Report No: C722/1
Date: January 2025

GEOENVIRONMENTAL APPRAISAL
of land adjacent to
40 HIGH STREET, CROWLE, SCUNTHORPE, NORTH LINCOLNSHIRE

Prepared for

Mr Simon Chapman

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SITE:	Land adjacent to 40 High Street, Crowle, Scunthorpe, North Lincolnshire		
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1.0 INTRODUCTION.

G&M Consulting Ltd (G&M) was commissioned by Mr Simon Chapman to undertake a geoenvironmental appraisal, of land adjacent to 40 High Street, Crowle, Scunthorpe, North Lincolnshire. It is understood that approval is being sought for the development of the site with a single residential dwelling. This report has been commissioned to support the discharge any contaminated land conditions associated with the approval.

The development layout drawing is presented on Drawing No 02A, prepared by The Rural Architect, a copy of which is presented in Appendix A of this report.

The location of the site is shown on Drawing No C722/1/1, presented in Appendix A of this report.

1.1 Project Brief.

The geoenvironmental appraisal of the site has been undertaken in two phases. The initial phase (Phase 1) was a preliminary investigation (desk study) which was prepared by G&M in January 2025 (Report Ref C722). Based on the results of the preliminary investigation, G&M has undertaken an intrusive site investigation (Phase 2), of the proposed area of development.

This report details the results of the intrusive investigation and makes recommendations with regards to the proposed development. This report should be read in conjunction with the desk study, which contains a description of the site, environmental setting and initial conceptual site model (CSM) from which the rationale for the intrusive investigation was derived.

The fieldwork for the intrusive investigation was undertaken on the 9th January 2025 and comprised the drilling of five window sample boreholes, with the installation of three combined groundwater/ground gas installations. Following completion of the fieldwork selected soil samples were scheduled for a range of chemical and laboratory tests. At the time of writing of this report monitoring of the installations is under way.

1.2 Site Description.

The site is a flat lying rectangular shaped piece of land, with the long axis trending east-west. The site lies at a level of approximately 10m above Ordnance Datum (OD).

The whole site is currently concrete hardstand, the site is bounded to the north by a wooden fence, behind which is a residential property, the eastern boundary of the site is formed of a brick wall to an adjacent kitchen manufacturing business. The southern boundary is formed of a breeze block wall to an adjacent car repair garage. The site is bounded to the west by a wooden gate (through which the site is accessed), behind which is a gravel track providing access to the adjacent residential property. An empty skip was noted in the north-east corner of the site. Industrial racking was noted adjacent to the eastern boundary of the site.

A set of site condition photographs have been retained by G&M for inspection if required.

1.3 Limitations.

This investigation report, which is designed to meet the requirements of all relevant current guidance, presents the factual information and interpretation of the data obtained during this appraisal and recommendations relevant to the defined objectives.

The comments and opinions presented in this report are based on the findings of a review of available information and ground conditions encountered during the intrusive investigation work. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation. Any diagram or opinion of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.

During the course of the works G&M did not notice the presence of any Japanese Knotweed, or other such invasive plant species. However, it should be noted that G&M are not qualified ecologists and as such cannot guarantee the absence of knotweed or other invasive vegetation. If necessary, the possible presence of such vegetation should be confirmed by a qualified ecologist.

This report is intended for the sole use of Mr Simon Chapman, or his representative. No other third party may rely upon or reproduce the contents of this report without the written authorisation of the report author. If any unauthorised third party comes into possession of this report they rely on it at their own risk and the author does not owe them any duty of care or skill.

2.0 GROUND INVESTIGATION.

2.1 Design and Strategy.

The Phase 1 desk study prepared previously, referenced above, was used as the basis for the design of an appropriate intrusive ground investigation. The main findings of the desk study as given in the summary to the report were as follows:

- *Historical maps show the site to have been undeveloped until sometime prior to 1968, when an unlabeled building is shown along the south western boundary of the site. At the time of the walkover survey this building was not present on site.*
- *Two off-site sources of potential contamination have been identified as part of this assessment. A vehicle repair and servicing garage is located adjacent to the south-western boundary and a fire station is located adjacent to the north-eastern boundary.*
- *The preliminary conceptual site model has identified potential complete pollutant linkages that are considered to require further risk assessment and investigation.*
- *The risks outlined above necessitate a Phase 2 intrusive ground investigation, the outline scope of which should comprise;*
  - *Window sample boreholes drilled across the site to adequately characterise the made ground and shallow natural soils and groundwater across the site.*
  - *Installation and monitoring of three combined ground gas/ground water wells. Monitoring in accordance with C665:2007. Water samples to be recovered from installations.*
  - *In-field soil sampling and screening (utilising a Photo Ionisation Detector (PID)).*
  - *Soil samples should be collected in appropriate containers and subject to chemical soil analysis including a range of testing suites including, metals, pH, water soluble sulphate, phenol, speciated TPHs, speciated PAHs and asbestos screening.*
  - *Compilation of the data gathered during the Phase 2 site investigation into an interpretive report, with the preparation of a Remediation Strategy, if necessary.*

The aim and purpose of the ground investigation was to verify the nature and depth of made ground and shallow subsoils across the site, to allow informed decisions on potential remediation options that might be required in order to break the direct contact exposure pathways that were identified at the Phase 1 stage.

The scope of the intrusive investigation is detailed below;

Exploratory Hole Type	Purpose
Window sample boreholes	To determine the general nature of shallow soils underlying the site, including the; • Nature, distribution and thickness of any potential made ground. • Nature, degree and extent of ground contamination. • Determination of the presence of shallow underlying natural ground • Allow for the installation of ground gas/groundwater monitoring wells • To help identify and inform suitable remedial options

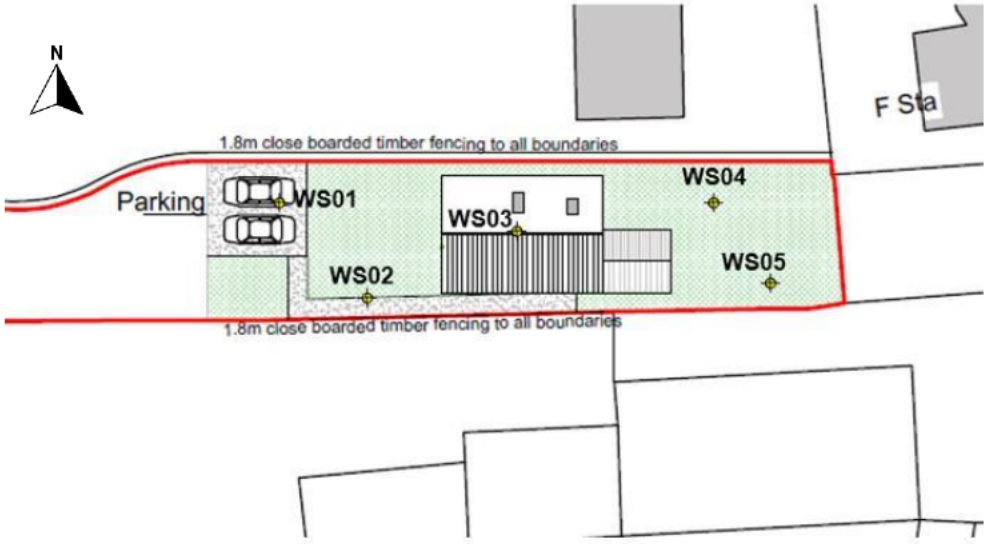
2.2 Scope of Works.

Fieldwork was undertaken on the 9th January 2025, and comprised;

- Drilling of five window sample boreholes, referenced WS01 to WS05 inclusive, to a depth of 5.0 m below ground level (bgl)

The investigation was scoped using guidance presented in BS 10175:2011+A2:2017 and the principles of Land Contamination Risk Management (LCRM) - Environment Agency July 2023 and BS EN 1997:2004 and 2007.

The exploratory hole positions were set out and the fieldwork supervised by a G&M engineering geologist. The locations of the exploratory holes are shown below.



Prior to the commencement of any exploratory hole a scan was carried out for buried services using a combination of cable avoidance tool (CAT) and signal generator ('Genny').

The window sample holes were drilled using a Dando Terrier tracked window sampling rig. This utilises a drop weight to drive steel sampling tubes with a uPVC liner. The sampling tubes reduce in diameter with depth.

The combined gas and groundwater monitoring installations comprised 50 mm diameter HDPE pipe, consisting of a lower slotted section of casing surrounded by single size non-calcareous gravel. The wells were installed to a depth of 3.0 m bgl, in WS02, WS03 and WS04. The upper section of the well was constructed from plain casing sealed with a bentonite/cement seal. A flush lockable security cover was concreted into place to complete the well installation at the ground surface.

2.3 Strata Description.

Depths and descriptions of strata encountered together with details of the samples recovered are shown on the exploratory hole record sheets presented in Appendix B of this report. Procedures and principles contained in BS EN ISO 14688-1:(2002), as amplified by BS 5930:(2015+A1:2020) were followed.

The depths of strata on the record sheets are recorded from current ground levels at each location.

2.4 Sampling and In-situ Testing.

Small disturbed sub samples of soil were taken from the exploratory holes for chemical analysis, these were placed in amber glass jars as appropriate.

In accordance with best practice (BS10175:2011+A2:2017) samples were collected in appropriate containers, kept in a chilled cool box whilst on site, retained in a fridge (below 2^{o}C) until the day of collection, packed in a chilled cool box on the day of collection and transported in this to the laboratory.

2.5 Laboratory Testing.

Selected soil and water samples were tested for a range of potential contaminants, under a sub-contract with i2 Analytical Ltd (i2), a UKAS/MCERTS accredited laboratory. The analytes tested are listed in Section 4.2 of this report.

The results of soil analysis are presented in Appendix C of this report.

3.0 GROUND CONDITIONS AND MATERIAL PROPERTIES.

A complete record of all the strata encountered is given on the attached trial pits logs, presented in Appendix B of this report. In general, the exploratory holes show a concrete surface, underlain by a predominantly granular made ground, over natural deposits comprising a clayey sand with a gravelly clay at depth.

3.1 Made Ground.

A 100mm to 150mm thick concrete was encountered from surface in all window sample positions.

In WS01 and WS02 made ground was encountered below the concrete surface, which comprised a greyish brown slightly clayey slightly gravelly fine to coarse sand, to depths of between 0.50 m and 0.55 m bgl. The Gravel was recorded as subangular to subrounded fine to coarse of brick, coal and rare clinker.

In WS03, WS04 and WS05 a dark grey locally brown and orange clayey sandy subangular fine to coarse gravel was encountered beneath the concrete, to depths of between 0.55 m and 0.60m bgl. The Gravel component was recorded as brick, clinker, sandstone and tile, within WS03, coarse fragments of wood were also noted.

3.2 Natural Deposits.

The made ground is underlain by natural strata comprising a greyish brown silty fine and medium sand in all of the window sample holes, to a maximum depth of 1.30 m bgl. Within WS05, this sand is noted to be slightly gravelly. This sand is underlain by a yellowish brown clayey locally very clayey fine and medium sand to depths of between 4.2 m and 4.4 m bgl. A Soft, locally firm brownish red slightly gravelly locally gravelly clay is noted below this sand to the base of all of the window sample holes. The gravel was noted as subangular fine to coarse of mudstone and grey siltstone.

3.3 Groundwater.

Groundwater was encountered in in all window sample holes at a depth of 1.40 m bgl, during the fieldwork.

The table below summarises the standing groundwater levels recorded within the monitoring wells installed by G&M to date. Currently only two monitoring visits have been made to site, post fieldwork.

Exploratory Hole No	Drilled Depth (m bgl)	Depth of Monitoring Well (m bgl)	Groundwater Level (m bgl) Visit 1 –16/01/25	Groundwater Level (m bgl) Visit 2 –24/01/25
WS02	5.0	3.0	1.41	1.42
WS03	5.0	3.0	1.51	1.54
WS04	5.0	3.0	1.55	1.58

It should be borne in mind that water levels are likely to fluctuate with season/rainfall and that the groundwater regime may therefore be substantially higher than those found during this investigation.

3.4 Visual / Olfactory Evidence of Contamination.

The made ground was found to include varying proportions of clinker, coal, tile and brick, which can produce elevated concentrations of certain toxic and phytotoxic contaminants.

No olfactory evidence of any contamination was noted during the fieldwork.

As per BS 10175:2011 samples were field tested using a PID (which is not an accredited sampling technique). This is accepted as a preliminary method for assessing hydrocarbon impacted soils. This should only be used as a guide for selecting which samples 'require more comprehensive laboratory analysis'. No elevated PID readings were recorded during the fieldwork. The results are presented on the respective exploratory hole logs, presented in Appendix B of this report.

3.5 Ground Gas and Vapours

Ground gas monitoring has been carried out on two occasions to date, the results are summarised below. Full details of the ground gas monitoring are presented in Appendix D of this report.

Well	Methane (range) % v/v	Methane (range) %LEL	Carbon Dioxide (range) %v/v*	Oxygen (range) %v/v	VOC (ppm)	Flow(range) l/hr*
WS02	ND	-	0.9-1.0	17.6-17.9	0.0	0
WS03	ND	-	0.4-0.7	15.3-16.3	0.0	0
WS04	ND	-	0.2-0.4	19.2-20.0	0.0	0

ND - Not Detected. * Peak reading

Barometric air pressure for the visits varied between 1002 mb and 1009 mb

4.0 RESULTS OF CHEMICAL TESTING.

4.1 General.

For this site, measured values were compared to Generic Assessment Criteria (GAC) derived for a commercial/industrial end use.

Chemical analysis was undertaken on representative soil samples recovered from across the site. The determinands were selected to provide information on the distribution of potential contaminants. The general analytical suite was supplemented with additional analysis where former land usage, as determined from the desk study, or visual or olfactory observations suggested the presence of additional contaminants.

The majority of initial screening levels (GAC's) used in the production of this assessment have been taken from the guidelines introduced by:

- DEFRA C4SL's, DEFRA 2015.
- Joint Land Quality Management Ltd (LQM) and Chartered Institute of Environmental Health (CIEH), Generic Assessment Criteria for Human Health Risk Assessment, S4UL's, Land Quality Press 2015.

Usually statistical testing is undertaken for the Planning Scenario by the methods described in CL:AIRE "Professional Guidance: Comparing Soil Contamination Data with a Critical Concentration", September 2020. This statistical testing is undertaken to determine whether there was sufficient evidence that the true mean concentration of each determinand was less than the relevant critical concentration for that component. However, given the fact that a proportion of the sampling was carried out on a targeted basis, detailed statistical assessment of the data has not been conducted, instead individual contaminant concentrations have been compared to their relevant assessment criteria.

4.2 Testing Schedule.

Following completion of the fieldwork samples were selected for testing as follows;

Laboratory Analysis	Made Ground/Topsoil	Natural Soils
Total concentrations of arsenic, cadmium, chromium (incl hexavalent), copper, lead, nickel, selenium, zinc, mercury	6	4

Laboratory Analysis	Made Ground/Topsoil	Natural Soils
Water soluble sulphate, pH	7	8
Speciated PAH	5	3
Phenol	7	8
Asbestos	5	-
Speciated TPH	3	2
BTEX / MTBE	3	2

4.3 Soil Analysis.

The chemical analysis results and screening criteria are summarised below. The results for the made ground and natural soils have been combined for an initial assessment.

Summary of Total Soil Concentrations

Determinand	GAC (1% SOM) (mg/kg, unless otherwise stated)	No. of samples above screening value	No. of samples tested	Concentrations above GAC (mg/kg, unless otherwise stated)
Metals/Metalloids				
Arsenic	37 (2)	0	10	
Cadmium	11(1)	0	10	
Chromium (VI)	21 (2)	0	10	
Lead	200 (2)	2	10	340 (WS01-0.30m) 250 (WS05-0.50m)
Mercury	40 (1)	0	10	
Selenium	250 (1)	0	10	
Copper	2400 (1)	0	10	
Nickel	180 (1)	0	10	
Zinc	3700 (1)	0	10	
Inorganics				
pH	<5	0	15	
Water Soluble Sulphate	0.5 g/l (3)	1	15	0.701 (WS03-0.30m)
Organics				
PAHs				
Acenaphthene	210(1)	0	8	
Anthracene	2400(1)	0	8	
Acenaphthylene	170(1)	0	8	
Benzo(a)anthracene	7.2(1	0	8	
Benzo(b)fluoranthene	2.6(1)	0	8	
Benzo(k)fluoranthene	77(1)	0	8	
Benzo(g,h,i)perylene	320(1)	0	8	
Benzo(a)pyrene	5.0(2)	0	8	
Chrysene	15(1)	0	8	
Dibenz(a,h)anthracene	0.24(1)	0	8	
Fluoranthene	280(1)	0	8	
Fluorene	170(1)	0	8	
Indeno(1,2,3-cd)pyrene	27(1)	0	8	
Naphthalene	2.3(1)	0	8	
Pyrene	620(1)	0	8	
Phenanthrene	95(1)	0	8	
TPHs				
Aliphatic EC 5-6	42(1)	0	5	
Aliphatic EC >6-8	100(1)	0	5	

Determinand	GAC (1% SOM) (mg/kg, unless otherwise stated)	No. of samples above screening value	No. of samples tested	Concentrations above GAC (mg/kg, unless otherwise stated)
Aliphatic EC >8-10	27(1)	0	5	
Aliphatic EC >10-12	130(1)	1	5	230 (WS03-0.30m)
Aliphatic EC >12-16	1,100(1)	0	5	
Aliphatic EC >16-35	65,000(1)	0	5	
Aromatic EC 5-7	70(1)	0	5	
Aromatic EC >7-8	130(1)	0	5	
Aromatic EC >8-10	34(1)	0	5	
Aromatic EC >10-12	74(1)	0	5	
Aromatic EC >12-16	140(1)	0	5	
Aromatic EC >16-21	260(1)	0	5	
Aromatic EC >21-35	1,100(1)	0	5	
Benzene	0.87(1)	1	5	7.2 (WS03-0.30m)
Toluene	130(1)	0	5	
Ethylbenzene	47(1)	0	5	
M xylene	59(1)	1	5	140 (WS03-0.30m)
O xylene	61(1)	1	5	76 (WS03-0.30m)
P xylene	5.6(1)	1	5	140 (WS03-0.30m)
Others				
Monohydric Phenol	120(1)	0	15	
Asbestos	Fibres present	2	5	Chrysotile (WS01 – 0.30m) Chrysotile (WS05 – 0.50m)

[1] LQM/CIEH (2015) S4UL's for Human Health Risk Assessment. 2nd Ed. (for a sandy soil with 1% SOM and pH 7.0)
[2] DEFRA C4SL's, DEFRA 2015
[3] BRE (2005) Special Digest 1, 3rd Edition, Concrete in aggressive ground. Upper limits for DS-1 Design Sulphate Class concrete.

Lead was noted to be elevated in two samples of the made ground.

TPH speciate (EC>10-12) was recorded above its respective threshold in one sample of made ground (WS3 at 0.3m). BTEX speciates Benzene, O xylene, P xylene and M xylene were noted to be elevated within the same sample of made ground.

Elevated water soluble sulphate was determined in one sample of made ground, recording a concentration 0.70 g/l, against a threshold of 0.5 g/l.

No other determinands tested within the samples of made ground were found to be above their respective threshold.

No samples of the natural soils, were shown to be elevated above respective GAC levels. Including samples taken at a significant depth below the site.

Asbestos fibres were encountered in two of the five samples of the made ground tested.

4.4 Groundwater Analysis

A water sample was submitted for analysis, recovered from the monitoring well installed within WS03. Analytical data from the testing have been evaluated against GAC values appropriate to the conceptual model for the site, based on the EQS/Drinking Water Standards.

The above guidelines have been used as the target concentrations, above which remedial targets may need to be derived, in accordance with R & D Publication 20, 'Methodology for the derivation of remedial targets for soil and groundwater to protect water resources'.

Summary of Water Analysis

Determinand	No. of Samples Tested	GAC (□g/l unless specified)	No. of Samples >GAC	Maximum concentration above GAC (□g/l, unless otherwise stated)
Arsenic	1	50(1)	0	
Cadmium	1	5(1)(2)	0	
Chromium	1	50(2)	0	
Lead	1	25(2)	0	
Mercury	1	1(1)(2)	0	
Selenium	1	10(2)	0	
Copper	1	2000(2)	0	
Nickel	1	200(1)/20(2)	0	
Zinc	1	5000(2)	0	
Total TPH	1	10(2)	0	
Naphthalene	1	2(1)	0	
Benzo(a)pyrene	1	0.01(2)	0	
Benzo(b)fluoranthene*	1	0.1(2)	0	
Benzo(k)fluoranthene*	1	0.1(2)	0	
Benzo(ghi)perylene*	1	0.1(2)	0	
Indeno(1,2,3-cd)pyrene*	1	0.1(2)	0	
Sum PAH-4*	1	0.1(2)	0	
Phenol	1	30(1)	0	
pH	1	6.9 pH units(3)	0	
Ammoniacal Nitrogen as NH3	1	500(2)	0	

[1] Environment Agency (2002) Environment Agency technical advice to third parties on pollution of controlled waters for Part IIA of the EPA 1990, Freshwater Environmental Control Standards (EQS).
[2] Water Supply (Water Quality) (Amendment) Regulations 2001 and 2007, where available.
(3) The Surface Waters (Fishlife) (Classification) Regulations 1997
*The sum of all 4 individual PAHs marked with an asterisk

No determinands were recorded above their respective thresholds.

5.0 QUALITATIVE RISK ASSESSMENT AND REVISED CONCEPTUAL MODEL.

The preliminary conceptual site model, developed from the desk study information, as presented in the G&M Report, has been revised in light of the ground investigation and chemical analysis results presented above. The revised conceptual model has been developed for the proposed future land use (residential) This summarises the understanding of surface and sub-surface features, the potential contaminant sources, transport pathways and receptors

Human Health – Further Considerations:

- Elevated levels of Lead, TPH speciate Aliphatic EC >10-12, BTEX speciates Benzene, p&m-Xylene and o-Xylene.
- Localised Asbestos fibres.
- Elevated water soluble sulphate.
- Ground gas - Currently a complete pollutant linkage assumed until monitoring period completed and reported.

Summary of Identified Pollutant Linkages

In summary the revised conceptual site model has identified the following potential pollutant which could result in an unacceptable risk to the proposed end-use, denoted as a moderate or higher potential of significant pollutant linkage on the conceptual site model.

Source	Risk	Potential Contaminants	Exposure Pathway	Primary Receptor/s	Complete Pollutant Linkage
Made Ground - on site	Moderate/High	Elevated levels of Lead, TPH speciate Aliphatic EC >10-12, BTEX speciates Benzene, p&m-Xylene and o-Xylene. Localised Asbestos fibres	Skin contact Ingestion	Construction workers, built development, End users of site,	**Yes:** Residential property shown to have gardens and areas of soft landscaping, clean capping of gardens and areas of soft landscaping will be required. Asbestos fibre risk to construction workers to be managed.
	Low	Water soluble sulphate	Direct Contact	Built Development	**Yes:** Although not a risk to human health, design class of concrete should be considered in light of elevated sulphate
	Moderate	Ground gas	Migration (lateral and vertical) Inhalation, explosion	End users/Built Development	**Yes:** further assessment required; monitoring ongoing (4 further visits over a three month period) Currently a complete pollutant linkage assumed until monitoring period completed and reported. No Radon protective measures are required for the site.

6.0 CONCLUSIONS AND RECOMMENDATIONS.

6.1 General

G&M Consulting Ltd (G&M) was commissioned by Mr Simon Chapman to undertake a geoenvironmental appraisal, of land adjacent to 40 High Street, Crowle, Scunthorpe, North Lincolnshire. It is understood that approval is being sought for the development of the site with a single residential dwelling. This report has been commissioned to support the discharge any contaminated land conditions associated with the approval.

The development layout drawing is presented on Drawing No 02A, prepared by The Rural Architect, a copy of which is presented in Appendix A of this report.

It has been assumed that ground levels will not change significantly from those described in this report, or that the proposed end use of the site will not change from that detailed above. If this is not the case, then amendments to the interpretation and conclusions in this report may be required.

6.2 Contamination Constraints to Development

Risk Evaluation for Proposed Land Use (Residential With Plant Uptake)

Localised elevated concentrations of BTEX, TPH speciates, Asbestos and Lead have been identified within the thin veneer of made ground materials on the site. The elevated concentrations of contaminants are considered to pose a **moderate/high** risk to future site users. Consequently, remedial action is therefore considered necessary to break the potential pollutant linkage.

Testing of the deeper natural soils present on site, did not record determinands above their respective thresholds. It is therefore concluded that the site is not impacted by any of the off-site sources previously identified. The elevated levels of contaminants appear to be associated with the thin veneer of made ground present on site.

If made ground is left beneath areas of proposed hardstand (building footprints and car parking etc), it is considered to pose a negligible risk to end users, as pathways are severed due to capping by the hardstanding.

If made ground is left on site in areas of private gardens or soft landscaping, there will be a need to place clean cover soils. This is to provide a healthy medium for plant growth and to remove any remaining pathways for exposure of end users to residual contaminants. It is recommended that a minimum of 600mm of clean capping soils (including 150mm of clean topsoil) are placed. This thickness is subject to regulatory approval.

Should all the made ground be removed, which is likely in areas of the proposed development, considering the thickness of these materials encountered during the investigation, then providing that no visual or olfactory evidence of suspected contamination is noted, within the underlying natural subsoils, and chemical testing of the resultant surface is undertaken, no specific depth of cover would be required, beyond that needed to provide a suitable thickness of growing medium.

Controlled waters

The area of proposed development will comprise, hardstand car parking, buildings or clean capping soils, thereby limiting any surface water percolation and effectively preventing any vertical migration of any mobile contaminants. Furthermore, the groundwater sample recovered from WS03, recorded contaminant levels below the respective thresholds detailed in Section 4.4 of this report. Consequently, it is considered that the soils are considered to pose a **negligible/low** risk to controlled waters and that no further remediation is considered necessary, outside of that described. This opinion is subject to regulatory approval.

Construction and Maintenance Workers

Contamination may pose a short-term (acute) or long-term (chronic) risk to workers during construction and maintenance. The potential risks must be specifically assessed as part of the health and safety evaluation for the works to be performed in accordance with prevailing legislation. Site practices must conform to the specific legislation requirements and follow appropriate guidance (e.g. HSE, 1991; CIRIA 1996).

On the basis of the results obtained, the revised conceptual model confirms potential **moderate/high** risks to construction workers from BTEX, TPH speciates, Asbestos and lead in the made ground soils. However, risks can be readily adequately mitigated by appropriate PPE and hygiene precautions and good working and soil management practices, including dampening down of soils. It is recommended that procedures outlined in the HSE document ‘Protection of Workers and the General Public during Remediation of Contaminated Land’ be followed.

This report should be forwarded to any organisation undertaking groundworks in order for them to assess the risk to their own personnel.

Adjacent Site Users
Provided any made ground materials are carefully excavated and standard dust control measures are adopted, including dampening down of soils, during the development works, then it is considered that there is a **negligible/low** short term risk to adjacent site users.

Utilities
It is recommended that the results of the chemical testing and details of the proposed enabling works are provided to the appropriate utility companies to determine the necessity for service protection.

Built Development
The water soluble sulphate content and pH value of the made ground and natural soils was determined as part of the chemical testing. A total of fifteen tests were carried out on soil samples; seven on the made ground and eight on the natural soils.

The pH value for samples of the made ground was recorded in the range of 8.5 to 11.2 and for the natural soils 7.6 to 8.9.

The water soluble sulphate content of the made ground was recorded between 17.3 mg/l and 701 mg/l. The water soluble sulphate content for the natural soils was between 18.9 to 163mg/l.

Therefore, a characteristic value for pH of 8.5 is determined for the made ground and 7.6 for the natural soils. A characteristic value for water soluble sulphate of 701 mg/l is determined for the made ground and 163 mg/l for the natural soils. Based on these characteristic values, and Table C2 (SD1) for brown field sites, a Design Sulphate Class for the made ground of DS-2 is indicated and for the natural soils DS-1.

6.3 Ground Gas (Interim Findings)

Gas monitoring has been undertaken on two occasions to date.

Guidance on the assessment of ground gas is given in CIRIA C665:(2007) ‘Assessing Risks Posed by Hazardous Ground Gases to Buildings’ and BS8485:2015+A1:2019 ‘Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings’.

Based on the results presented in Section 3.5 of this report, methane has not been detected, carbon dioxide has been recorded at a level of up to 1.0% v/v (WS02), and using the limit of detection of the monitoring equipment issued, a gas flow rate of 0.1l/hr (as no flows were recorded in any of the boreholes during the monitoring), a site GSV of 0.0010l/hr is calculated. This would indicate a Characteristic Situation CS1, meaning that no gas protection measures would be required for the development.

Currently monitoring of the ground gas wells is underway; it is proposed to monitor four further occasions over a nominal three month period. Following completion, an addendum report and a further assessment will be undertaken.

According to the desk study basic radon protection measures are **not** required for the protection of the proposed buildings at this location.

6.4 Disposal of Soils

The removal of any materials from the site should be undertaken in accordance with the Health and Safety at Work etc Act 1974 (and all regulations made under the Act), the Control of Substances Hazardous to Health Regulations 2002 (SI 2002/2677) and Waste Regulations including Duty of Care Regulations 1991. There will also be a requirement to classify the waste in accordance with the European Waste Catalogue.

6.5 Watching Brief during Development Works

Although considered unlikely, it is possible that areas of contamination or made ground may be encountered during the development works, which have not been identified by this report. If any areas of noxious, odorous, fibrous or liquid etc. contamination are encountered, then works should stop immediately, the local authority informed and further advice sought from a suitably experienced and qualified consultant. It is recommended that a watching brief be maintained during the development work for this purpose.

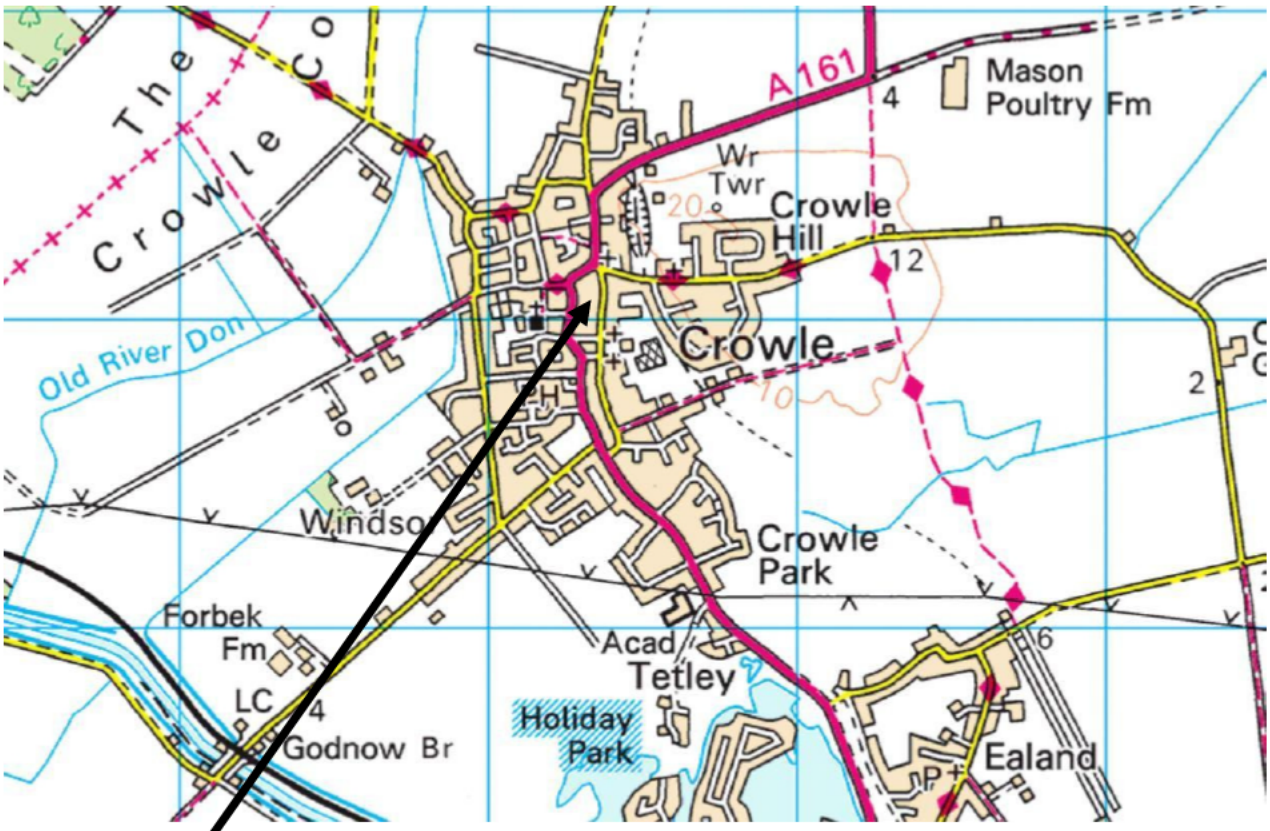
6.6 Regulatory Approval

The conclusions and recommendations presented above are considered practical based on the findings of this report. However, they cannot however be guaranteed to gain regulatory approval, and therefore this report should be submitted to the regulators for their comment/approval as part of the planning process and before any development work takes place.

The above recommendations comprise a general outline of possible or likely works. A remediation strategy report should be produced and agreed with the regulatory authorities prior to development.

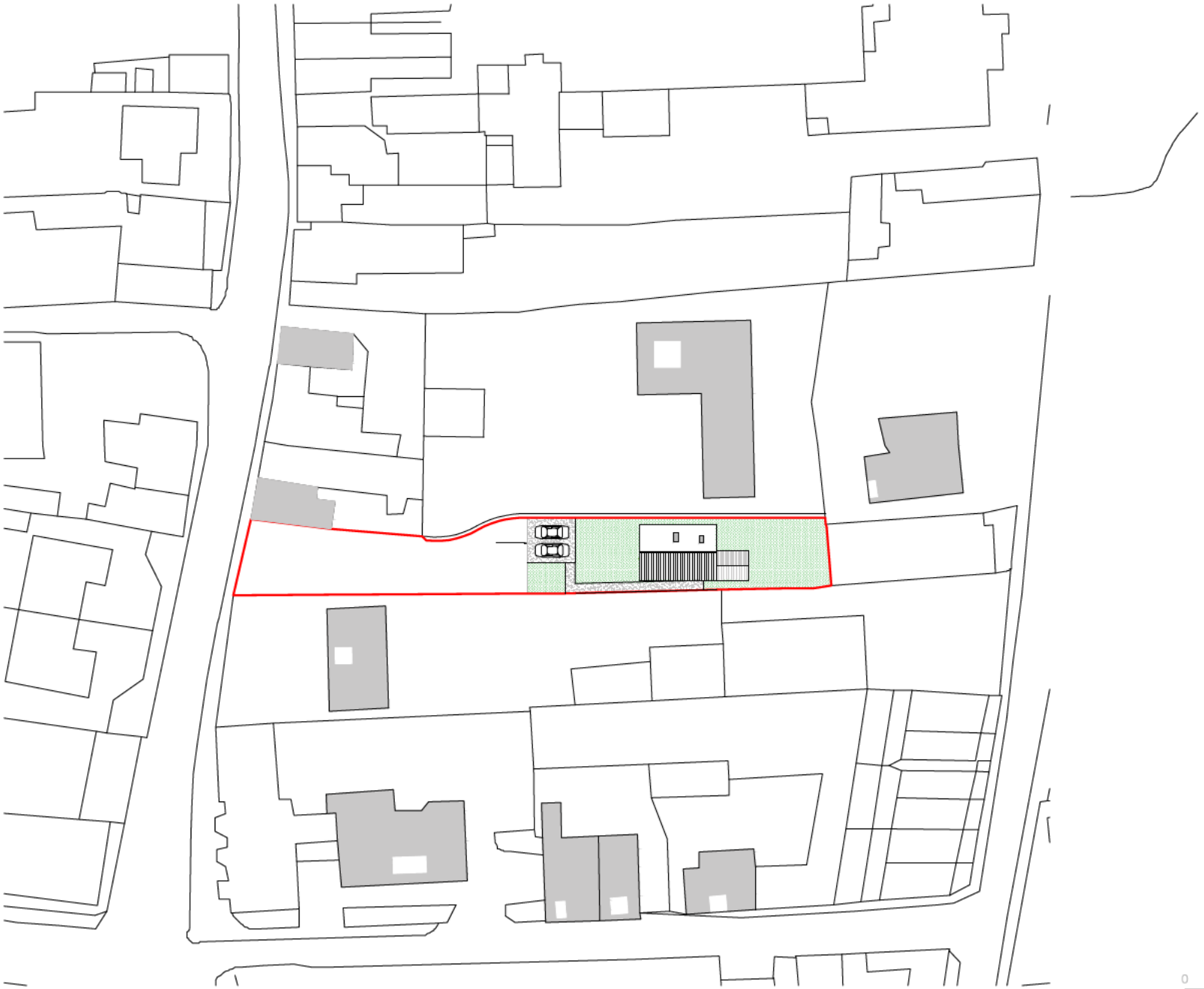
APPENDIX A

DRAWINGS



Site Location Plan **Drawing No C722/1**

G&M CONSULTING



North

PLANNING

BRIGHTER INVESTMENTS

40 HIGH STREET, CROWLE

SITE PLAN

MARCH 2021 1:500

21.18 02A

0 5 10 20 30 40

scale 1:500 metres

APPENDIX B

EXPLORATORY HOLE RECORDS

Key to exploratory hole symbols and abbreviations

SAMPLE TYPES

ACM - Asbestos sample
AMAL - Amalgamated sample
B - Bulk disturbed sample
BLK - Block sample
C - Core sample
CBR - CBR test sample
D - Disturbed sample
ES - Environmental sample
EW - Environmental water sample
G - Gas sample
J - Jar sample
L - Liner sample
TW - Pushed thin wall sample
U - Undisturbed sample
UT - Undisturbed thin wall sample
W - Water sample

IN-SITU TESTS

HV - Hand shear vane
HV(r) - Hand shear vane residual
PID - Photo ionisation detector
PP - Hand penetrometer
SPT - Standard penetration test
SPT(C) - SPT using cone

GROUNDWATER

Groundwater strike
Groundwater rest level

ROTARY CORE DETAILS

TCR - Total core recovery (%)
SCR - Solid core recovery (%)
RQD - Rock quality designation (%)
FI - Fracture index
NI - Non-intact core
AZCL - Assumed zone of core loss

LEGEND

Topsoil
Peat
Made ground
Concrete
Wood
Brick
Bituminous material
Gypsum
Coal
Void
Clay
Silt
Sand
Gravel
Cobbles
Boulders
Mudstone
Siltstone
Sandstone
Limestone
Chalk
Breccia
Conglomerate
Metamorphic
Igneous
Sand backfill
Gravel backfill
Arisings
Bentonite
Concrete
Grout
Plain pipe
Slotted pipe

Borehole Log

WS01
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client
Mr Simon Chapman

Contractor
RP Drilling Ltd

Consultant
G&M Consulting Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Light grey CONCRETE. 70% aggregate. Aggregate is subrounded to rounded fine to coarse of quartzite.
		0.30 0.30	PID ES 1	0.00		(0.45) 0.55		MADE GROUND: Greyish brown clayey slightly gravelly fine to coarse SAND. Gravel sized fragments are subangular fine to coarse of brick, coal and rare clinker.
		0.80 0.80	PID ES 2	0.00		(0.55) 1.10		Greyish brown silty fine and medium SAND.
	▼	1.50 1.50	PID ES 3	0.00		(3.10)		Yellowish brown, locally slightly clayey fine and medium SAND. Sand becoming fine to coarse and very silty. (2.20m) Becoming clayey and light brown. (2.80m)
		4.30 4.30	PID ES 4	0.00		4.20 (0.80) 5.00		Soft, locally firm brownish red slightly gravelly locally gravelly CLAY. Gravel is subangular fine to coarse of mudstone and grey siltstone. Becoming extremely weak. (4.80m) *End of Borehole at 5.00m*

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS01

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.40				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40	1.40	20	No rise

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS02
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client
Mr Simon Chapman

Contractor
RP Drilling Ltd

Consultant
G&M Consulting Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.10) 0.10		MADE GROUND: Light grey CONCRETE. 70% aggregate. Aggregate is subrounded to rounded fine to coarse of quartzite.
		0.40 0.40	PID ES 1	0.00		(0.20) 0.30		MADE GROUND: Dark grey subangular fine to coarse GRAVEL sized fragments of concrete, brick and tile.
						0.50		MADE GROUND: Greyish brown clayey slightly gravelly fine to coarse SAND. Gravel sized fragments are subangular fine to coarse of brick, coal and rare clinker.
		1.00 1.00	PID ES 2	0.00		(0.70) 1.20		Greyish brown silty fine and medium SAND.
	▼					(0.90) 2.10		Yellowish brown, locally slightly clayey fine and medium SAND.
						(0.70) 2.80		Greenish grey slightly gravelly silty fine and medium SAND. Gravel is subangular fine of coal.
						(1.50) 4.30		Yellowish brown, clayey fine to coarse SAND.
						(0.70) 5.00		Soft, locally firm brownish red slightly gravelly locally gravelly CLAY. Gravel is subangular fine to coarse of mudstone and grey siltstone.
								End of Borehole at 5.00m

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS02

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.40				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40	1.40	20	No rise

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS03

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client
Mr Simon Chapman

Contractor
RP Drilling Ltd

Consultant
G&M Consulting Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Description
						(0.15) 0.15		MADE GROUND: Light grey CONCRETE. 70% aggregate. Aggregate is subrounded to rounded fine to coarse of quartzite.
		0.30 0.30	PID ES 1	0.00		(0.40)		MADE GROUND: Dark grey locally brown, slightly clayey sandy subangular fine to coarse GRAVEL sized fragments of clinker, concrete, brick and wood. Sand is fine to coarse.
		0.60 0.60	PID ES 2	0.00		0.55		Firm, slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone, siltstone and rare coal.
						(0.55)		
	▼					1.10		Yellowish brown clayey locally very clayey fine and medium SAND.
		2.00 2.00	PID ES 3	0.00				
						(3.10)		
								Becoming very clayey. (3.60 - 3.80m)
						4.20		Soft, locally firm brownish red slightly gravelly locally gravelly CLAY. Gravel is subangular fine to coarse of mudstone and grey siltstone.
						(0.80)		
						5.00		*End of Borehole at 5.00m*

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS03

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.40				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40	1.40	20	No rise

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS04

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Samples and Tests: Type/ Ref	Samples and Tests: Results	Level (m)	Depth (thickness) (m)	Strata: Legend	Strata: Description
						(0.15) 0.15		MADE GROUND: Light grey CONCRETE. 70% aggregate. Aggregate is subrounded to rounded fine to coarse of quartzite.
		0.30 0.30	PID ES 1	0.00		(0.45) 0.60		MADE GROUND: Dark grey speckled orange slightly sandy subangular fine to coarse GRAVEL sized fragments of brick, clinker, sandstone and rare tile.
		0.80 0.80	PID ES 2	0.00		(0.70) 1.30		Dark brown silty fine and medium SAND.
	▼							Yellowish brown clayey locally very clayey fine and medium SAND.
		1.80 1.80	PID ES 3	0.00		(3.00)		Becoming dark brown. (2.80 - 3.10m)
								becoming very clayey. (4.00m)
						4.30 (0.70)		Soft, locally firm brownish red slightly gravelly locally gravelly CLAY. Gravel is subangular fine to coarse of mudstone and grey siltstone.
						5.00		*End of Borehole at 5.00m*

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS04

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.40				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40	1.40	20	No rise

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS05

Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Inst/ Backfill	Water Levels	Samples and Tests: Depth (m)	Type/ Ref	Results	Level (m)	Depth (Thickness) (m)	Strata: Legend	Description
						(0.15) 0.15		MADE GROUND: Light grey CONCRETE. 70% aggregate. Aggregate is subrounded to rounded fine to coarse of quartzite.
						(0.15) 0.30		MADE GROUND: Type 1 Fill
		0.50 0.50	PID ES 1	0.00		(0.30) 0.60		MADE GROUND: Dark grey speckled orange clayey sandy subangular fine to coarse GRAVEL sized fragments of brick, clinker and tile. Sand is fine to coarse.
		0.90 0.90	PID ES 2	0.00		(0.50) 1.10		Dark brown slightly gravelly fine and medium SAND. Gravel is subangular fine to medium of mudstone and rare coal.
	▼ 1					(1.80)		Yellowish brown clayey locally very clayey fine and medium SAND.
		2.50 2.50	PID ES 3	0.00		2.90		Dark brown slightly clayey fine to coarse SAND. Rare subangular fine gravel of coal noted.
						(1.50) 4.40		Soft, locally firm brownish red slightly gravelly locally gravelly CLAY. Gravel is subangular fine to coarse of mudstone and grey siltstone.
						(0.60) 5.00		*End of Borehole at 5.00m*

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

Borehole Log

WS05

SUPPLEMENTARY INFO

Hole Type	Easting	Northing	Ground Level (m)	Scale
WS				1:50

Project Name	Project No.	Start Date	End Date
Fieldside	C722	2025-01-09	2025-01-09

Client	Contractor	Consultant
Mr Simon Chapman	RP Drilling Ltd	G&M Consulting Ltd

Water Strike - General

Struck (m)	Seal Depth (m)	Casing Depth (m)	Date and Time	Remarks
1.40				

Water Strike - Details

Struck (m)	Rose To (m)	Time (mins)	Remarks
1.40	1.40	20	No rise

Remarks
Window Sample Complete

Method, Plant, Stability, Dimensions
0.00 - 5.00m WS Dando Terrier
Inclination: 90°

Logger
A Swinbourne

APPENDIX C

LABORATORY TEST RESULTS

G & M Consulting Ltd
The Chestnuts
Brackenhill Road
East Lound
Haxey
Doncaster
DN9 2 LR

t: 07743 319788

e: andrew@soilexperts.co.uk

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 : 25-001312

Project / Site name:	Fieldside, Crowle	**Samples received on:**	13/01/2025
Your job number:	C722	**Samples instructed on/ Analysis started on:**	15/01/2025
Your order number:		**Analysis completed by:**	20/01/2025
Report Issue Number:	1	**Report issued on:**	20/01/2025
Samples Analysed:	15 soil samples		

[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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423791	423792	423793	423794	423795
Sample Reference				WS01	WS01	WS01	WS01	WS02
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.30	0.80	1.50	4.30	0.40
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	36.4	< 0.1	< 0.1	< 0.1	10.7
Moisture Content	%	0.01	NONE	14	12	16	22	18
Total mass of sample received	kg	0.1	NONE	0.6	0.2	0.2	0.1	0.8
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Detected	-	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KJK	-	-	-	KJK
Actinolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	Detected	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	Not-detected	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	Loose Fibres	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	10.6	7.6	8	8.3	8.7
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	260	61	38	85	120
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	132	30.7	18.9	42.5	61.4
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.42	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.06	< 0.05	-	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.36	< 0.05	-	< 0.05	0.14
Anthracene	mg/kg	0.05	MCERTS	0.11	< 0.05	-	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	1.1	< 0.05	-	< 0.05	0.24
Pyrene	mg/kg	0.05	MCERTS	1.1	< 0.05	-	< 0.05	0.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.73	< 0.05	-	< 0.05	0.12
Chrysene	mg/kg	0.05	MCERTS	0.76	< 0.05	-	< 0.05	0.11
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.2	< 0.05	-	< 0.05	0.16
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.54	< 0.05	-	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.95	< 0.05	-	< 0.05	0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.48	< 0.05	-	< 0.05	0.06
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.12	< 0.05	-	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	< 0.05	-	< 0.05	0.06
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	8.4	< 0.80	-	< 0.80	1.19

Analytical Report Number: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423791	423792	423793	423794	423795
Sample Reference				WS01	WS01	WS01	WS01	WS02
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.30	0.80	1.50	4.30	0.40
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	4.7	-	-	5.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.8	< 0.2	-	-	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	-	-	2.4
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	180	6.7	-	-	21
Copper (aqua regia extractable)	mg/kg	1	MCERTS	78	10	-	-	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	340	20	-	-	890
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	9.6	-	-	14
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	3.2	< 1.0	-	-	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	330	50	-	-	190
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	19	-	-	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	24	-	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	13	-	-	< 8.0	-
TPHCWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	140	-	-	< 8.0	-
TPHCWG - Aliphatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	200	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	MCERTS	< 0.010	-	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.02	MCERTS	< 0.020	-	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	-	-	< 10	-
TPHCWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	53	-	-	< 10	-
TPHCWG - Aromatic >EC5 - EC35 $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	53	-	-	< 10	-
TPH (EC10 - EC40) $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-	-	< 10	-	-
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	-
Benzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	-
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	-	-	< 8.0	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	-	-	< 5.0	-

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

Analytical Report Number: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423796	423797	423798	423799	423800
Sample Reference				WS02	WS03	WS03	WS03	WS04
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	0.30	0.60	2.00	0.30
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	26.1	< 0.1	3.7	38.8
Moisture Content	%	0.01	NONE	16	8.4	14	18	13
Total mass of sample received	kg	0.1	NONE	0.2	0.6	0.1	0.2	0.6
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	Not-detected	-	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	-	KJK	-	-	KJK
Actinolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.7	11.2	8.6	8.1	10.8
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	81	1400	76	56	140
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	40.7	701	37.8	28	71.7
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	0.12	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	-	0.28	-	-	0.21
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	-	0.74	-	-	0.61
Pyrene	mg/kg	0.05	MCERTS	-	0.93	-	-	0.55
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.45	-	-	0.28
Chrysene	mg/kg	0.05	MCERTS	-	0.6	-	-	0.31
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	1	-	-	0.45
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.36	-	-	0.14
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.63	-	-	0.34
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.36	-	-	0.18
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.09	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.49	-	-	0.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	6.06	-	-	3.28

Analytical Report Number: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423796	423797	423798	423799	423800
Sample Reference				WS02	WS03	WS03	WS03	WS04
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	0.30	0.60	2.00	0.30
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.2	6.5	5.1	-	8.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1	< 0.2	-	0.8
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.3	350	16	-	130
Copper (aqua regia extractable)	mg/kg	1	MCERTS	6.9	68	21	-	61
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.5	110	15	-	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	12	15	-	22
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	1.9
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	25	180	55	-	150
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	< 0.010	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	< 0.010	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	0.042	< 0.010	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	230	< 1.0	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	570	< 2.0	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	60	< 8.0	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	1100	< 8.0	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	1900	< 10	-	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	< 0.010	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	< 0.010	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	0.24	< 0.020	-	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	22	< 1.0	-	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	70	< 2.0	-	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	28	< 10	-	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	230	< 10	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	350	< 10	-	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	< 10	270
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-	< 5.0	< 5.0	-	-
Benzene	µg/kg	5	MCERTS	-	7.2	< 5.0	-	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	16	< 5.0	-	-
p & m-Xylene	µg/kg	8	MCERTS	-	140	< 8.0	-	-
o-Xylene	µg/kg	5	MCERTS	-	76	< 5.0	-	-

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

Analytical Report Number: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423801	423802	423803	423804	423805
Sample Reference				WS04	WS04	WS05	WS05	WS05
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.80	1.80	0.50	0.90	2.50
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	39.3	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	17	17	17	17
Total mass of sample received	kg	0.1	NONE	0.2	0.2	0.6	0.2	0.2
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-	-	Detected	-	-
Asbestos Analyst ID	N/A	N/A	N/A	-	-	KJK	-	-
Actinolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	Detected	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	Loose Fibres, Asbestos Cement	-	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	9	8.5	10.9	8.9	8.1
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	35	81	190	88	330
Water Soluble SO_4 16hr extraction (2:1)	mg/l	1.25	MCERTS	17.3	40.5	95.2	43.9	163
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	-	-	0.06	< 0.05	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	0.06	< 0.05	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	0.47	< 0.05	-
Anthracene	mg/kg	0.05	MCERTS	-	-	0.12	< 0.05	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	1.4	< 0.05	-
Pyrene	mg/kg	0.05	MCERTS	-	-	1.3	< 0.05	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	0.77	< 0.05	-
Chrysene	mg/kg	0.05	MCERTS	-	-	0.75	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	1.1	< 0.05	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	0.48	< 0.05	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	0.92	< 0.05	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	0.42	< 0.05	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	0.09	< 0.05	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	0.47	< 0.05	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	-	8.38	< 0.80	-

Analytical Report Number: 25-001312
Project / Site name: Fieldside, Crowle

Lab Sample Number				423801	423802	423803	423804	423805
Sample Reference				WS04	WS04	WS05	WS05	WS05
Sample Number				ES	ES	ES	ES	ES
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.80	1.80	0.50	0.90	2.50
Date Sampled				09/01/2025	09/01/2025	09/01/2025	09/01/2025	09/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.4	-	15	4.1	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	-	1.2	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	-	< 1.8	< 1.8	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.4	-	230	5.5	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.5	-	130	8.3	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	7.7	-	250	6.7	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	-	18	12	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	3	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	42	-	350	30	-
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	< 0.010	-	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	< 0.010	-	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	-	< 0.010	-	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	-	6.3	-	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	23	-	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	-	100	-	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	-	130	-	-
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	< 0.010	-	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	-	< 0.010	-	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	-	< 0.020	-	-
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	-	-	36	-	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	-	36	-	-
TPH (EC10 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	-	-	-	-	< 10
VOCs								
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	-	-	< 5.0	-	-
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	-	-
p & m-Xylene	µg/kg	8	MCERTS	-	-	< 8.0	-	-
o-Xylene	µg/kg	5	MCERTS	-	-	< 5.0	-	-

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

Analytical Report Number : 25-001312
Project / Site name: Fieldside, Crowle

* 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 *
423791	WS01	ES	0.3	Brown loam and clay with gravel and stones
423792	WS01	ES	0.8	Brown sandy clay
423793	WS01	ES	1.5	Brown sandy clay
423794	WS01	ES	4.3	Brown clay
423795	WS02	ES	0.4	Brown sand with gravel and stones
423796	WS02	ES	1	Brown sand
423797	WS03	ES	0.3	Brown sand with stones
423798	WS03	ES	0.6	Brown clay and sand with gravel
423799	WS03	ES	2	Brown sand with stones
423800	WS04	ES	0.3	Brown clay and sand with stones
423801	WS04	ES	0.8	Brown sand
423802	WS04	ES	1.8	Brown sand
423803	WS05	ES	0.5	Brown clay and sand with gravel and stones
423804	WS05	ES	0.9	Brown sand
423805	WS05	ES	2.5	Brown sand

Analytical Report Number : 25-001312
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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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
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
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated 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
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
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-PL	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-PL	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	MCERTS
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-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS

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.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 25-001916

Project / Site name:	Fieldside, Crowle	**Samples received on:**	16/01/2025
Your job number:	C722	**Samples instructed on/ Analysis started on:**	16/01/2025
Your order number:		**Analysis completed by:**	24/01/2025
Report Issue Number:	1	**Report issued on:**	24/01/2025
Samples Analysed:	1 water sample		

Signed: [redacted]

Charlotte Andrew
Key Account Manager
For & on behalf of i2 Analytical Ltd.

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

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

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

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-001916
Project / Site name: Fieldside, Crowle

Lab Sample Number				426805
Sample Reference				WS03
Sample Number				ES
Water Matrix				Other water
Depth (m)				2.00
Date Sampled				16/01/2025
Time Taken				1125
Analytical Parameter (Water Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
General Inorganics				
pH (L099)	pH Units	N/A	NONE	7.3
Electrical Conductivity at 20°C	µS/cm	10	NONE	860
Sulphate as SO_4	mg/l	0.045	NONE	145
Ammoniacal Nitrogen as NH_3	µg/l	15	NONE	370
Hardness - Total	mgCaCO3/l	1	NONE	335
Total Phenols				
Total Phenols (monohydric)	µg/l	10	NONE	< 10
Speciated PAHs				
Naphthalene	µg/l	0.01	NONE	< 0.01
Acenaphthylene	µg/l	0.01	NONE	< 0.01
Acenaphthene	µg/l	0.01	NONE	< 0.01
Fluorene	µg/l	0.01	NONE	< 0.01
Phenanthrene	µg/l	0.01	NONE	0.1
Anthracene	µg/l	0.01	NONE	< 0.01
Fluoranthene	µg/l	0.01	NONE	0.17
Pyrene	µg/l	0.01	NONE	0.15
Benzo(a)anthracene	µg/l	0.01	NONE	0.1
Chrysene	µg/l	0.01	NONE	0.1
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	0.03
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01
Benzo(ghi)perylene	µg/l	0.01	NONE	0.04
Total PAH				
Total EPA-16 PAHs	µg/l	0.16	NONE	0.69
Heavy Metals / Metalloids				
Arsenic (dissolved)	µg/l	0.15	NONE	1.07
Cadmium (dissolved)	µg/l	0.02	NONE	0.14
Copper (dissolved)	µg/l	0.5	NONE	3.4
Lead (dissolved)	µg/l	0.2	NONE	0.5
Mercury (dissolved)	µg/l	0.05	NONE	< 0.05
Nickel (dissolved)	µg/l	0.5	NONE	7.4
Selenium (dissolved)	µg/l	0.6	NONE	3.5
Zinc (dissolved)	µg/l	0.5	NONE	8.4
Chromium (hexavalent)	µg/l	5	NONE	< 5.0
Petroleum Hydrocarbons				
TPH (EC10 - EC40) EH_1D_TOTAL_MS	µg/l	10	NONE	< 10

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

Analytical Report Number : 25-001916
Project / Site name: Fieldside, Crowle

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited matrices: SW, PW, GW, 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	NONE
Electrical Conductivity at 20°C in water	Determination of electrical conductivity in water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE	In-house method	L031B	W	NONE
Total Hardness of water	Determination of total hardness of water by calculation from calcium and magnesium. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L045B	W	NONE
Total Petroleum Hydrocarbons in water by GC-MS	Determination of total petroleum hydrocarbons in water by GC-MS. Accredited matrices (TPH C12 - C35): SW, PW, GW	In-house method	L070B	W	NONE
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5-diphenylcarbazide, followed by colorimetry. Accredited matrices: SW, PW, GW, FSE, LL	In-house method by continuous flow analyser	L080-PL	W	NONE
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080-PL	W	NONE
Ammonia as NH3 in water	Determination of ammonium/ammonia/ammoniacal nitrogen by the colorimetric salicylate/nitroprusside method using discrete analyser. Accredited matrices: SW, PW, GW, FSE, LL	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	NONE
pH of water at 20°C (automated)	Determination of pH of water by electrochemical measurement. Accredited matrices: SW, PW, GW, FSE, LL	In-house method	L099-PL	W	NONE

Analytical Report Number : 25-001916
Project / Site name: Fieldside, Crowle

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated PAHs and/or Semi-volatile organic compounds in water	Determination of semi-volatile organic compounds (including PAHs) in water by extraction in dichloromethane followed by GC-MS. Accredited matrices (PAHs): SW, PW, GW	In-house method based on USEPA 8270	L102B	W	NONE
Sulphate in water	Determination of sulphate in water after filtration by acidification followed by ICP-OES. Accredited matrices: SW, PW, GW, PrW, DI PrW, FSE, LL	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L039B	W	NONE

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

APPENDIX D

GAS MONITORING RESULTS SHEETS

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Mr Simon Chapman
Site: 40 High Street, Crowle
Date: 16/01/2025
Job No: C722
Visit No: 1 **of** 6
Operator: VF
Project Manager: AS

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	Reduced level (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Minimum	Steady			Peak	Steady								
WS02	0	0	0	0	1.0	1.0	0	0	0	0	17.6	17.9	0		0	0			1.41	3.00				
WS03	0	0	0	0	0.7	0.5	1	0	0	0	16.0	16.3	0		0	0			1,51	3.00				
WS04	0	0	0	0	0.2	0.2	0	0	0	0	19.8	20.0	0		0	0			1.55	3.00				
Max	**0**	**0**	**0**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	**19.8**	**20**	**0**	**0**	**0**	**0**	**0**	**0**						
Min	**0**	**0**	**0**	**0**	**0.2**	**0.2**	**0**	**0**	**0**	**0**	**16**	**16.3**	**0**	**0**	**0**	**0**	**0**	**0**						
GSV (l/hr)	**0**																							

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen	**Notes**			
Wind:		Calm	X	Light		Moderate		Strong			NR-	Not recorded		
Cloud cover:		None		Slight	X	Cloudy		Overcast						
Preciptation:	X	None		Slight		Moderate		Heavy						
Barometric pressure (mbar):			1002	Before			1002	After						
Pressure trend:				Falling	X	Steady		Rising						
Air Temperature (Deg. C):				Before				After						

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM 430
Gas concentration: **CH_4** 0.2%@5%, 1.0@30%, 3.0@100% **CO_2** 0.1%@10%, 3.0%@30%,3.0%@100% **O_2**
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 11/05/2024
Date of next calibration: 11/05/2025

PID: MiniRAE 3000
Calbrated range:
Calibration gas:
Response time:
Accuracy:
Date of last calibration: On site calibration using 100ppm Isobutylene
Date of next calibration:

Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS:

Client: Mr Simon Chapman **Job No:** C722
Site: 40 High Street, Crowle **Visit No:** 2 **of** 6
Date: 24/01/2025 **Operator:** VF **Project Manager:** AS

Monitoring Point	GAS CONCENTRATIONS												VOLATILES		FLOW DATA				WELL AND WATER DATA					Comments
	Methane (%v/v)		%LEL		Carbon dioxide (%v/v)		Carbon monoxide (ppmv)		Hydrogen sulphide (ppmv)		Oxygen (%v/v)		PID Peak (ppm)	Product thickness (mm)	Flow rate (l/hr)		Differential borehole Pressure (Pa)	Time for flow to equalise (secs)	Water level (mbgl)	Depth of well (m)	Reduced level (mAOD)	Water level (mAOD)	Response Zone	
	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady	Minimum	Steady			Peak	Steady								
WS02	0	0	0	0	1.0	0.9	0	0	0	0	17.6	17.7	0		0	0			1.42	3.00				
WS03	0	0	0	0	0.4	0.4	0	0	0	0	15.3	15.5	0		0	0			1.54	3.00				
WS04	0	0	0	0	0.4	0.4	0	0	0	0	19.2	19.3	0		0	0			1.58	3.00				
Max	**0**	**0**	**0**	**0**	**1**	**0.9**	**0**	**0**	**0**	**0**	**19.2**	**19.3**	**0**	**0**	**0**	**0**	**0**	**0**						
Min	**0**	**0**	**0**	**0**	**0.4**	**0.4**	**0**	**0**	**0**	**0**	**15.3**	**15.5**	**0**	**0**	**0**	**0**	**0**	**0**						
GSV (l/hr)	**0**																							

METEOROLOGICAL AND SITE INFORMATION:

(Select correct box with X or enter data, as applicable)

State of ground:		Dry	X	Moist		Wet		Snow		Frozen	**Notes**	
Wind:		Calm	X	Light		Moderate		Strong			NR-	Not recorded
Cloud cover:		None	X	Slight		Cloudy		Overcast				
Preciptation:	X	None		Slight		Moderate		Heavy				
Barometric pressure (mbar):			1009	Before			1009	After				
Pressure trend:				Falling	X	Steady		Rising				
Air Temperature (Deg. C):				Before				After				

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GFM 430
Gas concentration: **CH_4** 0.2%@5%, 1.0@30%, 3.0@100% **CO_2** 0.1%@10%, 3.0%@30%,3.0%@100% **O_2**
Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%
Gas Flow range: +100/-50 l/hour
Differential Pressure: (+/-) 1000 Pa
Date of last calibration: 11/05/2024
Date of next calibration: 11/05/2025

PID: MiniRAE 3000
Calbrated range:
Calibration gas:
Response time:
Accuracy:
Date of last calibration: On site calibration using 100ppm Isobutylene
Date of next calibration: