102 (0.1 – 0.4m), with a bundle of amosite asbestos fibres detected in a deep sample (2.50m to 2.80m) in WS103.
- 6.6 The deep sample from WS103 was within a negligible band of distinct Made Ground material that was not recorded within other exploratory boreholes. In addition, this location will be within the footprint of the residential development and as such, there is no exposure risk to end-users. When excavating foundations for the proposed development, should these extend into this band of material, any exposure risk to construction workers can be mitigated by the use of standard Respiratory Protective Equipment (RPE).
- 6.7 Given the presence of a single lump of cement-bound chrysotile asbestos in shallow ground that will form the rear-gardens of the development, additional investigation and detailed sampling of areas of private garden and soft landscaping was undertaken to understand the potential distribution, if any, of asbestos across the Site.
- 6.8 An additional 7No. hand-pits were excavated across the proposed rear garden area and areas of soft landscaping, with shallow (0.1 – 0.3m bgl) and deeper (0.4 – 0.6m bgl) samples collected from each trial pit and tested for the presence / absence of asbestos.
- 6.9 None of the additional 14No. samples collected and tested recorded the presence of asbestos within Site soils, with a total of 1No. sample from 17No. samples recording a single instance of cement-bound asbestos in the shallow soils.
- 6.10 Given the results of the assessment, it has been concluded that there is a negligible risk to end-users and no remedial measures will be required at the Site.

WAC Analysis

- 6.11 1No. sample was submitted for waste classification analysis, in accordance with WM3 classification. The results of this testing, in conjunction with the sample results obtained from the HESI Geotechnical Report are provided in Appendix D and should be provided to the waste receiver for classification purposes.

Ground Gas Monitoring

- 6.12 Ground gas monitoring visits were undertaken on 3No occasions: 24 June 2025, 4 July and 18 July 2025 to provide an initial assessment for the presence / absence of ground gases at the Site.
- 6.13 The ground gas monitoring recorded the following:
- Methane (CH₄) recorded at 0.0% by volume;
 - Carbon dioxide (CO₂) recorded at between 0.8% and 7.2% by volume (maximum of 2.0% within footprint of development / Made Ground);
 - Oxygen (O₂) recorded at 15.4% to 20.1% by volume; and
 - Gas flows recorded from 0.0l/hr to 0.3l/hr.
- 6.14 The results of the ground gas monitoring visits are provided in Appendix E.

Ground Gas Risk Assessment

- 6.15 The ground gases recorded at the Site show a distinct change between natural soils (WS01 / WS104) at the front of the Site (and not within the footprint of the proposed development) and those Made Ground soils within the footprint of the proposed development and rear of the Site.
- 6.16 The standpipes installed within the natural soils provided higher concentrations of CO₂ (up to 7.2% by volume) than those installed within the Made Ground (up to 2.0% by volume). Research has shown (Card & Wilson, 2011 and BS8485+A1:2019) that chalk as a carbonate rock can produce negligible quantities of carbon dioxide and that are not of significant risk to human health. The Site geology is mapped as Glaciofluvial Deposits over Undifferentiated Chalk of the Holywell Nodular and New Pit Formations.
- 6.17 It is considered that low concentrations of CO₂ generated by this natural process are represented by the ground gas measurements taken from WS1 and WS104 and that application of the ground gas risk methodology outlined below can be applied on the basis of the initial readings taken.
- 6.18 The assessment of gas risk follows the methodology detailed in BS 8485: 2015+A1:2019, using the gas concentrations and measured flow rate to derive a gas screening value (GSV). This GSV can then be used to determine a characteristic gas situation (CS) value for the Site.
- 6.19 Two of the monitoring visits were undertaken during low (<1005mbar) and falling atmospheric pressure, conditions most conducive to ground gas generation. Flow rates recorded during the monitoring undertaken during these conditions were negligible, reaching a maximum of 0.3l/hr.
- 6.20 The worst case GSVs have been determined using the highest concentrations of methane (0.0% v/v) and carbon dioxide (7.2% v/v) detected and the highest gas flow measured (0.3l/hr) at the site using

the monitoring results and the worst case GSVs are:

- Methane (0.0%) x gas flow (0.3 l/hr) gives a GSV of 0.000; and
- Carbon Dioxide (7.2%) x gas flow (0.3 l/hr) gives a GSV of 0.0216.

- 6.21 Although the highest concentration of CO₂ recorded during Site monitoring was 7.2% and, as such could be represent a higher CS category, this is a natural low risk source. Given this and these GSVs represent the worst-case ground gas risk on the Site, the classification of 'CS1' risk (very low) for both methane and carbon dioxide is considered appropriate, as detailed in Table 2, Section 6.4 of BS 8485: 2015+A1:2019.
- 6.22 The CS1 rating has been assessed based on the negligible CO₂ readings taken from within the Made Ground from the former pit and the likely slightly elevated CO₂ readings from natural soils at the front of the Site.
- 6.23 On the basis of the ground gas monitoring undertaken to date, it is considered that further monitoring is unwarranted and no ground gas protection measures are required for the proposed development.

Updated Conceptual Site Model

- 6.24 Based on the intrusive investigation and subsequent contamination sampling and ground gas monitoring undertaken at the Site, the Conceptual Site Model from the Phase 1 Contaminated Land Assessment for the Site can be updated with proven pollutant linkages, as per Table 7.1, below with risk tables included in Appendix F.

Source	Pollutant	Pathway	Receptor	Likelihood of Occurrence	Consequence (severity)	Potential Risk	Comment	Further Action
Historical and current agricultural site use with former infilled pit within Site including possible poor quality Made Ground.	Asbestos in soils, metals, polyaromatic hydrocarbons, petroleum hydrocarbons	Possible direct contact with contaminated soils and accidental ingestion/inhalation of contaminated dust/vapours generated from soils in private garden areas / soft landscaped areas.	Future residential end-users	Unlikely	Medium	Low	No contaminants of concern exceeding the relevant SSAC for the Site. Negligible asbestos findings across gardens and soft landscaping. No remedial action required.	No
		Direct contact and ingestion/inhalation of contamination in shallow soils during enabling works; exposure short term.	Construction/ground workers	Unlikely	Mild	Low	Potential for exposure during ground works, although readily mitigated with use of standard PPE/RPE.	No
	Ground gas (methane and carbon dioxide)	Possible generation of ground gas contaminants on Site and inhalation of harmful (asphyxiant) ground gases or accumulation of explosive gases.	Future residential end-users	Unlikely	Medium	Low	No significant concentrations of carbon dioxide or methane recorded, no further monitoring and no ground gas protection measures required during development	No
			Construction/ground workers	Unlikely	Mild	Very Low	Limited exposure potential, no action necessary	-
Off-site former/current site uses (farm to east / infilled ponds)	Petroleum hydrocarbons and volatiles organic compounds	Migration onto Site and inhalation of contamination vapours.	Future residential end users	Unlikely	Medium	Low	No significant sources of contamination, no action necessary.	-
			Construction/ground workers	Unlikely	Mild	Very Low		-
	Ground gas (methane and carbon dioxide)	Possible migration of ground gas contaminants onto Site and inhalation of harmful (asphyxiant) ground gases or accumulation of explosive gases.	Future residential end users	Unlikely	Medium	Low	No significant sources proximal to Site and no exposure risk identified; no action necessary	-

Table 6.1: Updated Site Risk Assessment

7.0 CONCLUSIONS & RECOMMENDATIONS

Conclusions

- 7.1 The proposed development is for a single residential dwelling on land off Hexton Road, Lilley.
- 7.2 The site investigation comprised 4No. exploratory holes to establish the ground, ground gas and groundwater conditions and to provide a quantified risk assessment for end-users.
- 7.3 Ground conditions at the Site comprised Made Ground to depths of between 1.60m and 4.50m bgl, underlain by superficial Glaciofluvial Deposits to the extent of the boreholes.
- 7.4 No groundwater was recorded during the investigation.
- 7.5 Environmental testing of site soils found no contaminants of concern above the relevant SSACs for the Site.
- 7.6 A single, shallow fragment of cement-bound Chrysotile asbestos and a single, deep bundle of Amosite asbestos were recorded during the initial investigation. A more detailed, subsequent assessment of shallow ground conditions in proposed rear garden areas and area of soft landscaping found no further instances of asbestos. As such, it is considered that the risk posed to future end-users at the Site is negligible and no remedial actions will be required.
- 7.7 Should foundations extent to the base of the Made Ground, any exposure risk to construction workers of asbestos fibres can be mitigated through the use of RPE.
- 7.8 Based on the ground gas monitoring undertaken to date, the Site is classified as characteristic CS1 for carbon dioxide and methane, indicating that there is very low ground gas risk and as such, further monitoring and ground gas protection measures are not required for the proposed development.

Recommendations.

- 7.9 Based on the investigations undertaken to date, no further investigation and no remedial works are required at the Site to safeguard future end-users.
- 7.10 As such, it is considered that Condition 13(b) of Planning Reference 22/01841/S73 can be discharged and Conditions 13(c) and (d) are no longer applicable.

8.0 REFERENCES

- 8.1 Addison, J, Davies, L, Robertson A and Willey, R. 1988. The release of dispersed asbestos fibres from soils. Research Report TM/88/14. Institute of Occupational Medicine, Edinburgh.
- 8.2 British Standards Institute (BSI). BS 5930:2015 Code of practice for ground investigations. 2015.
- 8.3 British Standards Institute (BSI). BS 8002:1994 Code of Practice for earth retaining structures. 1994
- 8.4 British Standards Institute (BSI). BS 8485:2015+A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases in new buildings. 2019.
- 8.5 British Standards Institute (BSI). BS 10175:2011+A2:2017 – Investigation of potentially contaminated sites. 2017.
- 8.6 CIRIA. 2014. Asbestos in Soil and Made Ground: A Guide to Understanding and Managing the Risks. CIRIS C733. CIRIA, London.
- 8.7 Contaminated Land: Applications in Real Environments (CL:AIRE). 2014. SP1010 – Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination.
- 8.8 DEFRA, Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance, April 2012
- 8.9 Department for Communities and Local Government. National Planning Policy Framework. February 2019.
- 8.10 Department of the Environment, Transport and the Regions, Environment Agency and Institute of Environmental Health. Guidelines for Environmental Risk Assessment and Management. HMSO July 2000.
- 8.11 ENVIRONMENT AGENCY. Guidance for the Safe Development of Housing on Land Affected by Contamination R&D Publication 66, 2008.
- 8.12 ENVIRONMENT AGENCY. Land Contamination Risk Management guidance. October 2020
- 8.13 NHBC and Environment Agency. Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: 2008 Volume 1.
- 8.14 NHBC guidance on evaluation of development proposals on sites where methane and carbon dioxide are present, Report Edition No. 04, March 2007.
- 8.15 NHBC Standards (2011) Chapter 4.1: Land quality – managing ground conditions. 2011.
- 8.16 The Environmental Protection Group (EPG). A pragmatic approach to ground gas risk assessment for the 21st century. 2011.

APPENDIX A

Exploratory Hole Location Plan

create

- **Windowless Sampler location and ID**
- **Trial Pit location and ID**
- **Previous SI (by others) borehole location and ID**

APPENDIX B

Exploratory Hole Logs

KEY SHEET

SAMPLING

ES Environmental sample*

TESTING

N=x SPT blow count 'N' given as the sum of the blows required to drive the sampler across the test length (300mm)

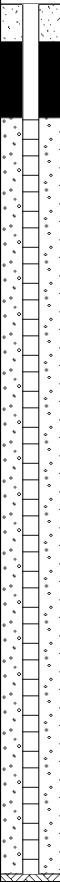
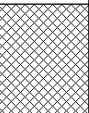
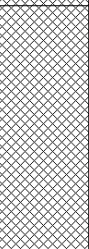
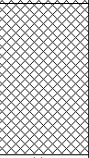
(x,x/y,y,y,y) Blows per increment during the standard penetration test (SPT). The initial two readings, 'x' relate to the seating drive (150mm of test) whilst the remaining blows, 'y', relate to the number of blows per 75mm increment of the test length (total of 300mm)

x (x,x for z) Incomplete SPT test where seating drive blow count (x) totals 50 for length of seating drive (z) (penetration in mm)

x (x,x/y for z) Incomplete SPT test where seating drive was completed but full test length could not be achieved (z) (penetration in mm).

All measurements are given in metres (m), unless otherwise specified

*Sample comprised 1No. litre plastic tub, 1No. 250ml amber jar and 1No. 60ml amber vial

		Borehole Log					Borehole No. WS101							
						Sheet 1 of 1								
Project: Land off Hexton Road			Project No: P25-3557		Co-ords:		Hole Type WS							
Location: Lilley					Level:		Scale 1:40							
Client: Ernst & Young					Date: 24/06/2025		Logged TB							
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description						
		Depth (m)	Type	Results										
		0.20 - 0.40	ES		0.60			Orange brown mottled brown sandy gravelly clay. Gravel is angular to subangular fine to coarse flint and subangular fine to medium chalk. With fragments of brick. MADE GROUND.	1					
		1.00	SPT	N=9 (2,2/3,2,2,2)						Reworked chalk recovered as white with occasional pale yellow brown staining silty subangular to subrounded very weak chalk gravel. With rare traces of brick. MADE GROUND.				
		2.00	SPT	N=6 (1,2/1,2,2,1)							Dark brown becoming brown silty sandy clay. Trace charcoal and brick. MADE GROUND.			
		3.00	SPT	N=3 (1,0/1,0,1,1)							2.70		Light brown mottled orange brown SILT/CLAY. GLACIOFLUVIAL DEPOSITS.	
											2.90			Orange brown silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.
											3.20			3.20m ...with trace clay
		4.00	SPT	N=17 (1,2/2,4,6,5)							3.80		Light brown clayey sandy SILT. GLACIOFLUVIAL DEPOSITS.	
											4.00		4.00m ...damp	
											4.20		4.20m ...with fine sandy lenses	
		4.60	SPT	N=50 (25 for 20mm/50 for 20mm)							4.50		Very dense brown mottled light brown fine to medium SAND. GLACIOFLUVIAL DEPOSITS.	
4.64	End of Borehole at 4.64m													
		Borehole Diameter		Casing Diameter		Chiselling								
Depth Base		Diameter		Depth Base		Diameter		Depth Top	Duration					
Remarks														
1. WS101 halted at 4.64m, barrel refusal														
2. No groundwater encountered														
3. SPT Hammer ratio = 67%														



Borehole Log

Borehole No.

WS102

Sheet 1 of 1

Project: Land off Hexton Road

Project No: P25-3557

Co-ords:

Hole Type

WS

Location: Lilley

Level:

Scale 1:40

Client: Ernst & Young

Date: 24/06/2025

Logged TB

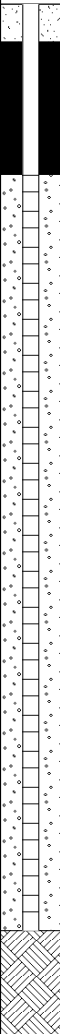
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.10 - 0.40	ES					Grass over brown mottled grey brown silty sandy gravelly clay. Gravel is subangular to subrounded fine to medium flint and subangular to subrounded fine to coarse chalk. With fragments of brick. MADE GROUND.	
					0.60			0.60m ...becoming brown mottled grey brown silty sandy clay	
					0.80			0.80m ...becoming grey brown mottled dark grey brown. With organic fragments and very slight organic odour	1
		1.00 - 1.30	ES						
		1.00	SPT	N=11 (1,1/2,2,3,4)					
					1.50			1.50m ...with reworked chalk	
					1.70				
		2.00	SPT	N=2 (0,1/1,0,1,0)				Brown mottled orange brown silty sandy gravelly clay. With pockets of chalk and with fragments of brick and charcoal. MADE GROUND.	2
					2.80			2.80m ...fragment of slate	
					3.20				
					3.50			Brown mottled grey brown sandy angular to subangular fine to medium flint gravel. With fragments of brick and charcoal. MADE GROUND.	
								Brown mottled light brown silt / clay. MADE GROUND.	
					3.90			Orange brown silty fine sand. MADE GROUND.	
					4.00			Grey brown clayey angular to subrounded fine to medium flint and chalk gravel. MADE GROUND.	4
					4.50			Orange brown mottled light brown silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.	
			4.80			Very soft light brown to grey brown silty sandy CLAY. GLACIOFLUVIAL DEPOSITS.			
			4.80			4.80m ...damp			
			4.95			4.95m ...becoming medium dense orange brown clayey sandy SILT	5		
			5.45			End of Borehole at 5.45m			
								6	
								7	
								8	

Borehole Diameter		Casing Diameter		Chiselling		Duration
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	

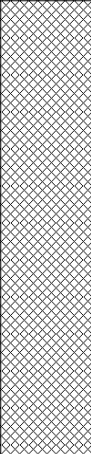
Remarks

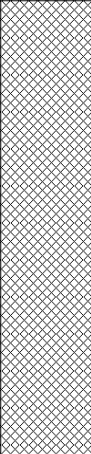
1. WS102 halted at 5.45m, target depth
2. No groundwater encountered
3. SPT Hammer ratio = 67%



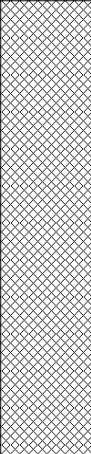
		Borehole Log					Borehole No. WS103		
							Sheet 1 of 1		
Project: Land off Hexton Road			Project No: P25-3557		Co-ords:		Hole Type WS		
Location: Lilley					Level:		Scale 1:40		
Client: Ernst & Young					Date: 24/06/2025		Logged TB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50		Grass over brown mottled grey brown silty sandy gravelly clay. Gravel is subangular to subrounded fine to medium flint and subangular to subrounded fine to coarse chalk. With fragments of brick. MADE GROUND. <i>0.50m ...becoming orange brown mottled grey brown</i>	1	
		0.80	ES		1.25				
		1.00	SPT	N=16 (1,2/3,4,5,4)	1.40		<i>1.25m ...becoming grey brown mottled dark grey brown. With organic fragments and very slight organic odour</i>		
		2.00	SPT	N=7 (2,1/2,1,2,2)			Reworked chalk recovered as white with occasional pale yellow brown staining silty subangular to subrounded very weak chalk gravel. MADE GROUND.	2	
		2.50 - 2.80	ES		2.50				
		3.00	SPT	N=2 (1,1/1,0,0,1)	2.90		Dark grey brown silty sandy clay. With occasional fragments of chalk and with fragments of brick and charcoal. With very slight organic odour. MADE GROUND.	3	
					3.10		Orange brown silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.		
					3.30		<i>3.10m ...with trace clay</i>		
					3.60		Very soft brown mottled orange brown sandy CLAY / SILT. GLACIOFLUVIAL DEPOSITS.		
		4.00	SPT	N=11 (3,3/2,2,3,4)	3.80		<i>3.60m ...damp</i>	4	
					4.30		<i>3.80m ...becoming light brown sandy clayey SILT</i>		
					4.60		Orange brown mottled brown to light brown clayey silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.		
					4.80		Orange brown mottled brown silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.		
		5.00	SPT	N=45 (3,3/4,4,8,29)	5.20		Orange brown mottled brown slightly clayey sandy SILT. GLACIOFLUVIAL DEPOSITS.	5	
					5.45		<i>5.20m ...becoming brown</i>		
							End of Borehole at 5.45m	6	
								7	
								8	
Borehole Diameter		Casing Diameter		Chiselling					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration			
Remarks 1. WS103 halted at 5.45m, target depth 2. No groundwater encountered 3. SPT Hammer ratio = 67%									

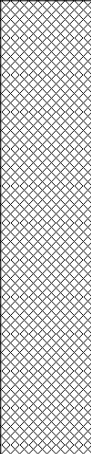
create		Borehole Log					Borehole No. WS104		
							Sheet 1 of 1		
Project: Land off Hexton Road			Project No: P25-3557		Co-ords:		Hole Type WS		
Location: Lilley					Level:		Scale 1:40		
Client: Ernst & Young					Date: 24/06/2025		Logged TB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	ES		0.60		Grass over brown mottled grey brown to brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subangular fine to coarse chalk. With fragments of brick. MADE GROUND. 0.60m ...becoming brown to orange brown	1	
		1.00	SPT	N=10 (1,2/3,2,2,3)	1.30		Brown to orange brown slightly sandy silty CLAY. GLACIOFLUVIAL DEPOSITS. 1.70m ...becoming SILT/CLAY		
		2.00	SPT	N=13 (1,2/3,3,3,4)	1.90		Brown mottled light brown finely laminated slightly silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS. 2.60m ...with <10cm clayey lenses	2	
		3.00	SPT	N=8 (3,3/2,2,2,2)	3.00		3.00m ...damp		
		4.00	SPT	N=12 (1,1/1,2,4,5)	3.60		Brown mottled light brown clayey sandy SILT. GLACIOFLUVIAL DEPOSITS. 3.80m ...damp	4	
		4.20			4.40		4.20m ...becoming sandy CLAY/SILT		
		5.00	SPT	N=18 (2,4/3,5,5,5)			Medium dense brown finely laminated slightly silty to silty fine to medium SAND. GLACIOFLUVIAL DEPOSITS.	5	
		5.45					End of Borehole at 5.45m		
									6
									7
								8	
Borehole Diameter		Casing Diameter		Chiselling					
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration			
Remarks 1. WS104 halted at 5.45m, target depth 2. No groundwater encountered 3. SPT Hammer ratio = 67%									

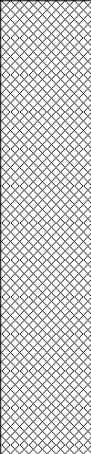
				Trial Pit Log				Trial Pit No. TP101	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick and occasional half bricks. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP101 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

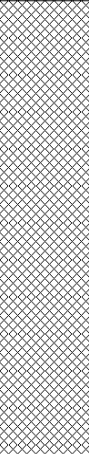
				Trial Pit Log				Trial Pit No. TP102	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP102 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

create				Trial Pit Log				Trial Pit No. TP103	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP103 halted at 0.60m, target depth 2. No groundwater encountered									AGS
Stability : Stable									

				Trial Pit Log				Trial Pit No. TP104	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP104 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

				Trial Pit Log				Trial Pit No. TP105	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP105 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

				Trial Pit Log				Trial Pit No. TP106	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to grey brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick. MADE GROUND.		
	0.40 - 0.60	ES							
							End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP106 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

				Trial Pit Log				Trial Pit No. TP107	
								Sheet 1 of 1	
Project: Land off Hexton Road				Project No: P25-3557		Co-ords: Level:		Date 18/07/2025	
Location: Lilley						Dimensions (m): 0.35		Scale 1:10	
Client: Ernst & Young						Depth: 0.60		Logged TB	
Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth (m)	Type	Results						
	0.10 - 0.30	ES		0.60			Brown to dark brown slightly sandy gravelly clay. Gravel is subangular to subrounded fine to coarse flint and subrounded fine to coarse chalk. With frequent fragments of brick and occasional charcoal. MADE GROUND.		
	0.40 - 0.60	ES					End of Trial Pit at 0.60m		
									1
									2
Remarks 1. TP107 halted at 0.60m, target depth 2. No groundwater encountered									
Stability : Stable									

APPENDIX C

Chemical Test Certificates

Certificate of Analysis

Certificate Number 25-14540

Issued: 11-Jul-25

Client Create Consulting Engineers LTD
15 Princess Street
Norwich
NR3 1AF

Our Reference 25-14540

Client Reference ~ P25-3557

Order No ~ 5877

Contract Title ~ Land off Hexton Road, Lilley

Description 6 Soil samples, 1 Leachate prepared by DETS sample.

Date Received 26-Jun-25

Date Started 26-Jun-25

Date Completed 11-Jul-25

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Louise Cook
Contracts Manager



Summary of Chemical Analysis

Soil Samples

Our Ref 25-14540

Client Ref ~ P25-3557

Contract Title ~ Land off Hexton Road, Lilley

Lab No	2529793	2529794	2529795	2529796	2529797	2529798
Sample ID ~	WS01	WS02	WS02	WS03	WS03	WS04
Depth ~	0.20-0.40	0.10-0.40	1.00-1.30	0.80-0.80	2.50-2.80	0.40
Other ID ~	ES1	ES1	ES2	ES1	ES2	ES1
Sample Type ~	ES	ES	ES	ES	ES	ES
Sampling Date ~	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Preparation									
Moisture Content	DETSC 1004	0.1	%	13	10	19	16	21	11
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg	22	25	20	23	28	27
Barium	DETSC 2301#	1.5	mg/kg	76	78	83	49	68	53
Beryllium	DETSC 2301#	0.2	mg/kg	0.8	0.7	0.9	0.7	0.8	0.7
Boron, Water Soluble (2.5:1)	DETSC 2311#	0.2	mg/kg	0.6	0.8	1.0	0.4	0.7	0.3
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.2	0.2	0.3	0.2
Chromium	DETSC 2301#	0.15	mg/kg	23	20	27	17	22	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	28	35	26	27	33	30
Lead	DETSC 2301#	0.3	mg/kg	38	78	35	23	32	27
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Nickel	DETSC 2301#	1	mg/kg	28	28	32	27	32	28
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Vanadium	DETSC 2301#	0.8	mg/kg	40	37	46	34	42	36
Zinc	DETSC 2301#	1	mg/kg	120	110	110	87	98	97
Inorganics									
pH	DETSC 2008#		pH	8.3	8.3	7.9	8.1	8.0	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	0.1	0.1	< 0.1	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Organic matter	DETSC 2002#	0.1	%	1.3	2.0	1.7	1.1	1.9	1.3
Sulphate Aqueous Extract as SO4 (2:1)	DETSC 2076#	10	mg/l	39	100	76	44	31	15
Sulphide	DETSC 2024*	10	mg/kg	12	16	< 10	44	16	12
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03	0.05	0.03	0.02	0.03	0.02
Petroleum Hydrocarbons									
Aliphatic C5-C6: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10: HS_1D_AL	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >EC10-EC12: EH_2D_AL	DETSC 3521#	1.5	mg/kg	2.49	2.50	< 1.50	2.52	5.00	< 1.50
Aliphatic >EC12-EC16: EH_2D_AL	DETSC 3521#	1.2	mg/kg	< 1.20	< 1.20	< 1.20	< 1.20	8.98	< 1.20
Aliphatic >EC16-EC21: EH_2D_AL	DETSC 3521#	1.5	mg/kg	< 1.50	< 1.50	< 1.50	< 1.50	5.16	< 1.50
Aliphatic >EC21-EC35: EH_2D_AL	DETSC 3521#	3.4	mg/kg	< 3.40	11.11	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic >EC35-EC40: EH_2D_AL	DETSC 3521*	3.4	mg/kg	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
Aliphatic C5-C40: EH_2D+HS_1D_AL	DETSC 3521*	10	mg/kg	< 10.00	13.61	< 10.00	< 10.00	19.15	< 10.00
Aromatic C5-C7: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10: HS_1D_AR	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >EC10-EC12: EH_2D_AR	DETSC 3521#	0.9	mg/kg	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
Aromatic >EC12-EC16: EH_2D_AR	DETSC 3521#	0.5	mg/kg	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Aromatic >EC16-EC21: EH_2D_AR	DETSC 3521#	0.6	mg/kg	5.22	3.95	2.51	1.36	3.94	3.08
Aromatic >EC21-EC35: EH_2D_AR	DETSC 3521#	1.4	mg/kg	7.54	14.83	4.39	< 1.40	< 1.40	6.15

Summary of Chemical Analysis

Soil Samples

Our Ref 25-14540

Client Ref ~ P25-3557

Contract Title ~ Land off Hexton Road, Lilley

Lab No	2529793	2529794	2529795	2529796	2529797	2529798
Sample ID ~	WS01	WS02	WS02	WS03	WS03	WS04
Depth ~	0.20-0.40	0.10-0.40	1.00-1.30	0.80-0.80	2.50-2.80	0.40
Other ID ~	ES1	ES1	ES2	ES1	ES2	ES1
Sample Type ~	ES	ES	ES	ES	ES	ES
Sampling Date ~	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025
Sampling Time ~	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
Aromatic >EC35-EC40: EH_2D_AR	DETSC 3521*	1.4	mg/kg	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
Aromatic C5-C40: EH_2D+HS_1D_AR	DETSC 3521*	10	mg/kg	12.76	18.78	< 10.00	< 10.00	< 10.00	< 10.00
TPH Ali/Aro C5-C40: EH_2D+HS_1D_Total	DETSC 3521*	10	mg/kg	12.76	32.39	< 10.00	< 10.00	19.15	< 10.00
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.18	0.08	0.07	< 0.03	< 0.03	0.15
Anthracene	DETSC 3303	0.03	mg/kg	0.05	< 0.03	< 0.03	< 0.03	< 0.03	0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.52	0.30	0.19	< 0.03	0.04	0.34
Pyrene	DETSC 3303#	0.03	mg/kg	0.45	0.28	0.17	< 0.03	0.03	0.29
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.21	0.14	0.07	< 0.03	< 0.03	0.14
Chrysene	DETSC 3303	0.03	mg/kg	0.20	0.14	0.07	< 0.03	< 0.03	0.14
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.24	0.19	0.08	< 0.03	< 0.03	0.15
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.10	0.08	< 0.03	< 0.03	< 0.03	0.07
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.17	0.14	0.04	< 0.03	< 0.03	0.11
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.11	0.09	< 0.03	< 0.03	< 0.03	0.07
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.10	0.09	< 0.03	< 0.03	< 0.03	0.07
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	2.3	1.5	0.70	< 0.10	< 0.10	1.6
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.6	< 0.3	< 0.3	< 0.3	< 0.3

WASTE ACCEPTANCE CRITERIA TESTING v20.25.02.03

Our Ref 25-14540

Client Ref P25-3557

Contract Title Land off Hexton Road, Lilley

Sample Id WS03 ES2 2.50-2.80

Sample Numbers 2529797 2529799

Date Analysed 11/07/2025

Test Results On Waste			WAC Limit Values		
Determinand and Method Reference	Units	Result	Inert Waste	SNRHW	Hazardous Waste
DETSC 2084# Total Organic Carbon	%	2.5	3	5	6
DETSC 2003# Loss On Ignition	%	6.8	n/a	n/a	10
DETSC 3321# BTEX	mg/kg	< 0.04	6	n/a	n/a
DETSC 3401# PCBs (7 congeners)	mg/kg	< 0.01	1	n/a	n/a
DETSC 3311* Mineral Oil (C10 - C40)	mg/kg	< 10	500	n/a	n/a
DETSC 3301 PAHs	mg/kg	< 1.6	100	n/a	n/a
DETSC 2008# pH	pH Units	8.0	n/a	>6	n/a
DETSC 2073* Acid Neutralisation Capacity (pH4)	mol/kg	1.2	n/a	TBE	TBE
DETSC 2073* Acid Neutralisation Capacity (pH7)	mol/kg	< 1.0	n/a	TBE	TBE

Test Results On Leachate			WAC Limit Values		
Determinand and Method Reference	Conc in Eluate ug/l	Amount Leached mg/kg	Limit values for LS10 Leachate		
	10:1	LS10	Inert Waste	SNRHW	Hazardous Waste
DETSC 2306 Arsenic as As	3.4	0.03	0.5	2	25
DETSC 2306 Barium as Ba	11	0.1	20	100	300
DETSC 2306 Cadmium as Cd	< 0.030	< 0.02	0.04	1	5
DETSC 2306 Chromium as Cr	0.38	< 0.1	0.5	10	70
DETSC 2306 Copper as Cu	8.9	0.09	2	50	100
DETSC 2306 Mercury as Hg	0.027	< 0.002	0.01	0.2	2
DETSC 2306 Molybdenum as Mo	4.7	< 0.1	0.5	10	30
DETSC 2306 Nickel as Ni	4	< 0.1	0.4	10	40
DETSC 2306 Lead as Pb	0.91	< 0.05	0.5	10	50
DETSC 2306 Antimony as Sb	1.3	< 0.05	0.06	0.7	5
DETSC 2306 Selenium as Se	1.6	< 0.03	0.1	0.5	7
DETSC 2306 Zinc as Zn	4.4	0.04	4	50	200
DETSC 2055 Chloride as Cl	< 100	< 100	800	15,000	25,000
DETSC 2055* Fluoride as F	350	3.5	10	150	500
DETSC 2055 Sulphate as SO4	3000	< 100	1000	20,000	50,000
DETSC 2009* Total Dissolved Solids	100000	1000	4000	60,000	100,000
DETSC 2130 Phenol Index	< 100	< 1	1	n/a	n/a
DETSC 2085 Dissolved Organic Carbon	16000	160	500	800	1000

Additional Information	
DETSC 2008 pH	7.7
DETSC 2009 Conductivity uS/cm	145.0
* Temperature*	20.0

Mass of Sample Kg	0.114
Mass of dry Sample Kg	0.090

Stage 1

Volume of Leachant L2	0.876
Volume of Eluate VE1	0.8

TBE - To Be Evaluated
SNRHW - Stable Non-Reactive
Hazardous Waste

Disclaimer: The WAC limit values are provided for guidance only. Normec DETS does not accept responsibility for errors or omissions. Values are correct at time of issue.

Summary of Asbestos Analysis

Soil Samples

Our Ref 25-14540

Client Ref ~ P25-3557

Contract Title ~ Land off Hexton Road, Lilley

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2529793	WS01 ES1 0.20-0.40	SOIL	NAD	none	Lucy Lindsley
2529794	WS02 ES1 0.10-0.40	SOIL	Chrysotile	chrysotile in cement	Lucy Lindsley
2529795	WS02 ES2 1.00-1.30	SOIL	NAD	none	Lucy Lindsley
2529796	WS03 ES1 0.80-0.80	SOIL	NAD	none	Lucy Lindsley
2529797	WS03 ES2 2.50-2.80	SOIL	Amosite	bundle of amosite	Lucy Lindsley
2529798	WS04 ES1 0.40	SOIL	NAD	none	Lucy Lindsley

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 25-14540
 Client Ref ~ P25-3557
 Contract ~ Land off Hexton Road, Lilley

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2529793	WS01 0.20-0.40 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529794	WS02 0.10-0.40 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529795	WS02 1.00-1.30 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529796	WS03 0.80-0.80 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529797	WS03 2.50-2.80 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529798	WS04 0.40 SOIL	24/06/25	GJ 250ml, GJ 60ml, PT 1L		
2529799	WS03 2.50-2.80 LEACHATE	24/06/25	GJ 250ml, GJ 60ml, PT 1L		

Lab No	Sample ID	Comments
2529799	WS03 2.50-2.80	Insufficient sample 1344g (<2kg) Sample received
Key: G-Glass P-Plastic J-Jar T-Tub Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.		

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 250µm sieve Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis. The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.
--

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :- Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Information in Support of the Analytical Results

List of HWOL Acronyms and Operators

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

Det	Acronym
Aliphatic C5-C6	HS_1D_AL
Aliphatic C6-C8	HS_1D_AL
Aliphatic C8-C10	HS_1D_AL
Aliphatic >EC10-EC12	EH_2D_AL
Aliphatic >EC12-EC16	EH_2D_AL
Aliphatic >EC16-EC21	EH_2D_AL
Aliphatic >EC21-EC35	EH_2D_AL
Aliphatic >EC35-EC40	EH_2D_AL
Aliphatic C5-C40	EH_2D+HS_1D_AL
Aromatic C5-C7	HS_1D_AR
Aromatic C7-C8	HS_1D_AR
Aromatic C8-C10	HS_1D_AR
Aromatic >EC10-EC12	EH_2D_AR
Aromatic >EC12-EC16	EH_2D_AR
Aromatic >EC16-EC21	EH_2D_AR
Aromatic >EC21-EC35	EH_2D_AR
Aromatic >EC35-EC40	EH_2D_AR
Aromatic C5-C40	EH_2D+HS_1D_AR
TPH Ali/Aro C5-C40	EH_2D+HS_1D_Total
Mineral Oil (C10-C40) + Clean Up	EH_CU_1D_Total

Key:

~ Sample details are provided by the client and can affect the validity of the results

* -not accredited.

-MCERTS (accreditation only applies if report carries the MCERTS logo).

\$ -subcontracted.

n/s -not supplied.

I/S -insufficient sample.

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.03.07

Certificate of Analysis

Certificate Number 25-16821

Issued: 28-Jul-25

Client Create Consulting Engineers LTD
15 Princess Street
Norwich
NR3 1AF

Our Reference 25-16821

Client Reference ~ P25-3557

Order No ~ PO5899

Contract Title ~ Land off Hexton Road, Lilley

Description 14 Soil samples.

Date Received 22-Jul-25

Date Started 22-Jul-25

Date Completed 28-Jul-25

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By



Reyhan Irfan
Operations Manager



Summary of Asbestos Analysis Soil Samples

Our Ref 25-16821

Client Ref ~ P25-3557

Contract Title ~ Land off Hexton Road, Lilley

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2542870	TP101 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542871	TP101 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542872	TP102 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542873	TP102 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542874	TP103 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542875	TP103 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542876	TP104 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542877	TP104 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542878	TP105 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542879	TP105 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542880	TP106 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542881	TP106 ES2 0.40-0.60	SOIL	NAD	none	Josh Best
2542882	TP107 ES1 0.10-0.30	SOIL	NAD	none	Josh Best
2542883	TP107 ES2 0.40-0.60	SOIL	NAD	none	Josh Best

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * -not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 25-16821
 Client Ref ~ P25-3557
 Contract ~ Land off Hexton Road, Lilley

Containers Received & Deviating Samples

Lab No	Sample ID ~	Date Sampled ~	Containers Received	Holding time exceeded for tests	Incorrect container for tests
2542870	TP101 0.10-0.30 SOIL	18/07/25	PT 1L		
2542871	TP101 0.40-0.60 SOIL	18/07/25	PT 1L		
2542872	TP102 0.10-0.30 SOIL	18/07/25	PT 1L		
2542873	TP102 0.40-0.60 SOIL	18/07/25	PT 1L		
2542874	TP103 0.10-0.30 SOIL	18/07/25	PT 1L		
2542875	TP103 0.40-0.60 SOIL	18/07/25	PT 1L		
2542876	TP104 0.10-0.30 SOIL	18/07/25	PT 1L		
2542877	TP104 0.40-0.60 SOIL	18/07/25	PT 1L		
2542878	TP105 0.10-0.30 SOIL	18/07/25	PT 1L		
2542879	TP105 0.40-0.60 SOIL	18/07/25	PT 1L		
2542880	TP106 0.10-0.30 SOIL	18/07/25	PT 1L		
2542881	TP106 0.40-0.60 SOIL	18/07/25	PT 1L		
2542882	TP107 0.10-0.30 SOIL	18/07/25	PT 1L		
2542883	TP107 0.40-0.60 SOIL	18/07/25	PT 1L		

Key: P-Plastic T-Tub

Normec DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Key:

~ Sample details are provided by the client and can affect the validity of the results
 * -not accredited.
 # -MCERTS (accreditation only applies if report carries the MCERTS logo).
 \$ -subcontracted.
 n/s -not supplied.
 I/S -insufficient sample.

Information in Support of the Analytical Results

Our Ref 25-16821

Client Ref ~ P25-3557

Contract ~ Land off Hexton Road, Lilley

U/S -unsuitable sample.

t/f -to follow.

nd -not detected.

End of Report Ver 25.07.18

Land off Hexton Road, Lilley

Comparison of Samples vs Site Specific Assessment Criteria

Scenario: Residential with plant uptake (1% SOM)

LoD	Metals (Based on 5% SOM)	SSAC	Sample ID	WSI	WSI01	WSI02	WSI02	WSI03	WSI03	WSI04
			Depth	0.30 - 0.40	0.2 - 0.4	0.1 - 0.4	1.0 - 1.3	0.8	2.5 - 2.8	0.4
0.2mg/kg	Arsenic	37		20	22	25	20	23	28	27
1.5mg/kg	Barium	-		-	76	78	83	49	68	53
0.2mg/kg	Beryllium	1.7		-	0.80	0.70	0.90	0.70	0.80	0.70
0.2mg/kg	Boron, Water Soluble	290		-	0.60	0.80	1.0	0.40	0.70	0.30
0.1mg/kg	Cadmium	11		0.24	0.30	0.30	0.20	0.20	0.30	0.20
0.15mg/kg	Chromium	910		20	23	20	27	17	22	19
1mg/kg	Chromium, Hexavalent	6		-	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
0.2mg/kg	Copper	2400		26	28	35	26	27	33	30
0.3mg/kg	Lead	200		28	38	78	35	23	32	27
0.05mg/kg	Mercury	40		0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.05
1mg/kg	Nickel	130		28	28	28	32	27	32	28
0.5mg/kg	Selenium	250		0.93	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
0.8mg/kg	Vanadium	410		-	40	37	46	34	42	36
1mg/kg	Zinc	3700		95	120	110	110	87	98	97
Inorganics										
	pH	-		8.4	8.3	8.3	7.9	8.1	8.0	8.0
0.1mg/kg	Cyanide, Total	-		-	0.10	0.10	0.10	< 0.1	0.20	< 0.1
0.1mg/kg	Cyanide, Free*	34		-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
0.10%	Organic matter	-		-	1.3	2.0	1.7	1.1	1.9	1.3
10mg/l	Sulphate Aqueous Extract as SO ₄	-		-	39	100	76	44	31	15
10mg/kg	Sulphide	-		-	12	16	< 10	44	16	12
0.01%	Sulphate as SO ₄ , Total	-		-	0.03	0.05	0.03	0.02	0.03	0.02
Petroleum Hydrocarbons										
0.01mg/kg	Aliphatic C5-C6	42		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
0.01mg/kg	Aliphatic C6-C8	100		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
0.01mg/kg	Aliphatic C8-C10	27		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1.5mg/kg	Aliphatic C10-C12	130		-	2.5	2.5	< 1.50	2.5	5.0	< 1.50
1.2mg/kg	Aliphatic C12-C16	1100		-	< 1.20	< 1.20	< 1.20	< 1.20	9.0	< 1.20
1.5mg/kg	Aliphatic C16-C21	65000		-	< 1.50	< 1.50	< 1.50	< 1.50	5.2	< 1.50
3.4mg/kg	Aliphatic C21-C35	65000		-	< 3.40	11	< 3.40	< 3.40	< 3.40	< 3.40
3.4mg/kg	Aliphatic C35-C40	-		-	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40	< 3.40
10mg/kg	Aliphatic C5-C35	-		-	< 10	14	< 10	< 10	19	< 10
0.01mg/kg	Aromatic C5-C7	70		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
0.01mg/kg	Aromatic C7-C8	130		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
0.01mg/kg	Aromatic C8-C10	34		-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
0.9mg/kg	Aromatic C10-C12	74		-	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90	< 0.90
0.5mg/kg	Aromatic C12-C16	140		-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
0.6mg/kg	Aromatic C16-C21	260		-	5.2	4.0	2.5	1.4	3.9	3.1
1.4mg/kg	Aromatic C21-C35	1100		-	7.5	15	4.4	< 1.40	< 1.40	6.2
1.4mg/kg	Aromatic C35-C40	-		-	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40	< 1.40
10mg/kg	Aromatic C5-C35	-		-	13	19	< 10	< 10	< 10	< 10
10mg/kg	TPH Ali/Aro Total	-		-	13	32	< 10	< 10	19	< 10
PAHs										
0.03mg/kg	Naphthalene	2.3		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
0.03mg/kg	Acenaphthylene	170		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
0.03mg/kg	Acenaphthene	210		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
0.03mg/kg	Fluorene	170		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
0.03mg/kg	Phenanthrene	95		-	0.18	0.08	0.07	< 0.03	< 0.03	0.15
0.03mg/kg	Anthracene	2400		-	0.05	< 0.03	< 0.03	< 0.03	< 0.03	0.03
0.03mg/kg	Fluoranthene	280		-	0.52	0.30	0.19	< 0.03	0.04	0.34
0.03mg/kg	Pyrene	620		-	0.45	0.28	0.17	< 0.03	0.03	0.29
0.03mg/kg	Benzo(a)anthracene	7.2		-	0.21	0.14	0.07	< 0.03	< 0.03	0.14
0.03mg/kg	Chrysene	15		-	0.20	0.14	0.07	< 0.03	< 0.03	0.14
0.03mg/kg	Benzo(b)fluoranthene	2.6		-	0.24	0.19	0.08	< 0.03	< 0.03	0.15
0.03mg/kg	Benzo(k)fluoranthene	77		-	0.10	0.08	< 0.03	< 0.03	< 0.03	0.07
0.03mg/kg	Benzo(a)pyrene	2.2		-	0.17	0.14	0.04	< 0.03	< 0.03	0.11
0.03mg/kg	Indeno(1,2,3-c,d)pyrene	27		-	0.11	0.09	< 0.03	< 0.03	< 0.03	0.07
0.03mg/kg	Dibenzo(a,h)anthracene	0.24		-	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
0.03mg/kg	Benzo(g,h,i)perylene	320		-	0.10	0.09	< 0.03	< 0.03	< 0.03	0.07
0.10mg/kg	PAH - USEPA 16, Total	4399		-	2.3	1.5	0.70	< 0.10	< 0.10	1.6
Phenols										
0.3mg/kg	Phenol - Monohydric	184		-	< 0.3	0.60	< 0.3	< 0.3	< 0.3	< 0.3

Key

xx At or exceeding the SSAC (Site Specific Assessment Criteria)

LoD Laboratory 'Limit of Detection'

* Based on ATKINS AtRisk Value, 2017

APPENDIX D

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)



XOA34-GJF60-BOWOD

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

Report is invalid if pages are removed.

Job name

Land off Hexton Road, Lilley

Description/Comments

Project

P25-3557

Site

Land off Hexton Road, Lilley

Classified by

Name: **Thomas Bennett**
 Date: **17 Jul 2025 15:31 GMT**
 Telephone:
 Company: **Create Consulting Engineers Ltd**
15 Princes Street
Norwich
Nr3 1AF

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

HazWasteOnline™ Certification:

-

Course

Hazardous Waste Classification

Date

-

Purpose of classification

7 - Disposal of Waste

Address of the waste

Land off Hexton Road, Lilley

Post Code LU2 8NA

SIC for the process giving rise to the waste

41202 Construction of domestic buildings

Description of industry/producer giving rise to the waste

Development of unoccupied plot of land

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

Excavation of Site soils for residential development

Description of the waste

Made Ground soils from former infilled pit

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	WAC Results			Page
					Inert	SNRHW	Hazardous	
1	WS03 ES2	2.5 - 2.8	Non Hazardous		Pass	Pass	N/A	3
2	WS1	0.3 - 0.4	Non Hazardous		Pass	Pass	N/A	6

Related documents

#	Name	Description
1	25-14540.hwol	DETS North .hwol file used to populate the Job
2	Create Consulting Waste Stream	waste stream template used to create this Job

WAC results

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate the samples in this Job: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

Report

Created by: Thomas Bennett

Created date: 17 Jul 2025 15:31 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	8
Appendix B: Rationale for selection of metal species	9
Appendix C: Version	10

Classification of sample: WS03 ES2


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

Sample details

Sample name:	LoW Code:
WS03 ES2	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
2.5 - 2.8 m	
Moisture content:	
21%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 21% Wet 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 trioxide }				28 mg/kg	1.32	29.206 mg/kg	0.00292 %	✓	
		033-003-00-0	215-481-4	1327-53-3							
2		barium { barium diboron tetraoxide }				68 mg/kg	1.623	87.213 mg/kg	0.00872 %	✓	
		056-005-00-3	237-222-4	13701-59-2							
3		beryllium { beryllium oxide }				0.8 mg/kg	2.775	1.754 mg/kg	0.000175 %	✓	
		004-003-00-8	215-133-1	1304-56-9							
4		boron { diboron trioxide }				0.7 mg/kg	3.22	1.781 mg/kg	0.000178 %	✓	
		005-008-00-8	215-125-8	1303-86-2							
5		cadmium { cadmium oxide }				0.3 mg/kg	1.142	0.271 mg/kg	0.0000271 %	✓	
		048-002-00-0	215-146-2	1306-19-0							
6		chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				22 mg/kg	1.462	25.402 mg/kg	0.00254 %	✓	
			215-160-9	1308-38-9							
7		chromium in Cr(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<1 mg/kg	2.27	<2.27 mg/kg	<0.000227 %		<LOD
		024-017-00-8									
8		copper { dicopper oxide; copper (I) oxide }				33 mg/kg	1.126	29.352 mg/kg	0.00294 %	✓	
		029-002-00-X	215-270-7	1317-39-1							
9		lead { lead chromate }			1	32 mg/kg	1.56	39.432 mg/kg	0.00253 %	✓	
		082-004-00-2	231-846-0	7758-97-6							
10		mercury { mercury dichloride }				<0.05 mg/kg	1.353	<0.0677 mg/kg	<0.00000677 %		<LOD
		080-010-00-X	231-299-8	7487-94-7							
11		nickel { nickel chromate }				32 mg/kg	2.976	75.24 mg/kg	0.00752 %	✓	
		028-035-00-7	238-766-5	14721-18-7							
12		selenium { nickel selenate }				<0.5 mg/kg	2.554	<1.277 mg/kg	<0.000128 %		<LOD
		028-031-00-5	239-125-2	15060-62-5							
13		vanadium { divanadium pentaoxide; vanadium pentoxide }				42 mg/kg	1.785	59.232 mg/kg	0.00592 %	✓	
		023-001-00-8	215-239-8	1314-62-1							
14		zinc { zinc chromate }				98 mg/kg	2.774	214.774 mg/kg	0.0215 %	✓	
		024-007-00-3	236-878-9	13530-65-9							
15		cyanides { salts of hydrogen cyanide with the exception of complex cyanides such as ferrocyanides,				0.2 mg/kg	1.884	0.298 mg/kg	0.0000298 %	✓	

#	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							
	ferricyanides and mercuric oxycyanide and those specified elsewhere in this Annex }									
	006-007-00-5									
16	naphthalene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-052-00-2	202-049-5	91-20-3							
17	acenaphthylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-917-1	208-96-8							
18	acenaphthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-469-6	83-32-9							
19	fluorene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-695-5	86-73-7							
20	phenanthrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		201-581-5	85-01-8							
21	anthracene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		204-371-1	120-12-7							
22	fluoranthene				0.04 mg/kg		0.0316 mg/kg	0.00000316 %	✓	
		205-912-4	206-44-0							
23	pyrene				0.03 mg/kg		0.0237 mg/kg	0.00000237 %	✓	
		204-927-3	129-00-0							
24	benzo[a]anthracene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-033-00-9	200-280-6	56-55-3							
25	chrysene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-048-00-0	205-923-4	218-01-9							
26	benzo[b]fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-034-00-4	205-911-9	205-99-2							
27	benzo[k]fluoranthene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-036-00-5	205-916-6	207-08-9							
28	benzo[a]pyrene; benzo[def]chrysene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-032-00-3	200-028-5	50-32-8							
29	indeno[123-cd]pyrene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-893-2	193-39-5							
30	dibenz[a,h]anthracene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
	601-041-00-2	200-181-8	53-70-3							
31	benzo[ghi]perylene				<0.03 mg/kg		<0.03 mg/kg	<0.000003 %		<LOD
		205-883-8	191-24-2							
32	monohydric phenols				<0.3 mg/kg		<0.3 mg/kg	<0.00003 %		<LOD
			P1186							
33	polychlorobiphenyls; PCB				<0.01 mg/kg		<0.01 mg/kg	<0.000001 %		<LOD
	602-039-00-4	215-648-1	1336-36-3							
Total:								0.055 %		

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

WAC results for sample: WS03 ES2

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	2.5	3	5	6
2	LOI (loss on ignition)	%	6.8	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.04	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.01	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<0.1	100	-	-
7	pH	pH	8	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	<1	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.034	0.5	2	25
10	barium	mg/kg	0.11	20	100	300
11	cadmium	mg/kg	<0.02	0.04	1	5
12	chromium	mg/kg	<0.1	0.5	10	70
13	copper	mg/kg	0.089	2	50	100
14	mercury	mg/kg	<0.002	0.01	0.2	2
15	molybdenum	mg/kg	<0.1	0.5	10	30
16	nickel	mg/kg	<0.1	0.4	10	40
17	lead	mg/kg	<0.05	0.5	10	50
18	antimony	mg/kg	<0.05	0.06	0.7	5
19	selenium	mg/kg	<0.03	0.1	0.5	7
20	zinc	mg/kg	0.044	4	50	200
21	chloride	mg/kg	<100	800	15,000	25,000
22	fluoride	mg/kg	3.5	10	150	500
23	sulphate	mg/kg	<100	1,000	20,000	50,000
24	phenol index	mg/kg	<1	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	160	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	1000	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

Classification of sample: WS1



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

Sample details

Sample name:	LoW Code:
WS1	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Sample Depth:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
0.3 - 0.4 m	
Moisture content:	
16%	
(wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 16% Wet 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 trioxide }				20 mg/kg	1.32	22.181 mg/kg	0.00222 %	✓	
	033-003-00-0	215-481-4	1327-53-3							
2	cadmium { cadmium oxide }				0.24 mg/kg	1.142	0.23 mg/kg	0.000023 %	✓	
	048-002-00-0	215-146-2	1306-19-0							
3	chromium in Cr(III) compounds { chromium(III) oxide (worst case) }				20 mg/kg	1.462	24.554 mg/kg	0.00246 %	✓	
		215-160-9	1308-38-9							
4	copper { dicopper oxide; copper (I) oxide }				26 mg/kg	1.126	24.589 mg/kg	0.00246 %	✓	
	029-002-00-X	215-270-7	1317-39-1							
5	lead { lead chromate }			1	28 mg/kg	1.56	36.687 mg/kg	0.00235 %	✓	
	082-004-00-2	231-846-0	7758-97-6							
6	mercury { mercury dichloride }				0.07 mg/kg	1.353	0.0796 mg/kg	0.00000796 %	✓	
	080-010-00-X	231-299-8	7487-94-7							
7	nickel { nickel chromate }				28 mg/kg	2.976	70.002 mg/kg	0.007 %	✓	
	028-035-00-7	238-766-5	14721-18-7							
8	selenium { nickel selenate }				0.93 mg/kg	2.554	1.995 mg/kg	0.0002 %	✓	
	028-031-00-5	239-125-2	15060-62-5							
9	zinc { zinc chromate }				95 mg/kg	2.774	221.377 mg/kg	0.0221 %	✓	
	024-007-00-3	236-878-9	13530-65-9							
Total:								0.0389 %		

Key

	User supplied data
	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
CLP: Note 1	Only the metal concentration has been used for classification

WAC results for sample: WS1

WAC Settings: samples in this Job constitute a single population.

WAC limits used to evaluate this sample: "UK"

The WAC used in this report are the WAC defined for the inert, stable non-reactive hazardous and hazardous classes of landfill in the UK. You should check the actual acceptance criteria when the disposal site is identified as they may differ from the generic WAC used in this report.

The sample **PASSES** the Inert (Inert waste landfill) criteria.

The sample **PASSES** the SNRHW (Stable non-reactive hazardous waste in non-hazardous landfill) criteria.

WAC Determinands

Solid Waste Analysis				Landfill Waste Acceptance Criteria Limits		
#	Determinand		User entered data	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
1	TOC (total organic carbon)	%	0.42	3	5	6
2	LOI (loss on ignition)	%	3.7	-	-	10
3	BTEX (benzene, toluene, ethylbenzene and xylenes)	mg/kg	<0.01	6	-	-
4	PCBs (polychlorinated biphenyls, 7 congeners)	mg/kg	<0.1	1	-	-
5	Mineral oil (C10 to C40)	mg/kg	<10	500	-	-
6	PAHs (polycyclic aromatic hydrocarbons)	mg/kg	<2	100	-	-
7	pH	pH	8.4	-	>6	-
8	ANC (acid neutralisation capacity)	mol/kg	0.005	-	-	-
Eluate Analysis 10:1						
9	arsenic	mg/kg	0.016	0.5	2	25
10	barium	mg/kg	0.098	20	100	300
11	cadmium	mg/kg	<0.0001	0.04	1	5
12	chromium	mg/kg	0.01	0.5	10	70
13	copper	mg/kg	0.0022	2	50	100
14	mercury	mg/kg	<5.0e-05	0.01	0.2	2
15	molybdenum	mg/kg	0.0019	0.5	10	30
16	nickel	mg/kg	0.0014	0.4	10	40
17	lead	mg/kg	0.0069	0.5	10	50
18	antimony	mg/kg	0.0006	0.06	0.7	5
19	selenium	mg/kg	0.0005	0.1	0.5	7
20	zinc	mg/kg	0.062	4	50	200
21	chloride	mg/kg	<10	800	15,000	25,000
22	fluoride	mg/kg	7.6	10	150	500
23	sulphate	mg/kg	<10	1,000	20,000	50,000
24	phenol index	mg/kg	<0.5	1	-	-
25	DOC (dissolved organic carbon)	mg/kg	68	500	800	1,000
26	TDS (total dissolved solids)	mg/kg	750	4,000	60,000	100,000

Key

	User supplied data
	Not applicable

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

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

GB MCL index number: 006-007-00-5

Description/Comments: Conversion factor based on a worst case compound: sodium cyanide

Additional Hazard Statement(s): EUH032 >= 0.2 %

Reason for additional Hazards Statement(s):

20 Nov 2021 - EUH032 >= 0.2 % hazard statement sourced from: WM3, Table C12.2

■ 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

■ **monohydric phenols** (CAS Number: P1186)

Description/Comments: Combined hazards statements from harmonised entries in CLP for phenol, cresols and xylenols (604-001-00-2, 604-004-00-9, 604-006-00-X)
 Data source: CLP combined data
 Data source date: 26 Mar 2019
 Hazard Statements: Muta. 2; H341 , Acute Tox. 3; H331 , Acute Tox. 3; H311 , Acute Tox. 3; H301 , STOT RE 2; H373 , Skin Corr. 1B; H314 , Skin Corr. 1B; H314 >= 3 % , Skin Irrit. 2; H315 1 <= conc. < 3 % , Eye Irrit. 2; H319 1 <= conc. < 3 % , 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

Appendix B: Rationale for selection of metal species

arsenic {arsenic trioxide}

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

barium {barium diboron tetraoxide}

No CrVI

beryllium {beryllium oxide}

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

boron {diboron trioxide}

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

cadmium {cadmium oxide}

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

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

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

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

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

copper {dicopper oxide; copper (I) oxide}

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

lead {lead chromate}

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

mercury {mercury dichloride}

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

nickel {nickel chromate}

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

selenium {nickel selenate}

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

vanadium {divanadium pentaoxide; vanadium pentoxide}

Worst case species (edit as required)

zinc {zinc chromate}

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

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

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

Appendix C: VersionHazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2025.197.6712.12175 (16 Jul 2025)

HazWasteOnline Database: 2025.197.6712.12175 (16 Jul 2025)

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**GB MCL List v6.0** - version 6.0 of 15th February 2025

APPENDIX E

Ground Gas / Groundwater Monitoring

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS

Site:

P25-3557: Land off Hexton Road, Lilley

Date:

24/06/2025

Visit No:

1

of

3

Operator:

TB



Monitoring Point	Time	GAS CONCENTRATIONS								FLOW DATA		VOLATILES		WELL AND WATER DATA		COMMENTS
		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		%LEL		Flow rate (l/hr)		PID Peak (ppm)	Product thickness (mm)	Water level (mbgl)	Well Depth (m)	
		Peak	Steady	Peak	Steady	Min.	Steady	Peak	Steady	Peak	Steady					
WS1	09:00		0.0		5.2		17.5				0.2			DRY	4.00	Positions monitored once wells installed, with rest period of 1 hour once final well installed
WS101	14:10		0.0		1.1		19.8				0.1			DRY	4.70	
WS102	14:25		0.0		0.8		20.1				0.1			DRY	4.96	
WS103	14:35		0.0		2.2		18.4				0.2			DRY	5.00	
Max		NA	0.0	NA	5.2	NA	20.1	NA	NA	NA	0.2	NA	NA	DRY	5.00	
Min		NA	0.0	NA	0.8	NA	17.5	NA	NA	NA	0.1	NA	NA	DRY	4.00	

ND - Not detected
NR - Not recorded
NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Wind:

Calm

X

Cloud cover:

None

X

Precipitation:

X

None

Time monitoring performed:

09:00

Start

End

Barometric pressure (mbar):

993

Start

End

Pressure trend (Daily):

X

Falling

Source:

GA5000

Air Temperature (Deg. C):

25

Before

After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:

GA5000

Gas Range:

CH₄0 - 100%

CO₂0 - 100%

O₂0 - 25%

Gas Flow range:

+100/-50 l/hour

Differential Pressure:

(+/-) 1000 Pa

Ambient air check:

CH₄

0.0

CO₂

0.1

O₂

20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS

Site:

P25-3557: Land off Hexton Road, Lilley

Date:

04/07/2025

Visit No:

2

of

3

Operator:

TB



Monitoring Point	Time	GAS CONCENTRATIONS								FLOW DATA		VOLATILES		WELL AND WATER DATA		COMMENTS
		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		%LEL		Flow rate (l/hr)		PID Peak (ppm)	Product thickness (mm)	Water level (mbgl)	Well Depth (m)	
		Peak	Steady	Peak	Steady	Min.	Steady	Peak	Steady	Peak	Steady					
WS1	11:00		0.0		4.6		17.8				0.2			DRY	4.00	
WS101	11:15		0.0		1.4		19.5				0.2			DRY	4.70	
WS103	11:30		0.0		1.5		19.4				0.2			DRY	4.96	
WS104	11:45		0.0		7.2		15.4				0.3			DRY	5.00	
Max		NA	0.0	NA	7.2	NA	19.5	NA	NA	NA	0.3	NA	NA	DRY	5.00	
Min		NA	0.0	NA	1.4	NA	15.4	NA	NA	NA	0.2	NA	NA	DRY	4.00	

ND - Not detected
NR - Not recorded
NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Snow

Frozen

Wind:

Calm

Light

X

Moderate

Strong

Cloud cover:

None

Slight

X

Cloudy

Overcast

Precipitation:

X

None

Slight

Moderate

Heavy

Time monitoring performed:

11:00

Start

12:15

End

Barometric pressure (mbar):

1009

Start

1009

End

Pressure trend (Daily):

Falling

X

Steady

Rising

Source:

GA5000

Air Temperature (Deg. C):

22

Before

22

After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:

GA5000

Gas Range:

CH₄0 - 100%

CO₂0 - 100%

O₂0 - 25%

Gas Flow range:

+100/-50 l/hour

Differential Pressure:

(+/-) 1000 Pa

Ambient air check:

CH₄

0.0

CO₂

0.1

O₂

20.9

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS

Site:

P25-3557: Land off Hexton Road, Lilley

Date:

18/07/2025

Visit No:

3

of

3

Operator:

TB



Monitoring Point	Time	GAS CONCENTRATIONS								FLOW DATA		VOLATILES		WELL AND WATER DATA		COMMENTS
		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		%LEL		Flow rate (l/hr)		PID Peak (ppm)	Product thickness (mm)	Water level (mbgl)	Well Depth (m)	
		Peak	Steady	Peak	Steady	Min.	Steady	Peak	Steady	Peak	Steady					
WS1	12:00		0.0		4.3		17.9				0.1			DRY	4.00	
WS101	12:20		0.0		2.0		19.0				0.3			DRY	4.70	
WS103	12:35		0.0		1.3		20.0				0.1			DRY	4.96	
WS104	12:55		0.0		7.0		16.7				0.0			DRY	5.00	
Max		NA	0.0	NA	7.0	NA	20.0	NA	NA	NA	0.3	NA	NA	DRY	5.00	
Min		NA	0.0	NA	1.3	NA	16.7	NA	NA	NA	0.0	NA	NA	DRY	4.00	

ND - Not detected
NR - Not recorded
NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

State of ground:

X

Dry

Moist

Wet

Wind:

Calm

X

Cloud cover:

None

X

Precipitation:

X

None

Time monitoring performed:

11:50

Start

End

Barometric pressure (mbar):

997

Start

End

Pressure trend (Daily):

X

Falling

Source:

GA5000

Air Temperature (Deg. C):

22

Before

After

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter:

GA5000

Gas Range:

CH₄0 - 100%

CO₂0 - 100%

O₂0 - 25%

Gas Flow range:

+100/-50 l/hour

Differential Pressure:

(+/-) 1000 Pa

Ambient air check:

CH₄

0.0

CO₂

0.1

O₂

20.9

APPENDIX F

Risk Tables

Classification	Definition
High Likelihood	There is a pollution linkage and an event that either appears very likely in the short-term and almost inevitable over the long-term, or there is evidence at the receptor of harm or pollution.
Likely	There is a pollution linkage and all the elements are present and in the right place, which means that it is probable that an event will occur. Circumstances are such that an event is not inevitable, but possible in the short-term and likely over the long-term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the short-term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long-term.

Table F1: Classification of Probability

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. (Note: Water Resources Act contains no scope for considering significance of pollution). Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organisation forming part of such ecosystem (note: the definitions of ecological systems within the draft circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from Site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to human health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. (Note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem, (note: the definitions of ecological systems within draft circular on Contaminated Land, DETR, 2000).	Concentration of a contaminant from Site exceed the generic, or Site-specific assessment criteria. Leaching of contaminants from a Site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the draft circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).

Classification	Definition	Examples
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc.), easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during Site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

Table F2: Classification of Consequence

		Consequence			
		Severe	Medium	Mild	Minor
Risk	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low Risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table F3: Combination of Consequence with Probability

Paul Cripps

LAND OFF HEXTON ROAD, LILLEY

Contaminated Land Assessment

The information contained within this report and any appendices or supporting information provided are to be treated as confidential.



Independent, multidisciplinary engineering
and environmental consultants

Norwich | London | Chelmsford | Glasgow | Milton Keynes



visit us at createce.co.uk or call us on 01603 877010