PEAK ENVIRONMENTAL SOLUTIONS

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PHASE 2 SITE INVESTIGATION

1 STATION ROAD
GUNNESS
SCUNTHORPE
NORTH LINCOLNSHIRE
DN15 8SU

REPORT PREPARED FOR

J Champan
1 Station Road
Gunness
Scunthorpe
North Lincolnshire
DN15 8SU

DOCUMENT REFERENCE: 42332R2
DRAFT REV A1
APRIL 2024

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Issue	Issue Date	**Prepared**	**Checked**	**Approved**
Draft Rev A1	April 2024	Clare Dainton	Christopher Dainton	Clare Dainton
		Notes: **Draft for consultation – NOT FOR DISTRIBUTION**		

1.0 INTRODUCTION

Peak Environmental Solutions Limited (PESL) has been commissioned by J Champan to undertake a Phase 2 Site Investigation to help prepare for development at 1 Station Road, Gunness, Scunthorpe, North Lincolnshire, DN15 8SU ('the site'). Figure 1 shows the site location (centred on NGR 484315 410977). Figure 2 and Drawing No. 23_001_001 (included in the Figures Section), show the current site layout and boundary.

The rectangular ~0.23 hectare site is located immediately to the east of Station Road at the southern end of the village of Gunness ~5km to the west of Scunthorpe in North Lincolnshire. No.1 Station Road is an existing residential property surrounded by a large garden that has recently undergone general clearance.

Planning permission for development will be sought from North Lincolnshire Council (NLC) for a development comprising the demolition of the existing bungalow and the construction of three new residences. The proposed development layout is shown in Drawing No. 23_001_050.

A Phase 1 investigation for the site was completed in March 2024, as follows:

> *Phase 1 Site Investigation. 1 Station Road, Gunness, Scunthorpe, North Lincolnshire, DN15 8SU. Prepared for J Chapman by Peak Environmental Solutions. Reference 42332R1/Iss-RevA. March 2024.*

The Phase 1 report should be referred to for a full description of the site, environmental setting and historical development, summary information included in Section 2.0 of this report. This report details and provides the results of a targeted Phase 2 Site Investigation completed during April 2024 to provide information to assist in determining the potential for on-site migration of contaminants from nearby solvent/petrochemical storage/processing/manufacturing activities to affect the proposed development.

The scope of the Phase 2 investigation was designed following a review of the Phase 1 information and was discussed with NLC Contaminated Land Team prior to implementation.

The work included intrusive excavation, sample recovery and laboratory soil and groundwater analytical testing. The results have been used to inform/revise the site conceptual model and preliminary/generic quantitative contamination risk assessments, as appropriate. The report also provides conclusions and recommendations.

Limitations of Assessment

The report has been prepared under umbrella frameworks laid out in non-statutory UK guidance provided here by www.gov.uk/government/publications/land-contamination-risk-management-lcrm and R&D66:2008 ('Guidance for the safe development of housing on land affected by contamination'), as well as in general accordance with the current National Planning Policy Framework. Information provided to or obtained by Peak Environmental Solutions has been relied upon in good faith. Our investigations exclude (i) surveys to identify the presence injurious and invasive weeds; (ii) surveys to identify the presence of asbestos containing materials in buildings and; (iii) surveys to identify geotechnical risk/issues. This report is subject to our standard terms of business and the limitations and exceptions in Appendix A.

2.0 PHASE 1 SITE INVESTIGATION SUMMARY

2.1 Site Layout and Setting

The site location is shown in Figure 1, Drawing No. 23_001_001 -4 shows the boundary location and current site features. Photographs of the site are included in Appendix B.

The ~0.23 hectare site is located in a low-lying area on the eastern bank of the tidal River Trent which, in this location, is ~150m wide. The whole of the surrounding area is low lying, with water levels controlled by drainage ditches and pumping systems. Residential properties are present to the north and south, with fields to the east.

No.1 Station Road (to be demolished) is located in the west, the remainder of the site is undeveloped. The site slopes gently to the east from an elevation of ~3.25m above Ordnance Datum close to the western boundary to ~2.42m near the eastern boundary.

To the west of the site beyond Station Road (the A18), is the Gunness Wharf which occupies the area between the site and River Trent ~240m to the west. The area is used for loading and unloading of bulk transport completed via boats on the River Trent. It also includes a manufacturing plant and significant bulk liquid storage tanks. Bulk liquid storage and petrochemical related activities have been on-going in the wharf area to the west since sometime prior to 1938.

The Phase 1 investigation identified potential risks to the site and the proposed development associated with on-site migration of contaminants from the wharf area.

2.2 Development Proposals

The proposed development layout is shown in Drawing No. 23_001_050 in the Figures Section.

Under the proposals, the existing house and garage will be removed. A driveway will be established along the southern site boundary and will provide access to three new bungalows, two in the west of the site and one in the east. Each of the properties will have a hard surfaced parking area and soft landscaped gardens.

2.3 Geology, Hydrogeology and Hydrology

The 1:50,000 scale BGS mapping for the area records superficial deposits in the form of Quaternary Warp comprising clay and silt immediately beneath the site and the surrounding area. Bedrock geology in the area comprises Triassic Mercia Mudstone.

The superficial deposits beneath the site are classified by the EA as a 'Secondary A' aquifer'. The bedrock deposits are classified as a ‘Secondary B’ aquifer and are unlikely to represent a significant groundwater resource. The site is not located a Source Protection Zone (SPZ) set by the EA for the protection of important groundwater resources.

The site is in an area where shallow groundwater is likely to be present. The direction of groundwater flow beneath the site is not known and may be influenced by a variety of factors including local topography and the tidal nature of the River Trent in this location.

Surface water at the site is likely to drain to the east and away from the River Trent. Gunness has been constructed on a ridge line that rises a little above the surrounding area. In general, drainage from land to the east of Station Road falls to the east into the extensive network of drainage ditches that surround the neighbouring fields. There is a drainage ditch in very close proximity to the northern site boundary which flows to the east into the Gunness South Drain located to the east of the site.

2.4 Phase 1 Findings

The Phase 1 process identified the following potential land contamination issues that may affect the development:

- Land to the west of the site and the west of Station Road has been used as a wharf and for solvent/petrochemical storage/processing/manufacturing activities for a period that started prior to 1938 and is on-going. Some ground contamination may be present as a result of this land use. Some migration of contaminants from the wharf area towards the site is considered possible, although migration will be limited and may be precluded by the presence of low permeability clay deposits in the area. The direction of groundwater flow at the site is currently unknown and is likely to be influenced by a range of factors including the tidal River Trent. (Note that shallow groundwater is present beneath the site, as observed during the site walkover).
- The site was developed in the 1930s when the existing house was built and the garden enclosed. Some limited contamination may be present as a result of residential land use.
- Some made ground has been brought onto the site to improve access and create roadways. Imported materials can sometimes include concentrations of contaminants, depending on their source.
- Other historic and contemporary land use around the site include a former fuel filling station (now car wash) and a hatchery. These land uses are further from the site and impacts on the site or the development are currently considered unlikely.

2.5 Phase 1 Recommendations and Phase 2 Objectives

The Phase 1 included a land contamination conceptual model and risk assessment to identify potential risks to the identified receptors. Recommendations for strategies to ensure protection of identified receptors during and following the development process were also included.

Phase 2 site investigation prior to the start of the development works was recommended specifically to assess the potential for on-site migration of contaminants in groundwater from the nearby wharf area. It was recommended that the investigation should be followed by generic quantitative/qualitative risk assessments aimed at establishing risks to the identified receptors.

This report provides the results of a targeted investigation aimed at assessing the potential for the on-site migration of contaminations from the nearby wharf area to affect the identified receptors (the future site users in particular).

3.0 SITE INVESTIGATION DETAILS

3.1 Overview

The works described in the following sections were completed in April 2024.

3.2 Underground Service Location

Underground service information was obtained by the client who took responsibility for service protection during the excavation works.

3.3 Trial Trenching

A single trial trench was excavated by the client on the 11th April 2024. The trench was excavated in close proximity to, and parallel with, the western site boundary in the location shown in Figure 3.

The trench was excavated to a maximum depth of 1.2m below ground level (bgl) under the instruction of a PESL site engineer. The ground conditions were logged by the PESL engineer in general accordance with BS5930:2015. Visual evidence for the presence of groundwater and any potential ground contaminants were also recorded on the log.

Following completion, the excavation was photographed and then left open for a minimum of 30 minutes to allow groundwater stabilisation. The excavation was backfilled with arisings in approximately the reverse order of excavation.

The trench log is included in Appendix C, with photographs showing the ground conditions in Appendix B.

3.4 Soil Sample Recovery

Selected soil samples were recovered from the trench pit locations and submitted for chemical analysis at a UKAS accredited laboratory. Samples were recovered by hand and were placed in laboratory-supplied containers, labelled with a unique ID, date, location and depth and stored in cooler boxes. The soil samples were shipped to the laboratory by a laboratory arranged courier under chain of custody documentation.

3.5 Groundwater Sampling

Following a period of stabilisation, groundwater samples were recovered from the trial trench using a clean disposable sampling bailer. As with the soil samples, groundwater samples were placed in laboratory-supplied containers, labelled with a unique ID, date, location and depth and stored in cooler boxes. Groundwater samples were shipped alongside the soil samples by a laboratory arranged courier under chain of custody documentation.

3.6 Laboratory Analytical Suites

One soil and one groundwater sample from the trial trench were selected and submitted for laboratory analysis. The adopted analytical testing schedule to characterise potential on-site migration of contaminants from the wharf area included:

- TPH: banded fractions total petroleum hydrocarbons C6 to C35 (aliphatic and aromatic banding for selected samples)
- BTEX: benzene, toluene, ethylbenzene, xylenes, MTBE (Methyl Tertiary Butyl Ether) (selected samples)
- Other volatile organic compounds including chlorinated solvents.
- Speciated PAH: Sixteen 'priority' polyaromatic hydrocarbons
- Other organic compounds: total monohydric phenols, total organic carbon (TOC)
- General inorganics: pH, total cyanide, water soluble sulphate, total sulphate
- Arsenic, water soluble boron (groundwater sample only), cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc
- Asbestos screen: Identifying the presence of asbestos and if present, assessment of type (soil sample only).

The Laboratory Analytical Report is presented in Appendix D.

4.0 GROUND INVESTIGATION RESULTS

4.1 Ground Conditions

The intrusive investigation location is shown in Figure 3. Selected photographs are included in Appendix B and a log for the trial trench in Appendix C.

The trial trench was extended ~6.5m from south to north parallel with and ~2.5m away from the western site boundary in an area of recently cleared former garden.

Consistent ground conditions were identified along the whole length of the trench and comprised:

0.0 – 0.3m bgl: Dark to mid brown topsoil with roots and rootlets.
0.3 – 1.2m bgl: Very soft to soft orange brown slightly silty CLAY.

4.2 Groundwater Conditions

Groundwater ingress into the trench consistently occurred at a depth of 0.9m bgl. Inflow was generally slow to moderate and water levels within the trench quickly stabilised during the ~1 hour period the trench was left open at 0.9m bgl. Groundwater sampling using a bailer was undertaken from the deepest part of the trench.

A single soil sample was recovered for chemical analysis from 0.9m bgl, with the aim of identifying contaminants in the form of non-aqueous phase liquids that could be present on the surface of the groundwater.

4.3 Evidence of Potential Contamination

No significant visual or olfactory evidence to suggest the presence of ground contamination was identified during the trial trenching. No odours were identified and no oily sheens were observed on the surface of the groundwater.

4.4 Laboratory Results

One soil and one groundwater sample were recovered during the investigation and were submitted for a range of organic/inorganic chemical analysis. The analytical certificates are included in Appendix D.

Tables 1 and 2 provide a summary of the soil and groundwater analytical results.

Table 1: Summary of Soil Analysis in mg/kg (unless otherwise stated)

Location	LOD	TR-01
Arsenic	*1*	15
Cadmium	*0.2*	< 0.2
Chromium	*1*	30
Copper	*1*	12
Lead	*1*	18
Mercury	*0.3*	< 0.3
Nickel	*1*	30
Selenium	*1*	< 1.0
Vanadium	*1*	43
Zinc	*1*	72
pH (units)	*N/A*	8.3
Total Cyanide	*1*	< 1.0
Total Sulphate as SO_4	*50*	460
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	*2.5*	260
Water Soluble SO_4 16hr extraction (2:1) (mg/l)	*1.25*	132
Total Organic Carbon (TOC) (%)	*0.1*	0.9
Total Phenols (monohydric)	*1*	< 1.0
Speciated Total 16 PAHs	*0.8*	< 0.80
Naphthalene	*0.05*	< 0.05
Acenaphthylene	*0.05*	< 0.05
Acenaphthene	*0.05*	< 0.05
Fluorene	*0.05*	< 0.05
Phenanthrene	*0.05*	< 0.05
Anthracene	*0.05*	< 0.05
Fluoranthene	*0.05*	< 0.05
Pyrene	*0.05*	< 0.05
Benzo(a)anthracene	*0.05*	< 0.05
Chrysene	*0.05*	< 0.05
Benzo(b)fluoranthene	*0.05*	< 0.05
Benzo(k)fluoranthene	*0.05*	< 0.05
Benzo(a)pyrene	*0.05*	< 0.05
Indeno(1,2,3-cd)pyrene	*0.05*	< 0.05
Dibenz(a,h)anthracene	*0.05*	< 0.05
Benzo(ghi)perylene	*0.05*	< 0.05
TPH-Aliphatic >EC5-EC6	*0.02*	< 0.020
TPH- Aliphatic >EC6-EC8	*0.02*	< 0.020
TPH-Aliphatic >EC8-EC10	*0.05*	< 0.050
TPH-Aliphatic >EC10-EC12	*1*	< 1.0
TPH-Aliphatic >EC12-EC16	*2*	< 2.0
TPH-Aliphatic >EC16-EC21	*8*	< 8.0
TPH-Aliphatic >EC21-EC35	*8*	< 8.0
TPH- Aromatic >EC5-EC7	*0.01*	< 0.010
TPH- Aromatic >EC7-EC8	*0.01*	< 0.010
TPH- Aromatic >EC8-EC10	*0.05*	< 0.050
TPH- Aromatic >EC10-EC12	*1*	< 1.0
TPH- Aromatic >EC12-EC16	*2*	< 2.0
TPH- Aromatic >EC16-EC21	*10*	< 10
TPH- Aromatic >EC21-EC35	*10*	< 10
Benzene	*5*	< 5.0
Toluene	*5*	< 5.0
Ethylbenzene	*5*	< 5.0
p & m-xylene	*5*	< 5.0
o-xylene	*5*	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	*5*	< 5.0
Range of other VOCs including chlorinated solvents	*All 5*	All <5.0

LOD: Limit of detection

Table 2: Summary of Groundwater Analysis in µg/l (unless otherwise stated)

Location	LOD	TR-01
Arsenic	*0.15*	8.71
Cadmium	*0.02*	0.64
Chromium	*0.2*	6.1
Copper	*0.5*	45
Lead	*0.2*	320
Mercury	*0.05*	< 0.05
Nickel	*0.5*	11
Selenium	*0.2*	20
Vanadium	*0.5*	89
Zinc	*0.15*	8.71
Boron	*10*	340
Selenium	*4*	< 4.0
pH (units)	*N/A*	7.7
Total Cyanide	*10*	< 10
Sulphate as SO_4 (mg/l)	*0.045*	354
Ammoniacal Nitrogen as N	*15*	< 15
Total Phenols (monohydric)	*10*	< 10
Speciated Total 16 PAHs	*0.16*	< 0.16
Naphthalene	*0.01*	< 0.01
Acenaphthylene	*0.01*	< 0.01
Acenaphthene	*0.01*	< 0.01
Fluorene	*0.01*	< 0.01
Phenanthrene	*0.01*	< 0.01
Anthracene	*0.01*	< 0.01
Fluoranthene	*0.01*	< 0.01
Pyrene	*0.01*	< 0.01
Benzo(a)anthracene	*0.01*	< 0.01
Chrysene	*0.01*	< 0.01
Benzo(b)fluoranthene	*0.01*	< 0.01
Benzo(k)fluoranthene	*0.01*	< 0.01
Benzo(a)pyrene	*0.01*	< 0.01
Indeno(1,2,3-cd)pyrene	*0.01*	< 0.01
Dibenz(a,h)anthracene	*0.01*	< 0.01
Benzo(ghi)perylene	*0.01*	< 0.01
TPH (>C6 - C8)	*1*	< 1.0
TPH (>C8 - C10)	*10*	< 10
TPH (>C10 - C12)	*10*	< 10
TPH (>C10 - C35)	*10*	< 10
TPH (>C12 - C16)	*10*	< 10
TPH (>C16 - C21)	*10*	< 10
TPH (>C21 - C35)	*10*	< 10
TPH Total >C6 - C35	*10*	< 10
Benzene	*3*	< 3.0
Toluene	*3*	< 3.0
Ethylbenzene	*3*	< 3.0
p & m-xylene	*3*	< 3.0
o-xylene	*3*	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	*3*	< 3.0
Range of other VOCs including chlorinated solvents	*All 3*	All < 3.0

LOD: Limit of detection

5.0 RISK ASSESSMENT

Phase 2 site investigation prior to the start of the development works was recommended specifically to assess the potential for on-site migration of contaminants in groundwater from the nearby wharf area.

The observed ground conditions, visual and olfactory evidence for ground contamination and chemical analysis results suggest that on-site migration of contaminants resulting from current or historic activities at the nearby wharf is not occurring.

No detectable concentrations of hydrocarbon contaminants were identified in groundwater at the western site boundary, or within soil recovered from the potential smear zone that could be associated with the presence of light non aqueous phase liquids.

In addition, the groundwater and soil pH were found to be within normal range and no elevated concentrations of either dissolved or solid phase metals were encountered.

The investigation results suggest that the proposed development (including the future site users) are unlikely to be impacted by contaminants resulting from historic or current activities at the nearby wharf.

6.0 CONCLUSIONS & RECOMMENDATIONS

The Phase 2 investigation was undertaken to identify potential impacts on the development associated with the on-site migration of contmaiantion associated with current and historic nearby industrial activities. No evidence to suggest that this is occurring has been identified and no further action to mitigate risks is considered necessary.

Outstanding land contmaiantion risks to the proposed development should be mitigated by the implementation of the following recommendation from the Phase 1 investigation at the appropriate stage during the development process:

- Near surface soil materials present at the site may not be suitable for use at surface in future garden areas. A strategy should be developed to ensure that near surface soils in the future garden/soft landscaped areas do on represent a risk to the future site occupants. The strategy may involve testing of the existing materials and/or importing and placing a suitable thickness of appropriately validated subsoil/topsoil across all of the soft landscaped areas. The strategy should be agreed in advance with NLC and should be followed by appropriate validation, including a validation report that can be submitted to the local planning authority.

  Note: The following guidance may be relevant: YALPAG 2021. Verification requirements for cover systems. Technical Guidance for Developers, Landowners and Consultants. Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG). Version 4.1. June 2021.

- New site services should be laid in clean service corridors.

- Below ground water supply services should comply with industry best practice for site development and the requirements of the water utility company.

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FIGURES

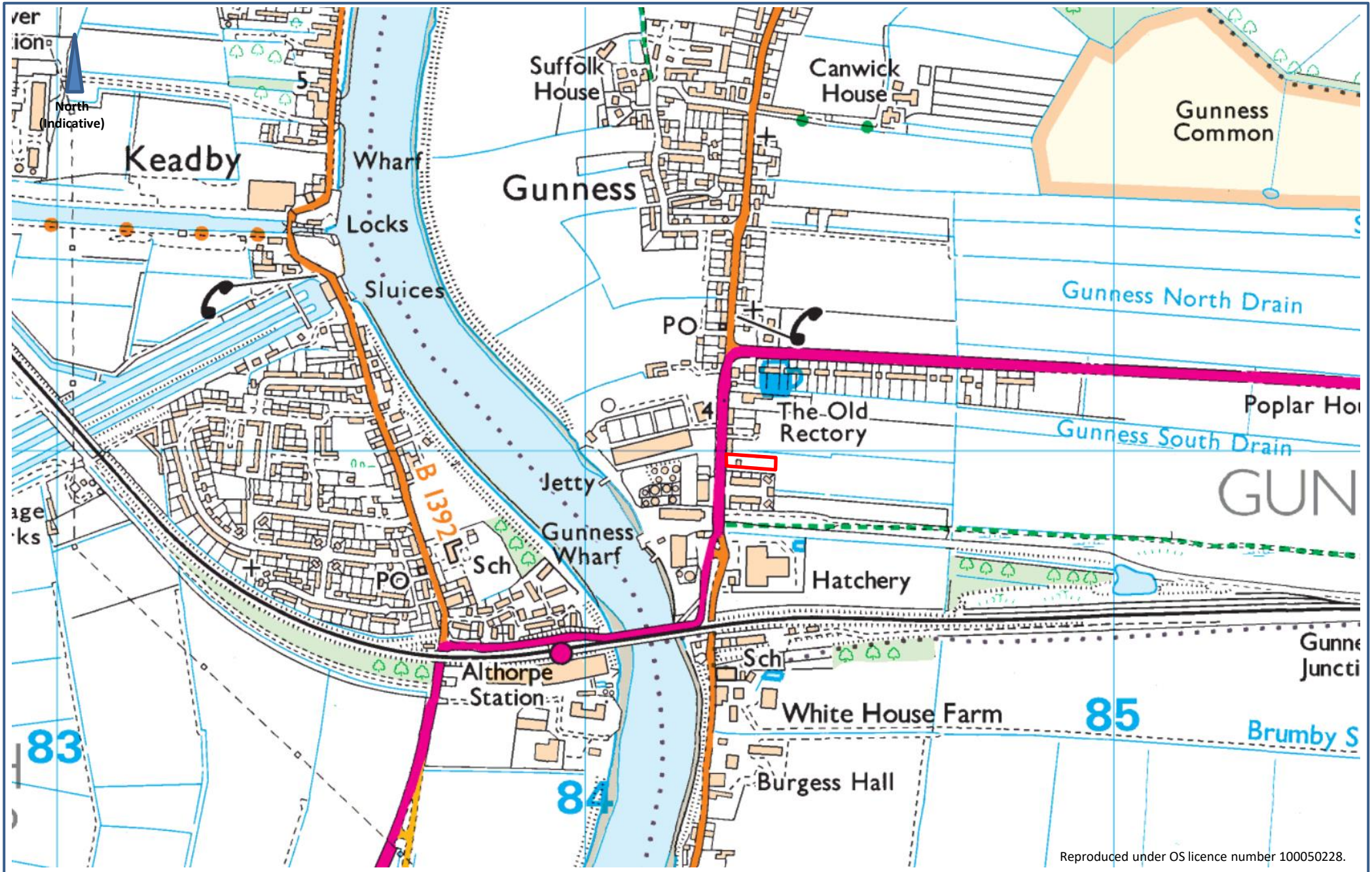

Figure 1	Site Location Plan	Site Location	Scale: Not to scale

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Project: 42332R2

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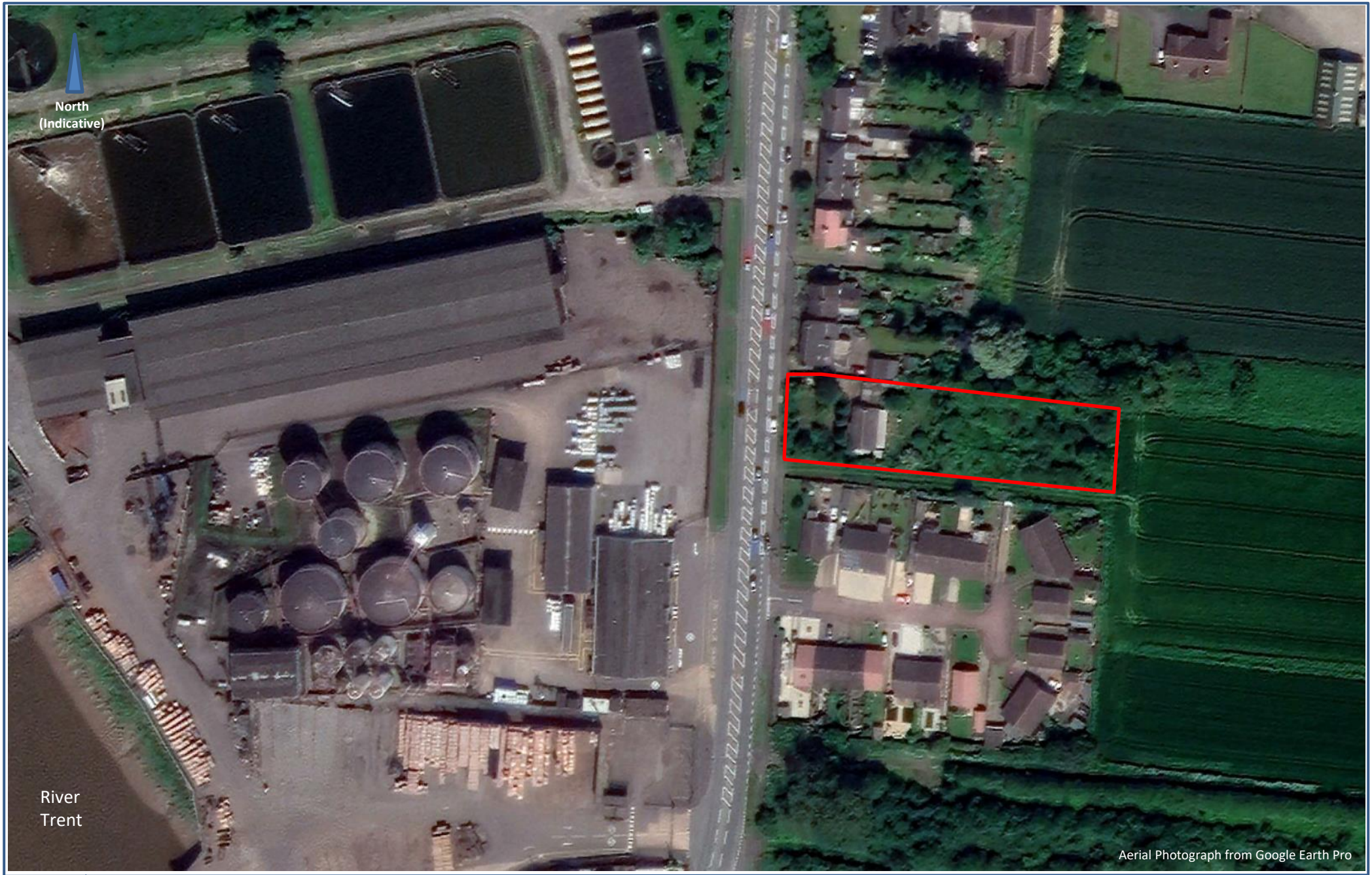

Figure 2	Aerial Photograph from June 2019	Site boundary (indicative)	Scale: Not to scale

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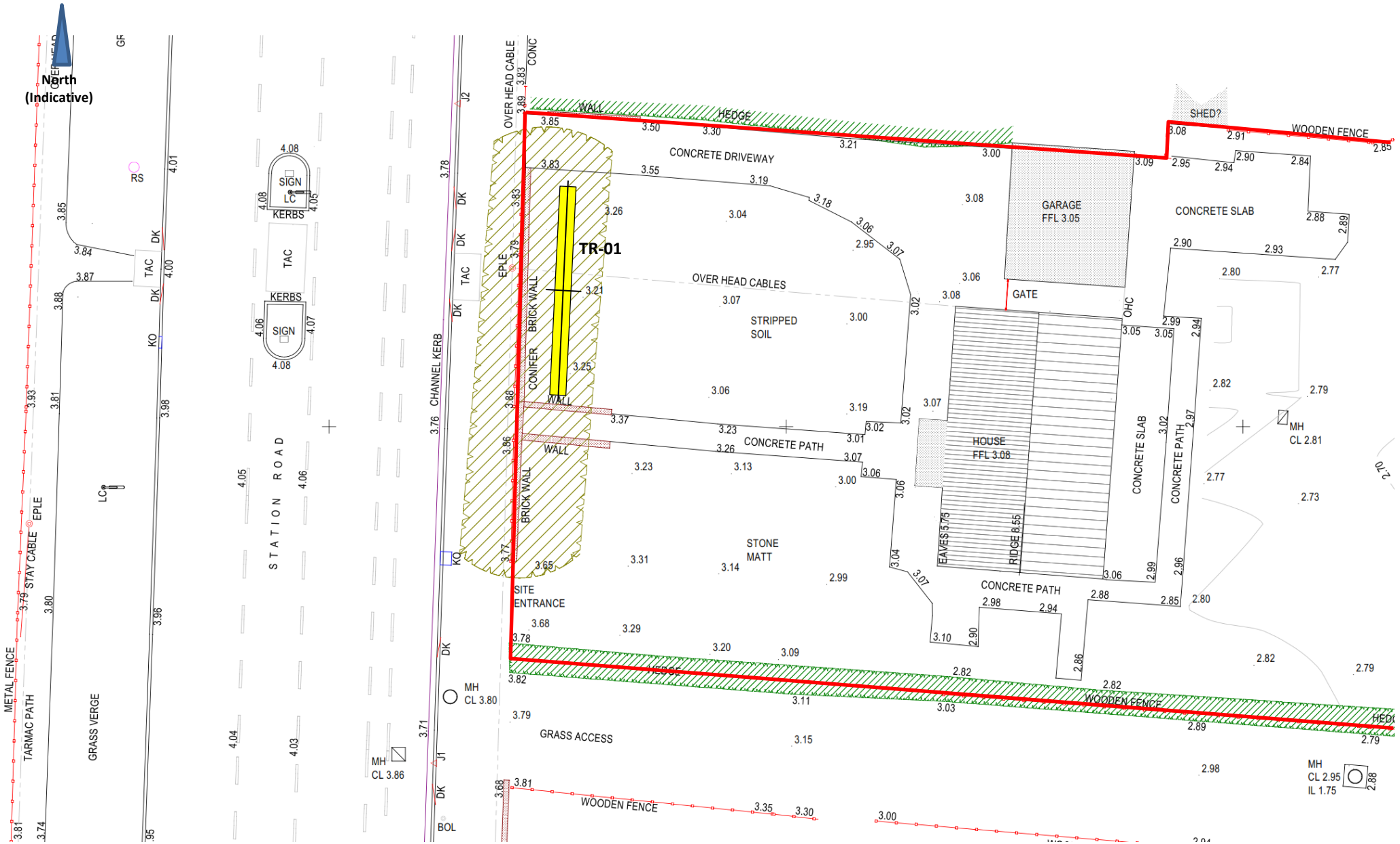

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Figure 3	TR-01 Trench Location Plan	Site Location	Scale: Not to scale

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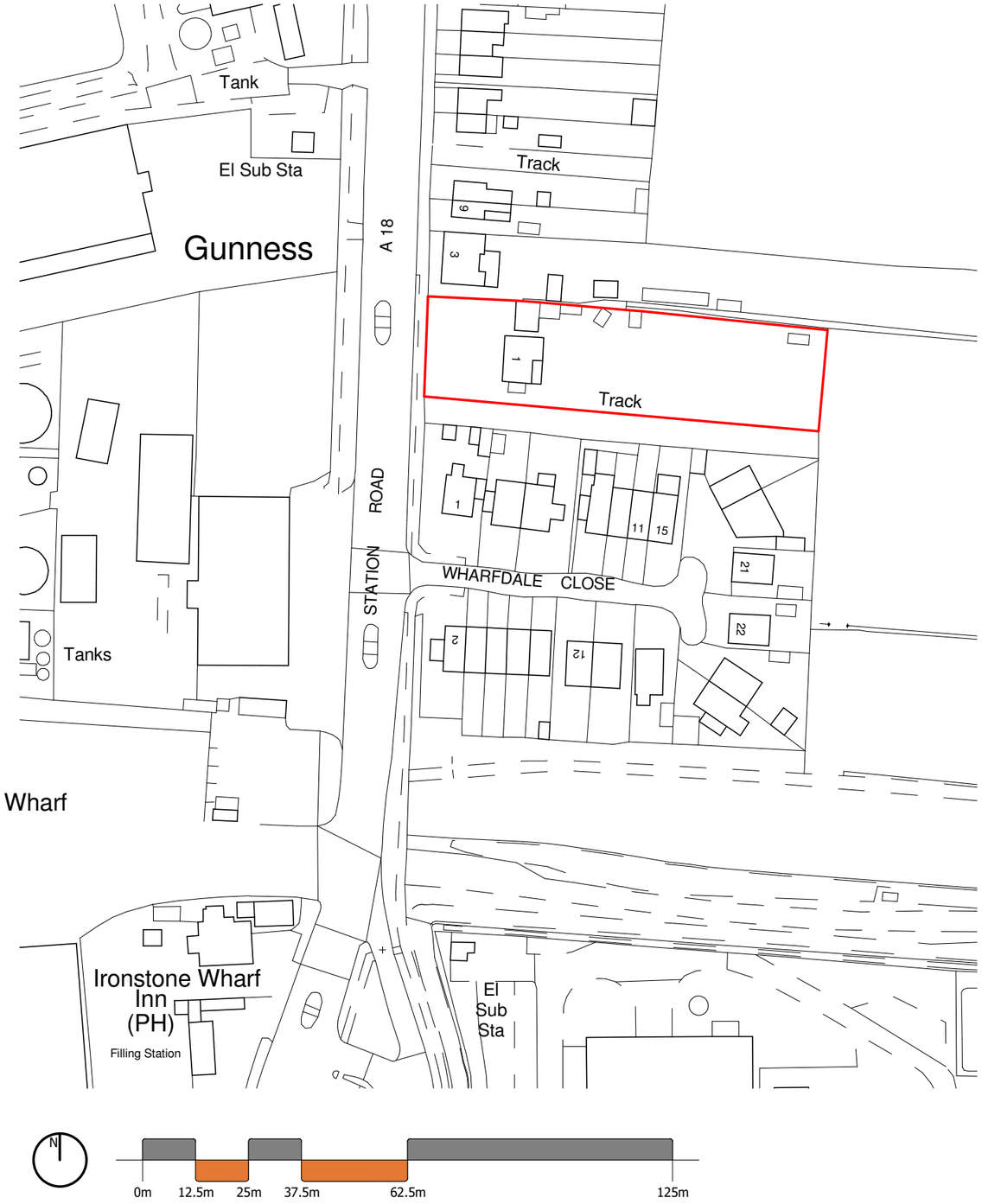

Notes

Explanations:
Unless otherwise stated -
- All dimensions are in millimeters
- Dimensions are shown from structure, NOT finishes

Instructions:
Responsibility is not accepted for values obtained in scaling from this drawing.

Construction information should be taken from written dimensions only.

Inconsistencies should be reported to the Author immediately.

References:
To be read in conjunction with:

Rev	Details	Date	Signed

Project Name
Residential Development

Client
Mr J. Chapman

Project Address
1 Station Road
Gunness, DN15 8SU

Drawing Title
Site Location Plan

Drawing Stage: 02. Concept Design
Purpose: For Comment

Project Number	Drawing Number	Revision
23_001	00-00_001	

Date	Scale	Drawn By	Checked By	Approved By	Size
13/07/2023	1 : 1250	Dan Mc			A3

Notes

Explanations:
Unless otherwise stated -
- All dimensions are in millimeters
- Dimensions are shown from structure, NOT finishes

Instructions:
Responsibility is not accepted for values obtained in scaling from this drawing.

Construction information should be taken from written dimensions only.

Inconsistencies should be reported to the Author immediately.

References:
To be read in conjunction with:

Rev	Details	Date	Signed

Project Name
Residential Development

Client
Mr J. Chapman

Project Address
1 Station Road
Gunness, DN15 8SU

Drawing Title
Proposed Site Plan

Drawing Stage: 02. Concept Design
Purpose: For Comment

Project Number	Drawing Number	Revision
23_001	00-00_050	

Date	Scale	Drawn By	Checked By	Approved By	Size
13/07/2023	As indicated	Dan Mc			A1

APPENDIX A: LIMITATIONS & EXCEPTIONS OF ASSESSMENT

LIMITATIONS AND EXCEPTIONS OF ASSESSMENT

J Champan (the Client) has requested that a Phase 2 Site Investigation (the 'Project') be performed at the site. The report (and any copies of it) have been prepared for the sole use and reliance of the Client. This report s (and any copies of it) shall not be relied upon or transferred to any other parties without the express written authorisation of Peak Environmental Solutions limited. If an unauthorised third party comes into possession of this report, (and any copies of it) they rely on it at their peril and the authors owe them no duty of care and skill. Findings and opinions conveyed in the services should only be used by competent persons acting on the behalf of the Client and the findings and opinions conveyed in the services should only be used for the intended use. Copyright of reports & documents remains with Peak Environmental Solutions Limited. The project and report are subject to Peak Environmental Solutions standard terms and conditions.

Authorised or unauthorised copies of this document may come into the possession of organisations that are designated under the Freedom of Information Act 2000 ("the Act"). Such organisations that are designated in the Act are requested by Peak Environmental Solutions to respect the above statements relating to confidentiality and copyright.

The findings and opinions conveyed via this report are based on information obtained from a variety of sources as detailed within this report, and which Peak Environmental Solutions Limited believes are reliable. Nevertheless, Peak Environmental Solutions Limited cannot and does not guarantee the authenticity or reliability of the information it has relied upon. The report represents the findings and opinions of experienced geo-environmental consultants. Peak Environmental Solutions Limited does not provide legal advice and the advice of lawyers may also be required.

The opinions presented in this report are based on a review of records, available investigation reports and historical sources. Peak Environmental Solutions Limited has found indicators that suggest that geo-environmental hazards may exist at the site and these may warrant mitigation or consideration appropriate to the end use stated by the Client. Not finding such indicators does not mean that geo-environmental hazards do not exist at the site. In addition, the Risk Assessment did not include any enquiry with respect to substances not included within the substances of concern.

The Client is advised that the geo-environmental conditions stated within reports supplied to Peak Environmental Solutions Limited are subject to change. Certain indicators of the presence of geo-environmental hazards may have been latent at the time of the most recent site reconnaissance and may subsequently have become observable. It is possible that Peak Environmental Solutions research, while fully appropriate for the Project, failed to indicate the existence of important information sources. Assuming such sources actually exist, their information could not have been considered in the formulation of Peak Environmental Solutions findings and opinions.

Certain indicators or evidence of geo-environmental hazards may have been outside the very limited portion of the subsurface investigated or monitored, latent at the time of this work or only partially intercepted by the works and thus their full significance could not have been appreciated. Groundwater levels are particularly susceptible to variations due to seasonal or other effects. Accordingly, it is possible that Peak Environmental Solutions work, whilst fully appropriate for the Project failed to indicate the presence or significance of geo-environmental hazards. Assuming the presence of a hazard, it could not have been considered in the formulation of Peak Environmental Solutions findings and opinions. The subsurface geological profiles and other descriptions are generalised by necessity and have been based on the information found at the locations of the exploratory holes and depths sampled and tested.

The geotechnical comments given in this report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of geotechnical and analytical tests made in the field and laboratory. However, there may be special geotechnical conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report. Accordingly, a careful watch should be maintained in any future groundworks and the geotechnical findings and recommendations of this report reviewed, if necessary as work proceeds.

Any interpretation of the results of the Project have been based on the proposed site usage and the findings are not valid should the proposed land use and/or the regulatory regime/guidance change. Where interpretation is based on public domain guidance/protocols/models/software/code, Peak Environmental Solutions is not liable for errors in the guidance/protocols/models/software/code.

Peak Environmental Solutions Limited believes that providing information about limitations is essential to help the Client identify and thereby manage their risks. These risks can be mitigated, but they cannot be eliminated, through additional research. Peak Environmental Solutions Limited will on request, advise the client of the additional research opportunities available, their impact on risk, and their cost.

In preparing this report, it has been assumed that all past and present occupants have provided all relevant and other information, especially relating to known or potential geo-environmental hazards. This report is not required to identify insufficiencies or mistakes in the information provided by the user/owner or from any other source, but has sought to compensate for these where obvious in the light of other information.

APPENDIX B: PHOTOGRAPHS

Photo 1: TR-01 in the west of the site with Station Road in the background and Gunness Wharf beyond

Photo 2: TR-01

Beechfield, Ninelands Road, Hathersage
Derbyshire, S32 1BJ
Tel: 01433 659071
www. peakenvironmentalsolutions.com

Photos 3&4: TR-01 Ground conditions

Photo 5-7: TR-01 Groundwater and ground conditions

APPENDIX C: TRIAL TRENCH LOG

PEAK ENVIRONMENTAL SOLUTIONS
info@peakenvironmentalsolutions.com
www.peakenvironmentalsolutions.com

Peak Environmental Solutions Limited
Beechfield
Ninelands Road
Hathersage
Derbyshire S32 1BJ
Tel: 01433 659071

Project No 42332

TP-01

Client: J Chapman
Project: 1 Station Rd
Location: Gunness

Date: 11 Apr 2024
Contractor: J Chapman
Method: Mini 360

Depth: 1.2 mbgl
Length: 6.5 m
Width: 0.3 m

Gr Elevation: mDatum
TOC Elevation: mDatum
Coordinates: :

Depth (mbgl)	Elevation (m)	Samples	Tests/VOCs	SPT N Values	Soil or Rock Field Material Description	Depth (mbgl)	Well Details & Groundwater Levels
0.0					Dark to mid brown loamy topsoil with roots and rootlets.	0	
						0.3	
0.5					Very soft to soft orange brown slightly silty CLAY.		
		D1					0.9m Resting
1.0							
					Base of trial pit.	1.2	
1.5							
2.0							
2.5							
3.0							

Remarks:
1: Gen Accordance BS5930:2015
2: No hydrocarbon odours
3: Sides stable
4:
5:
6:

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
W = Water Sample
VOC = PID Volatiles
N Value = Stan Pen Test
SWL = Standing Water Level

Driller: J Chapman
Logged: C Dainton
Drawn: C Dainton

Checked: C F Dainton
Approved: C Dainton

APPENDIX D: LABORATORY ANALYSIS CERTIFICATES

Peak Environmental Solutions
Beechfield
Ninelands Rd
Hathersage
Hope Valley
Derbyshire
S32 1BJ

t: 01433 659071

e: claredainton@peakenvironmentalsolutions.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-014082

Project / Site name:	1 Station Road, Guness	**Samples received on:**	12/04/2024
Your job number:	42232	**Samples instructed on/ Analysis started on:**	12/04/2024
Your order number:	42232	**Analysis completed by:**	22/04/2024
Report Issue Number:	1	**Report issued on:**	22/04/2024
Samples Analysed:	1 soil sample - 1 water sample		

[redacted]

Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-014082
Project / Site name: 1 Station Road, Guness
Your Order No: 42232

Lab Sample Number				170331
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				0.90
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	24
Total mass of sample received	kg	0.1	NONE	0.4

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	EWS

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	8.3
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO_4	mg/kg	50	MCERTS	460
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	260
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	132
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80

Analytical Report Number: 24-014082
Project / Site name: 1 Station Road, Guness
Your Order No: 42232

Lab Sample Number				170331
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				0.90
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	30
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	43
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	72
Petroleum Hydrocarbons				
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	< 10
TPH (>C6 - C8) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0
TPH (>C8 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0
TPH (>C10 - C12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	< 2.0
TPH (>C10 - C35) EH_CU_1D_TOTAL	mg/kg	10	NONE	< 10
TPH (>C12 - C16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	< 4.0
TPH (>C16 - C21) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10
TPH (>C21 - C35) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10
TPH Total >C6 - C35 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	< 10
VOCs				
Chloromethane	µg/kg	5	ISO 17025	< 5.0
Chloroethane	µg/kg	5	NONE	< 5.0
Bromomethane	µg/kg	5	ISO 17025	< 5.0
Vinyl Chloride	µg/kg	5	NONE	< 5.0
Trichlorofluoromethane	µg/kg	5	NONE	< 5.0
1,1-Dichloroethene	µg/kg	5	NONE	< 5.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	< 5.0
Trans 1,2-dichloroethylene	µg/kg	5	NONE	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0
1,1-Dichloroethane	µg/kg	5	ISO 17025	< 5.0

Analytical Report Number: 24-014082
Project / Site name: 1 Station Road, Guness
Your Order No: 42232

Lab Sample Number				170331
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				0.90
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
2,2-Dichloropropane	µg/kg	5	NONE	< 5.0
Chloroform	µg/kg	5	ISO 17025	< 5.0
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	< 5.0
1,2-Dichloroethane	µg/kg	5	ISO 17025	< 5.0
1,1-Dichloropropene	µg/kg	5	ISO 17025	< 5.0
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0
Carbontetrachloride	µg/kg	5	NONE	< 5.0
1,2-Dichloropropane	µg/kg	5	ISO 17025	< 5.0
Trichloroethene	µg/kg	5	ISO 17025	< 5.0
Dibromomethane	µg/kg	5	ISO 17025	< 5.0
Bromodichloromethane	µg/kg	5	ISO 17025	< 5.0
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	< 5.0
1,3-Dichloropropane	µg/kg	5	ISO 17025	< 5.0
Dibromochloromethane	µg/kg	5	ISO 17025	< 5.0
Tetrachloroethene	µg/kg	5	NONE	< 5.0
1,2-Dibromoethane	µg/kg	5	ISO 17025	< 5.0
Chlorobenzene	µg/kg	5	ISO 17025	< 5.0
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0
p & m-Xylene	µg/kg	5	MCERTS	< 5.0
Styrene	µg/kg	5	ISO 17025	< 5.0
Bromoform	µg/kg	5	NONE	< 5.0
o-Xylene	µg/kg	5	MCERTS	< 5.0
Isopropylbenzene	µg/kg	5	ISO 17025	< 5.0
1,1,2,2-Tetrachloroethane	µg/kg	5	NONE	< 5.0
Bromobenzene	µg/kg	5	NONE	< 5.0
n-Propylbenzene	µg/kg	5	ISO 17025	< 5.0
2-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0
4-Chlorotoluene	µg/kg	5	ISO 17025	< 5.0
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0
tert-Butylbenzene	µg/kg	5	ISO 17025	< 5.0
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	< 5.0
sec-Butylbenzene	µg/kg	5	ISO 17025	< 5.0
1,3-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0
p-Isopropyltoluene	µg/kg	5	ISO 17025	< 5.0
1,4-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0
1,2-Dichlorobenzene	µg/kg	5	ISO 17025	< 5.0
Butylbenzene	µg/kg	5	NONE	< 5.0
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	< 5.0
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0
Hexachlorobutadiene	µg/kg	5	NONE	< 5.0
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 24-014082
Project / Site name: 1 Station Road, Guness

Your Order No: 42232

Lab Sample Number				170332
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
General Inorganics				
pH (L099)	pH Units	N/A	ISO 17025	7.7
Total Cyanide	µg/l	10	ISO 17025	< 10
Sulphate as SO_4	mg/l	0.045	ISO 17025	354
Ammoniacal Nitrogen as N	µg/l	15	ISO 17025	< 15
Total Phenols				
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10
Speciated PAHs				
Naphthalene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01
Fluorene	µg/l	0.01	ISO 17025	< 0.01
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01
Anthracene	µg/l	0.01	ISO 17025	< 0.01
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Pyrene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01
Chrysene	µg/l	0.01	ISO 17025	< 0.01
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	ISO 17025	< 0.01
Dibenz(a,h)anthracene	µg/l	0.01	ISO 17025	< 0.01
Benzo(ghi)perylene	µg/l	0.01	ISO 17025	< 0.01
Total PAH				
Total EPA-16 PAHs	µg/l	0.16	ISO 17025	< 0.16
Heavy Metals / Metalloids				
Arsenic (total)	µg/l	0.15	ISO 17025	8.71
Cadmium (total)	µg/l	0.02	ISO 17025	0.64
Chromium (total)	µg/l	0.2	ISO 17025	6.1
Copper (total)	µg/l	0.5	ISO 17025	45
Lead (total)	µg/l	0.2	ISO 17025	320
Mercury (total)	µg/l	0.05	ISO 17025	< 0.05
Nickel (total)	µg/l	0.5	ISO 17025	11
Vanadium (total)	µg/l	0.2	ISO 17025	20
Zinc (total)	µg/l	0.5	ISO 17025	89
Boron (dissolved)	µg/l	10	ISO 17025	340
Selenium (total)	µg/l	4	ISO 17025	< 4.0

Analytical Report Number: 24-014082
Project / Site name: 1 Station Road, Guness

Your Order No: 42232

Lab Sample Number				170332
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Petroleum Hydrocarbons				
TPH (>C6 - C8) $_{HS\_1D\_TOTAL}$	µg/l	1	ISO 17025	< 1.0
TPH (>C8 - C10) $_{HS\_1D\_TOTAL}$	µg/l	10	ISO 17025	< 10
TPH (>C10 - C12) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH (>C10 - C35) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH (>C12 - C16) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH (>C16 - C21) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH (>C21 - C35) $_{EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
TPH Total >C6 - C35 $_{HS+EH\_1D\_TOTAL\_MS}$	µg/l	10	NONE	< 10
VOCs				
Chloromethane	µg/l	3	ISO 17025	< 3.0
Chloroethane	µg/l	3	ISO 17025	< 3.0
Bromomethane	µg/l	3	ISO 17025	< 3.0
Vinyl Chloride	µg/l	3	NONE	< 3.0
Trichlorofluoromethane	µg/l	3	NONE	< 3.0
1,1-Dichloroethene	µg/l	3	ISO 17025	< 3.0
1,1,2-Trichloro-1,2,2-trifluoroethane	µg/l	3	ISO 17025	< 3.0
Trans 1,2-dichloroethylene	µg/l	3	ISO 17025	< 3.0
MTBE (Methyl Tertiary Butyl Ether)	µg/l	3	ISO 17025	< 3.0
1,1-Dichloroethane	µg/l	3	ISO 17025	< 3.0
2,2-Dichloropropane	µg/l	3	NONE	< 3.0
Chloroform	µg/l	3	ISO 17025	< 3.0
1,1,1-Trichloroethane	µg/l	3	ISO 17025	< 3.0
1,2-Dichloroethane	µg/l	3	ISO 17025	< 3.0
1,1-Dichloropropene	µg/l	3	ISO 17025	< 3.0
Cis-1,2-dichloroethene	µg/l	3	ISO 17025	< 3.0
Benzene	µg/l	3	ISO 17025	< 3.0
Carbontetrachloride	µg/l	3	ISO 17025	< 3.0
1,2-Dichloropropane	µg/l	3	ISO 17025	< 3.0
Trichloroethene	µg/l	3	ISO 17025	< 3.0
Dibromomethane	µg/l	3	ISO 17025	< 3.0
Bromodichloromethane	µg/l	3	ISO 17025	< 3.0
Cis-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0
Trans-1,3-dichloropropene	µg/l	3	ISO 17025	< 3.0
Toluene	µg/l	3	ISO 17025	< 3.0
1,1,2-Trichloroethane	µg/l	3	ISO 17025	< 3.0
1,3-Dichloropropane	µg/l	3	ISO 17025	< 3.0
Dibromochloromethane	µg/l	3	ISO 17025	< 3.0
Tetrachloroethene	µg/l	3	ISO 17025	< 3.0
1,2-Dibromoethane	µg/l	3	ISO 17025	< 3.0
Chlorobenzene	µg/l	3	ISO 17025	< 3.0
1,1,1,2-Tetrachloroethane	µg/l	3	ISO 17025	< 3.0
Ethylbenzene	µg/l	3	ISO 17025	< 3.0
p & m-xylene	µg/l	3	ISO 17025	< 3.0
Styrene	µg/l	3	ISO 17025	< 3.0
Bromoform	µg/l	3	ISO 17025	< 3.0
o-xylene	µg/l	3	ISO 17025	< 3.0
Isopropylbenzene	µg/l	3	ISO 17025	< 3.0
1,1,2,2-Tetrachloroethane	µg/l	3	NONE	< 3.0
Bromobenzene	µg/l	3	ISO 17025	< 3.0
n-Propylbenzene	µg/l	3	ISO 17025	< 3.0

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Your Order No: 42232

Lab Sample Number				170332
Sample Reference				TR-01
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				11/04/2024
Time Taken				None Supplied
Analytical Parameter (Water Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
2-Chlorotoluene	µg/l	3	ISO 17025	< 3.0
4-Chlorotoluene	µg/l	3	ISO 17025	< 3.0
1,3,5-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0
tert-Butylbenzene	µg/l	3	ISO 17025	< 3.0
1,2,4-Trimethylbenzene	µg/l	3	ISO 17025	< 3.0
sec-Butylbenzene	µg/l	3	ISO 17025	< 3.0
1,3-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0
p-Isopropyltoluene	µg/l	3	ISO 17025	< 3.0
1,4-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0
1,2-Dichlorobenzene	µg/l	3	ISO 17025	< 3.0
Butylbenzene	µg/l	3	ISO 17025	< 3.0
1,2-Dibromo-3-chloropropane	µg/l	3	ISO 17025	< 3.0
1,2,4-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0
Hexachlorobutadiene	µg/l	3	ISO 17025	< 3.0
1,2,3-Trichlorobenzene	µg/l	3	ISO 17025	< 3.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
170331	TR-01	None Supplied	0.9	Brown sandy clay with vegetation

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Metals in water by ICP-MS (total)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW	In-house method based on USEPA Method 6020 & 200.8 for the determination of trace elements in water by ICP-MS	L012B	W	ISO 17025
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Metals in water by ICP-OES (dissolved)	Determination of metals in water by acidification followed by ICP-OES. Accredited Matrices: SW, GW, PW, PrW (Al, Cu, Fe,Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Metals in water by ICP-OES (total)	Determination of metals in water by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW (Al, Fe, Cu, Zn)	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Total petroleum hydrocarbons by GC-MS in water	Determination of total petroleum hydrocarbons in water by GC-MS/GC-MS HS	In-house method	L070B	W	NONE
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
BTEX and/or Volatile organic compounds in water	Determination of volatile organic compounds in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA 8260	L073B	W	ISO 17025
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	MCERTS

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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	ISO 17025
Total petroleum hydrocarbons by GC-MS HS in water	Determination of total petroleum hydrocarbons in water by GC-MS HS	In-house method	L088	W	ISO 17025
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS
pH at 20°C in water (automated)	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method	L099	W	ISO 17025
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAH) in leachate by extraction in dichloromethane followed by GC-MS	In-house method based on USEPA 8270	L102B	W	ISO 17025
Ammoniacal Nitrogen as N in water	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the discrete analyser (colorimetric) salicylate/nitroprusside method. Accredited matrices SW, GW, PW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	ISO 17025
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited Matrices SW, GW, PW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 24-014082
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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total