LAND AT BARTON ROAD, BARLESTONE

PHASE II GEO-ENVIRONMENTAL ASSESSMENT FOR MYPAD 2020 LIMITED

Project Ref:
EAL.288.22

Date:
July 2023

Prepared for:
MyPad 2020 Limited
The Quadrant
Nuart Road
Beeston
Nottingham
NG9 2NH

Prepared and Authorised by:		Phil Devitt BSc MSc MRICS *Director*
Date:	July 2023	
Version:	1.0	

Executive Summary

This presents the salient points of the report and should not be referred to in isolation. The conclusions and recommendations presented below are considered reasonable based on the findings of the site investigation. However, these cannot be guaranteed to gain regulatory approval and therefore copies of this report should be sent to the appropriate Regulatory Authorities and / or other organisations (as appropriate) by the Client for their comments and approval prior to undertaking any irrecoverable works associated with the subject site.

SUMMARY TABLE: PHASE II GEO-ENVIRONMENTAL ASSESSMENT	
SITE:	Land at Barton Road, Barlestone
CLIENT:	MyPad 2020 Limited
DATE:	July 2023
REFERENCE	EAL.288.22
DEVELOPMENT PROPOSAL:	Eighty-four residential dwellings with associated driveway access, private gardens and public open space.
HUMAN HEALTH:	No significant contamination identified.
CONTROLLED WATERS:	No significant contamination identified.
GAS RISK:	Preliminary assessment has identified that the site is within a Characteristic Situation 2 (CS2) setting. CS2 ground gas protection measures are required for all plots. However, this initial assessment will be confirmed following completion of the full monitoring programme.
RADON GAS:	Radon protection measures are not required.
NOTES	Soakaway drainage is not considered to be suitable for the site.
FOUNDATIONS:	Piled/vibro stone column foundations should be budgeted for across the site at this stage.
FLOOR SLAB:	A suspended floor slab is recommended.
CONCRETE:	DS-1, AC-2z recommended.

The executive summary given above is an overview of the key findings and conclusions of the report. There may be other information contained in the body of the report which puts into context the findings of the executive summary. No reliance should be placed on the executive summary until the whole report has been read in full.

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 PREAMBLE

Erda Associates Ltd. (Erda) has been appointed by MyPad 2020 Limited (hereafter referred to as 'the client') to undertake a Phase II Site Appraisal to provide a pre-development contamination and geotechnical assessment of the site known as *Land at Barton Road, Barlestone*. Site location and boundary plans are included in **Appendix A**.

The works reported within this document comprise the review of an existing desktop study and the undertaking of an intrusive ground investigation along with geotechnical testing and chemical analysis.

This document is intended to provide information that will assist decision making by identifying and recommending solutions to ground engineering and contamination issues.

The client intends to develop the site with eighty-four residential dwellings with associated driveways, private gardens and public open space. A proposed site development plan is included in **Appendix A**, for reference.

1.2 PROJECT BRIEF

The brief for the Phase II Geo-Environmental Assessment incorporates:

- A review of an existing Phase I Site Appraisal (Desk Study) for the subject site undertaken by GRM Development Solutions Limited
- Provide a strategy for, and to implement, a Phase II Environmental and Geotechnical Assessment.
- To determine any ground related geotechnical and contamination hazards that may affect the proposed development.
- Development of the Phase II Conceptual Model.
- To provide advice on further works required for the reduction of risks to the development and procedures likely to satisfy regulators.

Whilst every effort has been made to pre-empt the likely requirements of the Local Authority and the Environment Agency, they may have specific requirements that will need to be discussed and addressed at a later date.

1.3 DATA REFERENCES

- GRM Development Solutions Limited, Phase I Site Appraisal (Desk Study) – Barton Road, Barlestone, dated September 2019, (reference P9075).
- British Geological Survey Online Geological Mapping.
- BSI (2020), BS 5930:2015+A1 2020 Code of practice for ground investigations.
- CIRIA (2007), C665 Assessing Risks Posed by Hazardous Ground Gases to Buildings.
- PHE-BGS (2011), Joint Indicative Atlas of Radon in Great Britain.
- EA (2020), LCRM: How to assess and manage the risks from land contamination.

1.4 LIMITATIONS

This report has been produced in accordance with industry best practice at the time of writing.

In the production of this report, Erda Associates Ltd., have relied upon information provided by third parties. Erda Associates Ltd cannot accept responsibility for the reliability and authenticity of this information. Erda Associates Ltd. will not be responsible for any opinions which it has expressed, or conclusions which it has drawn, in reliance upon information which is subsequently proven to be inaccurate.

All statements and opinions provided in this report have been reported in good faith and are based on the information gained during, and restrictions imposed by, site investigation techniques used at the time. Erda Associates Ltd cannot be held responsible for conditions not revealed by the investigation.

This report has been prepared for the sole use of the client and shall not be relied upon or transferred to third parties without the express written consent of Erda Associates Ltd. Unauthorised third parties rely upon the information contained within this report at their own risk.

1.5 PROPOSED DEVELOPMENT

The client intends to develop the site with eighty-four residential dwellings with associated driveways, private gardens and public open space. A proposed site development plan is included in **Appendix A**, for reference.

2.0 BRIEF SUMMARY OF PREVIOUS PHASE I REPORT

The following outlines a brief summary of previous GRM Development Solutions report that was written in relation to the site. A copy of the previous report is not included herein. However, it is recommended that the aforementioned report should be read in full.

2.1 SITE HISTORY AND SETTING

The sites previous use is recorded to be agricultural fields dating back to at least 1885. A moderate sized pond situated in the central, northern part of the site is no longer recorded from 1980 and was, presumably, infilled. The potentially infilled pond has been identified as a potential source of contamination and ground gas.

The surrounding land use has predominantly comprised agricultural fields. Barlestone village, situated to the east, has progressively expanded until it was situated adjacent the eastern and southern boundary of the site. No significant potentially contaminative land uses in the immediate surrounding area have been identified.

2.2 ANTICIPATED GEOLOGY

- Made ground is not recorded to be present on site.
- Superficial glaciofluvial depsoits are recorded beneath the western portion of the site and generally comprise sand and gravel. The Oadby member is recorded to underlie the eastern part of the site and generally comprises gravelly clay.
- A solid geology of the Gunthorpe Member comprising mudstone is recorded to underlie the superficial deposits.
- No faults are recorded within 500m of the site.

2.3 HYDROGEOLOGY

The superficial glaciofluvial deposits are classified as a Secondary A Aquifer. The superficial Oadby Member is classified as a Secondary (Undifferentiated) Aquifer.

The solid geology (Gunthorpe Member) is classified as a Secondary B Aquifer.

There are no recorded groundwater abstraction licenses within 500m of the site. The site is not located within a Groundwater Source Protection Zone.

2.4 HYDROLOGY

Two small ponds were recorded to be present on site. However, these were not considered to be significant receptors due to their size and isolated nature.

A ditch is recorded along the eastern boundary and this was identified as a potential receptor.

2.5 RADON GAS ASSESSMENT

The site is not recorded to be within a radon affected area. Therefore, radon protection measures will not be required for new properties.

2.6 MINING

No significant risk of potential coal mining legacy or non-coal extraction has been identified for the site.

2.7 CONCEPTUAL SITE MODEL

Based on the above, the following conceptual site model was produced for the subject site;

Figure 2.7: Previous GRM Phase I Conceptual Site Model

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3 PHASE I CONCEPTUAL SITE MODEL

HUMAN HEALTH			
Source	**Pathway**	**Receptor**	**Level of Risk**
Localised made ground / in-fill material associated with pond in the north.	Indoor and outdoor inhalation of soil dust, the ingestion of, and dermal contact with, contaminated soil and soil dust, ingestion of vegetables that have taken up contamination and contaminated soil attached to vegetables.	End users.	Low.
Pesticides associated with current and historic agricultural land use.		Construction and Maintenance Workers.	
Localised made ground / in-fill material associated with pond in the north.	Inhalation of ground gas.	End users.	Very Low.
Limited made ground.	Water pipes.	End users.	Very low.

CONTROLLED WATERS			
Localised made ground / in-fill material associated with pond in the north.	Leaching of contaminants and vertical migration to the groundwater.	Secondary A Aquifer.	Very Low.
Pesticides associated with current and historic agricultural land use.	Leaching of contaminants and lateral migration to surface waters.	Ditch along the eastern boundary.	

3.0 PHASE II GROUND INVESTIGATION

3.1 FIELDWORK

The Phase II intrusive investigation was undertaken on the 29th and 30th June 2023 under the supervision of a suitably qualified engineer and in general accordance with the Code of Practice for Site Investigations BSI (2020), BS 5930:2015+A1 2020.

The Phase II investigation works incorporated the following:

- The advancing of seven window sample boreholes to a maximum depth of 5.00mbgl.
- The excavating of eleven trial pits to a maximum depth of 3.30mbgl.
- The collection of three shallow hand dug samples.
- The analysis of fourteen soil samples for a standard 'CLEA' screening suite and selected site specific determinands.
- The analysis of five soil samples for geotechnical design criteria - Plasticity Index (PI).
- The installation and subsequent monitoring of five ground gas and groundwater monitoring wells.
- Indicative soakaway testing.

An exploratory hole plan along with all exploratory hole records are included in **Appendix B**.

3.2 RATIONALE

The Phase II investigation has been designed to facilitate an assessment of the general ground conditions across the site, including contaminant sources, pathways and receptors. The investigation has also been designed in consideration of the current site layout and access restrictions, the development proposal and health and safety issues.

3.3 LABORATORY ANALYSIS & TESTING

Selected soil samples were analysed at specialist environmental and geotechnical laboratories as detailed in the following sections.

3.3.1 Chemical Analysis

A total of seven samples of topsoil, two samples of made ground and five samples of natural strata were sent for analysis at a UKAS/MCERTS accredited laboratory. The samples were screened for heavy metals, PAHs, asbestos, herbicides/pesticides, water-soluble sulphate and pH. The soil analysis results are contained within **Appendix C**.

3.3.2 Geotechnical Testing

Five samples of the natural strata were sent to a UKAS accredited laboratory and subjected to Plasticity Index (PI) testing. The geotechnical test results are contained in **Appendix C**.

3.3.3 Gas Monitoring and Sampling

Ground gas monitoring has been undertaken at the site to assess the potential risk of ground gas. A total of six monitoring visits were scheduled. At this stage the monitoring programme is ongoing and only three visits have been completed.

4.0 GROUND CONDITIONS

The intrusive investigation has generally revealed that the site is underlain by topsoil over superficial Glaciofluvial and Oadby Member deposits. Localised made ground was encountered in the vicinity of the historic pond in the central northern area of the site. The site-specific observations are detailed in the following sections.

4.1 TOPSOIL/MADE GROUND

Topsoil was encountered in the majority of locations across the site and generally comprised dark brown slightly gravelly clayey sand. The topsoil was generally recorded to extend to depths of between 0.20m to 0.30mbgl.

Made ground was encountered in TP08 and WS04 which were situated in the area of the historic pond in the central northern part of the site. The made ground was generally noted to comprise reworked topsoil and natural deposits and extended to depths of between 1.30 and 1.70mbgl.

4.2 SUPERFICIAL STRATA

Superficial strata were encountered directly beneath the topsoil and made ground in all exploratory holes. The superficial strata were noted to be variable in nature but generally comprised interbedded loose to dense slightly clayey sandy gravel/gravelly sand and soft to stiff slightly gravelly sandy clay.

It was noted that the cohesive deposits generally improved in consistency and thickness to the west of the site.

A soft grey organic silt was noted immediately beneath the made ground in TP08 to a depth of 2.80mbgl. These deposits are considered to be related to the former pond.

The base of the superficial deposits was not encountered in any of the exploratory holes.

4.3 FIELD OBSERVATIONS

With the exception of the localised made ground in the area of the central northern pond, there were no further pertinent observations recorded.

4.4 GROUNDWATER

Groundwater was generally noted to be present in conjunction with granular deposits during the investigation works. The groundwater was noted to rise in excavations and boreholes that were left open which may be indicative that the groundwater is confined by shallower cohesive deposits.

Subsequent groundwater monitoring has recorded groundwater consistently at depths of between 0.60m to 1.80m. This is considered to be reflective of the underlying groundwater regime.

4.5 SOAKAWAYS

Indicative soakaway testing within the cohesive deposits has confirmed that these are generally impermeable and unsuitable for soakaways. In addition, granular horizons were generally noted to be saturated and also unsuitable for soakaways.

Furthermore, subsequent groundwater monitoring has shown that this is present at depths of between 0.60m and 1.80mbgl (generally at a depth of 1.00mbgl). Again, the presence of shallow groundwater makes soakaway drainage unviable and alternative drainage strategies should be sought.

5.0 GEOTECHNICAL TESTING

The geotechnical assessment considers the development proposal for eighty-four residential dwellings with associated driveways, private gardens and public open space.

5.1 GEOTECHNICAL TESTING

5.1.1 Laboratory Testing

The results contained in **Appendix C** illustrate PI values of between 15% and 26% indicating that the shallow natural cohesive deposits should be classified as medium plasticity as a maximum classification to be used across the site. Moisture contents of between 12% and 18%, have also been recorded in the natural cohesive strata.

Plasticity index testing of one selected sample of the granular soils has confirmed that these are non-plastic.

Water Soluble Sulphate and pH analysis revealed results of 4.4-347mg/lSO_4 and 6.2-7.7, respectively.

5.1.2 In-situ Testing

In-situ standard penetration testing (SPT) the natural soils was undertaken during the ground investigation works. Results of the testing are included on the exploratory hole logs in **Appendix B**. In summary, SPT N Values within the superficial deposits ranged from 0 to 52 indicating a variable consistency. Hand shear vane was also undertaken within the cohesive deposits during the trial pit investigation. In summary values ranged between 30kPa to 130kPa again indicating a variable consistency.

5.2 FOUNDATION DESIGN

Due to the variability between granular and cohesive deposits and poor composition of the granular deposits in conjunction with groundwater, traditional foundations are considered to be potentially unsuitable. At this stage it is recommended that piled foundations/vibro stone columns are budgeted for across the entire site. A piling/vibro specialist will need to be approached to provide pile/stone column dimensions and safe pile/vibro capacities. Consideration should be given to nearby structure when selecting foundation type. Consideration should also be given to the effects of shrink/heave within cohesive deposits on pile/virbo foundations.

It is noted that the cohesive soils generally increased with thickness to the western portion of the site. There may be a sufficient thickness of clay above the deeper granular deposits in the western area to utilise traditional foundations. However, this assessment would need to be confirmed with your appointed structural engineer. It is likely that plot specific investigation will be required to assist with foundation design/confirm the cohesive soils are sufficient. Where foundations require deepening due to tree influence (in accordance with NHBC Chapter 4.2 – Building Near Trees) in the western field, it is likely that a piled or vibro foundation will be required. Piled/vibro foundations will also be required in the area of the former pond in the central northern area of the site.

A foundation zoning plan illustrating the above is included in **Appendix E**, for reference.

5.3 FLOOR SLABS

A suspended floor slab design is recommended.

5.4 EXCAVATION & GROUNDWATER CONDITIONS

Excavation of the materials encountered during the ground investigation should be easily achieved using conventional hydraulic excavation techniques.

From the ground investigation undertaken, it is likely that excavations will be generally stable in the short term. However, made ground is liable to collapse without warning.

Simple dewatering e.g. sump pumping may be required for excavations in excess of 1.00mbgl. Care should be taken to ensure that dewatering does not lead to settlement of soils below existing structures or services on or off-site.

5.5 BURIED CONCRETE

Based on the recorded water-soluble sulphate concentrations and pH values it is considered appropriate to adopt a Basic Design Sulphate Class of DS-1, together with an Aggressive Chemical Environment Concrete (ACEC) of AC-2z.

6.0 CONTAMINATION ASSESSMENT

The guidance detailed in section 1.3 has been followed to ensure that the risk posed to identified receptors, as detailed in the conceptual site model, is reported according to accepted compliance criteria.

Tier 1 Assessment Criteria for human health with regard to contamination within soils have been produced with reference to values published in LQM/CIEH S4UL and DEFRAs C4SLs. The Tier 1 Assessment Criteria are contained in **Appendix D**. The laboratory analysis results were assessed against the assessment criteria for a residential with produce end use. A SOM of 2.5% has been adopted for the PAH analysis.

6.1 HUMAN HEALTH

An assessment of the analysis results for metals and inorganics contained in **Appendix C**, revealed that the majority of samples do not exceed the respective GAC for residential end use with produce. This includes samples of the made ground retrieved from the former pond in the central northern area of the site.

Therefore, remediation to protect future end users of the site is not considered to be required.

6.1.1 Hydrocarbon Contamination

No visual or olfactory evidence of TPH contamination was identified in any of the exploratory holes. Therefore, the risk of this contamination is considered to be very low and no further assessment or remediation will be required.

6.1.2 Asbestos

Selected shallow samples were screened for asbestos as a precautionary measure. In summary asbestos was not detected in any of the samples and the risk is considered to be very low. Therefore, no further assessment or remediation is considered to be required.

6.1.4 Pesticides/Herbicides

Selected shallow samples were screened for pesticides/herbicides as a precautionary measure. In summary no significantly elevated concentrations were detected in any of the samples and the risk is considered to be very low. Therefore, no further assessment or remediation is considered to be required.

6.1.5 Ground Gas

To date a total of three ground gas monitoring visits have been undertaken to date and a further three visits are scheduled. The monitoring has been undertaken between the dates of the 15th December 2022 and 4th January 2023. A summary of the results is presented below.

Table 6.1.5 Ground Gas summary

Sample Location	Peak Methane (%v/v)	Peak Carbon Dioxide (%v/v)	Peak Flow Rate (l/hr)	GSV (l/hr)
WS1	0.0	0.9	0.1	0.0009
WS3	0.0	4.7	0.1	0.0047
WS4	0.0	2.3	0.1	0.0023
WS6	0.0	5.0	1.5	0.0750
WS7	0.0	7.0	0.1	0.0070

Concentrations of carbon dioxide and methane have been compared to the criteria outlined in CIRIA C665 where the gas screening value (GSV) (litres of gas per hour) is calculated.

Due to the elevated concentrations of carbon dioxide in WS6 and WS7, the site is preliminary assessed as being within a 'Characteristic Situation 2' setting and structures will therefore require gas protection measures.

A CS2 classification requires the use of either;

- A reinforced cast in situ suspended floor slab with minimal penetrations.
- Carbon dioxide, methane and Radon resistant membrane
- Laps and joints bonded as per manufacturers details.
- All services entries sealed

Or if Precast beam and block is to be used;

- A passive sub floor dispersal layer conforming to at least 'good performance'.
- This should be in the form of either: a clear void, polystyrene void former blanket, geocomposite void former blanket or no-fines gravel layer.
- Gas membrane as above.

The above assessment is preliminary and will be confirmed in a separate addendum letter once the full monitoring programme is complete.

6.2 CONTROLLED WATERS

Groundwater was typically encountered in conjunction with granular deposits during the ground investigation works. Subsequent groundwater monitoring has recorded groundwater to be situated at depths of between 0.60m and 1.80mbgl. This is considered to be representative of the underlying groundwater table which is confined by the overlying cohesive deposits.

In addition a drainage ditch was identified to be present along the eastern boundary of the site and is considered to be a potential receptor.

However, no significant contamination has been identified across the site. Therefore, the risk to controlled waters is considered to be very low and no further assessment or remediation is considered to be required.

7.0 PHASE II CONCEPTUAL SITE MODEL

7.1 SOURCE-PATHWAY-RECEPTOR

The conceptual model for the site considers the development proposal for eighty-four residential dwellings with associated driveways, private gardens and public open space along with the information gathered during the Phase I and II assessments.

Based on our contamination assessment and analysis contained in Section 7.0, no significant contamination has been identified on the site and no further remediation or assessment is considered to be required to protect future end users.

Initial ground gas monitoring has tentatively identified the site as being Characteristic Situation 2 for which gas protection measures will be required. However, this will require confirmation in a separate addendum letter once the full monitoring programme is complete.

For the controlled waters environment, the primary receptors are the Secondary A Aquifer and drainage ditch along the eastern boundary. However, no significant contamination has been identified across the site. Therefore, the risk to controlled waters is assessed as being very low and no further remediation or assessment will be required.

The development of the conceptual model is illustrated in Figure 7.1.

Figure 7.1: Phase II Conceptual Site Model

HUMAN HEALTH			
Source	**Pathway**	**Receptor**	**Level of Risk/Recommended Action**
No significant contamination identified.	Indoor and outdoor inhalation of soil dust, the ingestion of, and dermal contact with, contaminated soil and soil dust, ingestion of vegetables that have taken up contamination and contaminated soil attached to vegetables.	End users.	No significant risk identified -no further remediation or assessment required.
		Construction workers.	
Elevated carbon dioxide.	Inhalation of ground gas.	End users.	Characteristic Situation 2 ground gas protection measures are required for all plots.
		Construction workers.	No significant risk identified – no further remediation or assessment required.
No significant contamination identified.	Water pipes.	End users.	Standard water pipes should be suitable.

CONTROLLED WATERS			
No significant contamination identified.	Leaching of contaminants and vertical migration to the groundwater.	Secondary A Aquifer.	No significant risk identified -no further remediation or assessment required.
	Leaching of contaminants and lateral migration to surface waters.	Drainage ditch along eastern boundary.	No significant risk identified -no further remediation or assessment required.

8.0 RISK MANAGEMENT & REMEDIATION

Previous sections have quantified the risk posed to identified receptors, which in some instances, require remediation to protect or reduce levels of risk. The following section details measures and recommendations for dealing with risks associated with soil, groundwater and ground gas contamination in respect to the development proposal for a eighty-four residential dwellings with associated private garden, driveways and public open space.

8.1 REMEDIATION TO PROTECT END USERS

The site has been indicatively classified as being within a 'Characteristic Situation 2' setting for which ground gas protection measures will be required. Please note that this preliminary assessment is based on initial data and will be confirmed in a separate addendum letter once the full monitoring programme is complete.

8.2 REMEDIATION TO PROTECT CONTROLLED WATERS

No significant risk has been identified to controlled waters and no further remediation is required.

8.3 REMEDIATION TO PROTECT CONSTRUCTION WORKERS

Significant risk to construction workers is not anticipated. However, basic PPE for all workers (overalls, gloves and dust masks if required) and wash facilities/personal hygiene should be provided as a precautionary measure.

8.4 WASTE MANAGEMENT

A waste classification has not been undertaken as part of this assessment.

However, based on the initial chemical data, it is considered that the shallow soils may be classified as non-hazardous if off-site disposal is required. A full waste classification should be undertaken in accordance to the Environment Agency's WM3 and advice sought from the proposed waste receiver.

9.0 RECOMMENDATIONS

Recommendations for further assessment of the site include:

- Vibro/piled foundations are recommended for the site. Further assessment in the western portion of the site may allow a traditional foundation to be adopted.

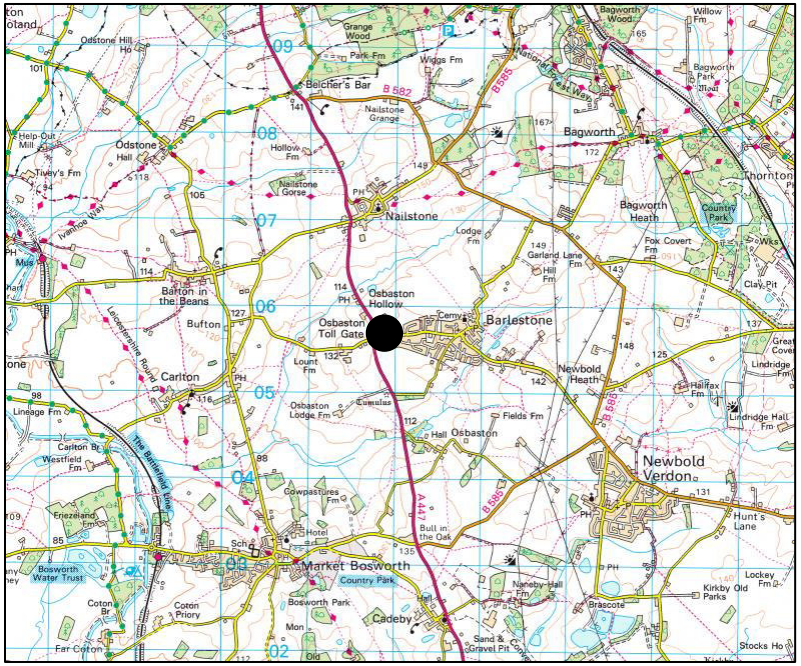
- CS2 ground gas protection is anticipated to be required for the site. However, please note that the monitoring programme is ongoing and this assessment will be confirmed in a separate addendum letter.

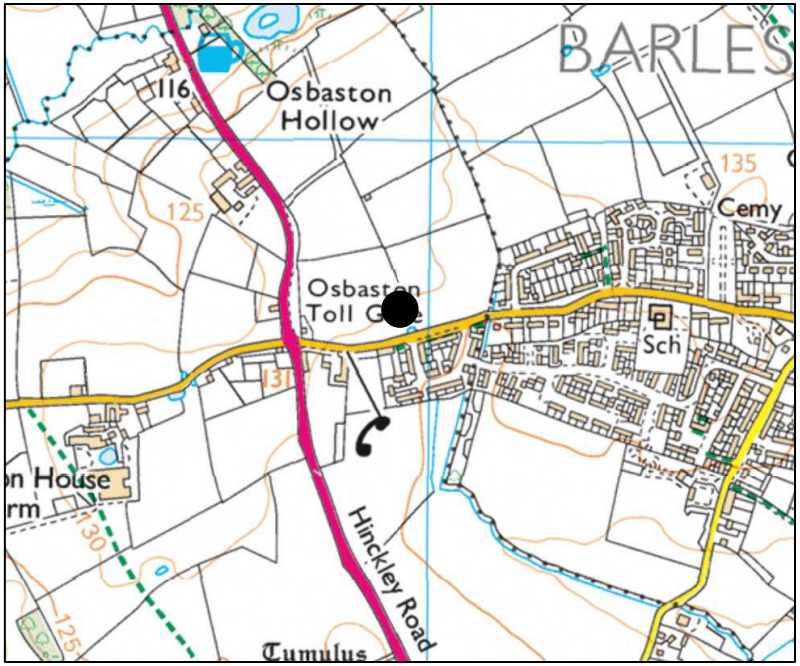
- Should any signs of contamination be evident during redevelopment of the site, a qualified environmental specialist should be consulted to assess the risk posed to end users and the environment.

10.0 CONCLUSIONS

The Phase II ground investigation has illustrated that the proposed development of the site with eighty-four residential dwellings with associated private gardens, driveways and public open space does not pose a significant risk, providing that the above recommendations are followed.

Appendix A





KEY:

● Approximate Site Location

Approximate Postcode: CV13 0HL

DO NOT SCALE

erda Associates ltd

TITLE: Site Location Plan		
PROJECT: Barton Road, Barlestone		
PROJECT No: EAL.288.22	DATE: 07/2023	
SCALE : NTS	DRAWN : PD	DWG No: Figure 1

KEY:

Site Boundary

DO NOT SCALE

Verda Associates ltd

TITLE:

Site Layout

PROJECT:

Barton Road, Barlestone

PROJECT No:	DATE:
EAL.288.22	07/2023

SCALE :	DRAWN :	DWG No:
NTS	PD	Figure 2

KEY:

DO NOT SCALE

Verda Associates ltd

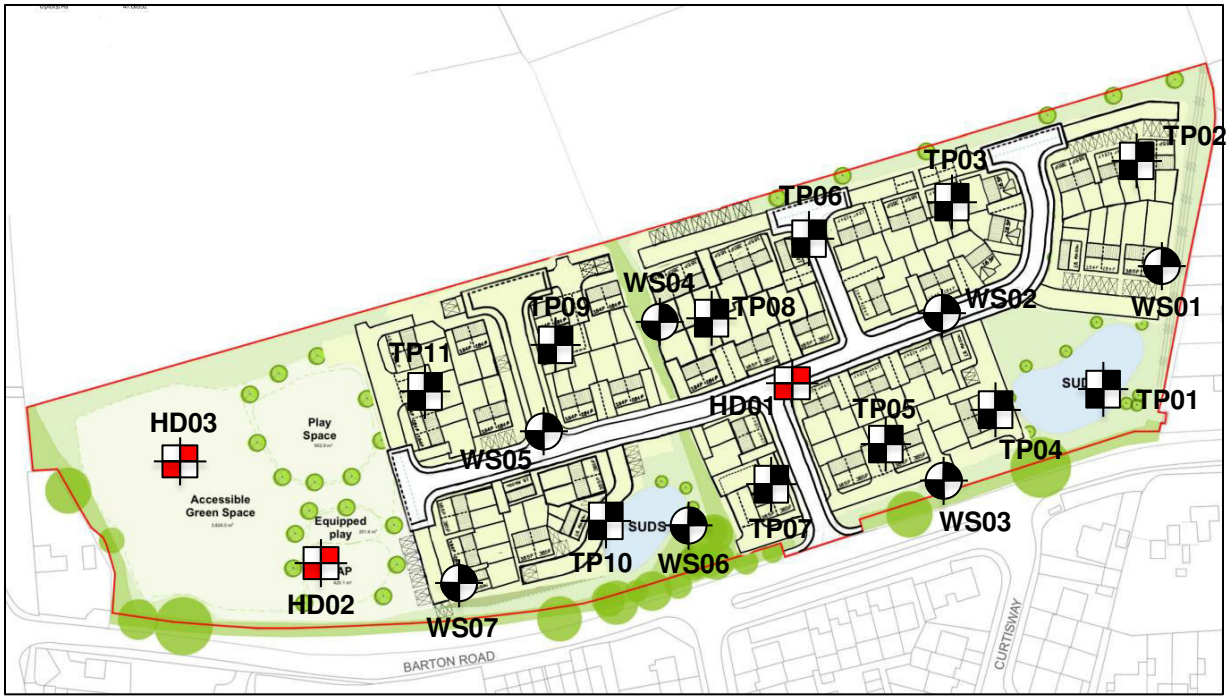
TITLE:
Development Proposal

PROJECT:
Barton Road, Barlestone

PROJECT No:	DATE:
EAL.288.22	07/2023

SCALE :	DRAWN :	DWG No:
NTS	PD	Figure 3

Appendix B



KEY:

- Shallow Hand Dug Sample
- Trial Pit
- WS Borehole

DO NOT SCALE

Erda Associates ltd

TITLE: Exploratory Hole Location Plan		
PROJECT: Barton Road, Barlestone		
PROJECT No: EAL.288.22	DATE: 07/2023	
SCALE : NTS	DRAWN : PD	DWG No: Figure 4

Erda Associates ltd
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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 29th June 2023

Plant: JCB 3CX

BOREHOLE NO. **TP01**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**	0.10	1	ES									
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50** 0.60 0.70 0.80		**0.80 (0.50)**	0.40	2	ES									
Loose reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint. …Trial pit collapsing from 2.00mbgl …groundwater encountered at 2.90mbgl.	0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (2.20)**	1.00	1	D									
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**			2.90											Groundwater

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater encountered at 2.90mbgl.
2. Trial pit collapsing from 2.00mbgl

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

Erda Associates ltd
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Mob: 07531 051197

Date: 29th June 2023

BOREHOLE NO. **TP02**

Sheet No. 1 of 1

CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**	0.20	1	ES									
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50** 0.60 0.70		**0.70 (0.40)**												
Firm reddish brown grey slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies with flint.	0.80 0.90 **1.00**		**1.00 (0.30)**												
Soft to firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40		**2.40 (1.40)**	1.20 1.30	1	D									30/40/40kPa
Loose reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint. …Groundwater encountered at 2.70mbgl.	**2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (0.60)**	2.70											Groundwater
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater encountered at 2.70mbgl
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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Date: 29th June 2023

BOREHOLE NO.
TP03

Sheet No. 1 of 1

CLIENT
MYPAD 2020 LTD

SITE LOCATION
LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No.
EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**												
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50**		**0.50 (0.20)**	0.50	1	ES									
Firm to stiff reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30		**2.30 (1.80)**	0.90 1.10	1	D									70/75/100kPa
Loose reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint. …groundwater encountered at 2.40mbgl	2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (0.60)**	2.40											Groundwater
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:
1. Groundwater encountered at 2.40mbgl.
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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BOREHOLE NO. **TP04**

Sheet No. 1 of 1

CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**	0.10	1	ES									
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40		**0.40 (0.10)**												
Soft to firm reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	**0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80		**2.80 (2.40)**	0.80	1	D									40/60/40kPa
Loose reddish brown slightly clayey gravelly SAND. Gravel is fine to coarse, fine to coarse mixed lithologies and flint.	2.90 **3.00**		**3.00 (0.20)**	3.00											Groundwater
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater encountered at 3.00mbgl
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 29th June 2023

Plant: JCB 3CX

BOREHOLE NO.

TP05

Sheet No. 1 of 1

Job No.

EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**												
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50**		**0.50 (0.20)**	0.50	1	ES									
Firm reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.60 0.70 0.80 0.90 **1.00** 1.10			1.00	1	D									
. . . becoming stiff frm 1.20mbgl.	1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30		**3.00 (2.80)**	1.20											90/90/110kPa
Trial pit terminated at 3.30mbgl.	3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater not encountered
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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Date: 29th June 2023

BOREHOLE NO.
TP06

Sheet No. 1 of 1

CLIENT
MYPAD 2020 LTD

SITE LOCATION
LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No.
EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**	0.20	1	ES									
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50**		**0.50 (0.20)**												
Firm reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint. . . . becoming stiff from 1.20mbgl.	0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50**		**2.50 (2.00)**	1.10 1.20	1	D									130/130/130kPa
Loose light brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint. …groundwater at 2.80mbgl	2.60 2.70 2.80 2.90 **3.00**		**3.00 (0.50)**	2.80											Groundwater
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:
1. Groundwater encountered at 2.80mbgl
2.Trial pit collapsing from 2.80mbgl

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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Date: 29th June 2023

BOREHOLE NO.
TP07

Sheet No. 1 of 1

CLIENT
MYPAD 2020 LTD

SITE LOCATION
LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No.
EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**												
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50** 0.60 0.70		**0.70 (0.40)**	0.40	1	ES									
Stiff reddish brown mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint and rare cobbles of slate and sandstone	0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50**		**2.50 (1.70)**	1.00 1.50	1	D									90/80/80kPa
Loose reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint.	2.60 2.70		**2.70 (0.20)**												
Firm reddish brown mottled grey sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint	2.80 2.90 **3.00**		**3.00 (0.30)**												
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:
1. Groundwater not encountered
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 29th June 2023

Plant: JCB 3CX

BOREHOLE NO.

TP08

Sheet No. 1 of 1

Job No.

EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
MADE GROUND comprising dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies. Reworked tospoil.	0.10 0.20 0.30		**0.30 (0.30)**	0.10	1	ES								
MADE GROUND comprising loose reddish brown slightly clayey sandy GRAVEL. Gravel is fine to coarse, fine to coarse mixed lithologies and flint. Reworked natural. …groundwater encountered at 1.30mbgl	0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30		**1.30 (1.00)**	1.30										Groundwater
Soft greyish blue slightly sandy clayey SILT. Common decomposing organic matter.	1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80		**2.80 (1.40)**	1.40	2	ES								
Firm dark brown slightly sandy very gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	2.90 **3.00**		**3.00 (0.20)**											
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**													

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater encountered at 1.30mbgl
2. Trial pit remained stable throughout excavation
3. Trench extended approximately 10m, the lateral edge of Silt not encountered. Visual depression may be indicative of former ponds size, approximately 15m x 15m

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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Date: 29th June 2023

BOREHOLE NO.
TP09

Sheet No. 1 of 1

CLIENT
MYPAD 2020 LTD

SITE LOCATION
LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No.
EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**												
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40		**0.40 (0.10)**												
Firm reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	**0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20		**1.20 (0.80)**	1.00											65/65/90kPa
Loose reddish brown slightly clayey gravelly SAND. Gravel is fine to coarse, fine to coarse mixed lithologies and flint.	1.30 1.40		**1.40 (0.20)**												
Firm dark brown sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint. …frequent cobbles at 2.00mbgl	**1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (1.50)**												
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:
1. Groundwater not encountered
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 29th June 2023

Plant: JCB 3CX

BOREHOLE NO. **TP10**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20		**0.20 (0.20)**	0.80											60/70/80kPa
Firm dark brown very sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.30 0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40		**1.40 (1.20)**												
Firm dark brown slightly sandy very gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	**1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50**		**2.50 (1.10)**												
Trial pit terminated at 2.50mbgl.	2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater not encountered
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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Date: 29th June 2023

BOREHOLE NO. **TP11**

Sheet No. 1 of 1

CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Plant: JCB 3CX

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N' Value	Installation	Test Sample Details
TOPSOIL: Dark brown slightly clayey slightly gravelly sand. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.10 0.20 0.30		**0.30 (0.30)**	0.10	1	ES									
Firm dark brown very sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	0.40 **0.50**		**0.50 (0.20)**												
Firm reddish brown very sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint. . . . becoming stiff from 1.0mbgl.	0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60		**1.60 (1.10)**	0.80 1.00	1	D									79/90/85kPa
Loose reddish brown slightly clayey gravelly SAND. Gravel is fine to coarse, fine to coarse mixed lithologies and flint.	1.70 1.80		**1.80 (0.20)**												
Firm reddish brown very sandy slightly gravelly CLAY. Gravel is fine to coarse rounded to subrounded mixed lithologies with flint.	1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (1.10)**	2.50											60/60/70kPa
Trial pit terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Groundwater not encountered
2. Trial pit remained stable throughout excavation

Logged By:	Checked By:	Date	Scale
DW	DW	23.07.2023	NTS

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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS01**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10 0.20 0.30		**0.30 (0.30)**	0.20	1	ES									
Soft orange mottled yellow slightly gravelly very sandy CLAY. Gravel is fine to coarse rounded quartzite. . . . no recovery from 1.00 to 1.50mbgl.	0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50**		**1.50 (1.20)**	0.80	2	D	0	1	1	1	1	1	**4**		
Medium dense orange mottled yellow slightly clayey slightly gravelly SAND. Gravel is fine to coarse rounded quartzite. . . . groundwater encountered at 2.00mbgl.	1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90		**5.00 (3.50)**	2.00	3	D	0	0	3	3	4	4	**14**		
							3	4	3	3	3	3	**12**		
							4	4	4	4	5	5	**18**		
. . . becoming loose from 5.00mbgl.	**5.00**						1	1	1	1	1	1	**4**		

Borehole terminated at 5.00mbgl.

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 3.00m (GL to 1.00m plain/bentonite, 1.00m to 3.00m slotted/gravel).
2. Groundwater encountered at 2.00mbgl.
3. Borehole collapsing below 3.00mbgl.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS02**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10 0.20 0.30		**0.30 (0.30)**	0.10	1	ES									
Soft dark reddish brown slightly gravelly sandy CLAY. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50**		**2.50 (2.20)**	0.60	2	D	1	2	2	1	2	2	**7**		
. . . groundwater encountered at 2.50mbgl.				1.40	3	D									
							1	0	1	1	1	1	**4**		
Dense reddish brown mottled orange clayey gravelly SAND. Gravel is fine to coarse rounded to angualr quartzite and siltstone.	2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00**		**4.00 (1.50)**				4	4	7	6	8	10	**31**		
							5	10	10	12	10	14	**46**		
Borehole terminated at 4.00mbgl.	4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Borehole reinstated with arisings upon completion.
2. Groundwater encountered at 2.50mbgl.
3. Borehole remained stable.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS03**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10		**0.20 (0.20)**	0.10	1	ES									
	0.20														
Loose orangish brown slightly gravelly SAND. Gravel is fine to coarse rounded to subrounded quartzite.	0.30														
	0.40														
	0.50														
	0.60														
	0.70			0.70	2	D									
	0.80														
	0.90														
. . . becoming damp from 1.00mbgl.	**1.00**						1	2	2	2	2	2	**8**		
	1.10														
	1.20														
	1.30														
	1.40														
	1.50														
	1.60														
	1.70														
	1.80														
	1.90														
. . . becoming wet from 2.00mbgl.	**2.00**						1	1	2	2	2	2	**8**		
	2.10														
	2.20														
	2.30			2.30	3	D									
	2.40														
	2.50														
	2.60		**5.00 (4.80)**												
	2.70														
	2.80														
	2.90														
	3.00						1	0	0	1	1	1	**3**		
	3.10														
	3.20														
	3.30														
	3.40														
	3.50														
	3.60														
	3.70														
	3.80														
	3.90														
	4.00						4	4	5	4	3	4	**16**		
	4.10														
	4.20														
	4.30														
	4.40														
	4.50														
	4.60														
	4.70														
	4.80														
	4.90														
	5.00						1	1	2	3	3	5	**13**		

Borehole terminated at 5.00mbgl.

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 4.00m (GL to 1.00m plain/bentonite, 1.00m to 4.00m slotted/gravel).
2. Groundwater encountered at 2.00mbgl.
3. Borehole collapsing below 3.00mbgl.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO.

WS04

Sheet No. 1 of 1

Job No.

EAL.288.22

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
MADE GROUND comprising dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone. Rare brick fragments. (Reworked topsoil).	0.10 0.20 0.30 0.40		**0.40 (0.40)**	0.30	1	ES									
Soft yellowish brown slightly sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular quartzite. Possible MADE GROUND?	**0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70		**1.70 (1.30)**	1.30	2	D	1	1	1	1	1	1	**4**		
Stiff dark reddish brown mottled dark grey slightly gravelly CLAY. Gravel is fine to coarse rounded to angular quartzite, chalk, and mudstone.	1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00**		**3.00 (1.30)**	1.80	3	D	3	4	5	6	6	6	**23**		
Borehole terminated at 3.00mbgl.	3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**						6	6	10	12	14	16	**52**		

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 3.00m (GL to 1.00m plain/bentonite, 1.00m to 3.00m slotted/gravel).
2. No groundwater encountered.
3. Borehole cremained stable.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS05**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10 0.20		**0.20 (0.20)**	0.10	1	ES									
Firm light orange mottled grey slightly sandy gravelly CLAY. Gravel is fine to coarse quartzite.	0.30 0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00**		**1.00 (0.80)**				2	3	3	3	3	3	**12**		
Firm dark reddish brown mottled dark grey slightly gravelly CLAY. Gravel is fine to coarse rounded to angular quartzite, chalk, and mudstone. Occasional sand lenses.	1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00**		**4.00 (3.00)**	1.20	2	D	2 4 0	4 4 0	4 5 0	4 5 0	4 5 0	4 5 0	**16** **20** **0**		
No recovery from 4.00m to 5.00mbgl. Very soft and rods sank under own weight.	4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**						0	0	0	0	0	0	**0**		

Borehole terminated at 5.00mbgl.

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 3.00m (GL to 1.00m plain/bentonite, 1.00m to 3.00m slotted/gravel).
2. Groundwater encountered at 2.00mbgl.
3. Borehole collapsing below 3.00mbgl.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS06**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10 0.20 0.30		**0.30 (0.30)**	0.20	1	ES									
Firm light orange mottled grey slightly sandy gravelly CLAY. Gravel is fine to coarse quartzite.	0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20		**1.20 (0.90)**	0.60	2	D	1	1	4	4	5	5	**18**		
Medium dense reddish brown SAND.	1.30 1.40		**1.40 (0.20)**												
Stiff dark reddish brown mottled dark grey slightly gravelly CLAY. Gravel is fine to coarse rounded to angular quartzite, chalk, and mudstone.	**1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00**		**4.00 (2.60)**	1.60	3	D	1 4 7	2 5 7	3 5 10	4 5 7	6 5 11	6 6 13	**19** **21** **42**		
Borehole terminated at 4.00mbgl.	4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**														

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 4.00m (GL to 1.00m plain/bentonite, 1.00m to 4.00m slotted/gravel).
2. Groundwater encountered at 2.00mbgl.
3. Borehole collapsing below 3.00mbgl.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

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CLIENT

MYPAD 2020 LTD

SITE LOCATION

LAND AT BARTON ROAD, BARLESTONE

Date: 30th June 2023

Ground Level:

Orientation:

Coordinates:

Plant: Window Sample Rig

Dimensions:

BOREHOLE NO. **WS07**

Sheet No. 1 of 1

Job No. **EAL.288.22**

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS Depth	No	Type	SPT Results Seating 75mm	Seating 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	Test Drive 75mm	N Value	Installation	Test Sample Details
TOPSOIL: dark brown slightly gravelly clayey sand. Gravel is fine to coarse rounded to sub-angular quartzite and sandstone.	0.10 0.20		**0.20 (0.20)**	0.10	1	ES									
Firm light orange mottled grey slightly sandy gravelly CLAY. Gravel is fine to coarse quartzite.	0.30 0.40 **0.50** 0.60 0.70 0.80 0.90 **1.00** 1.10 1.20 1.30 1.40 **1.50** 1.60 1.70 1.80 1.90 **2.00** 2.10 2.20 2.30 2.40 **2.50** 2.60 2.70 2.80 2.90 **3.00** 3.10 3.20 3.30 3.40 **3.50** 3.60 3.70 3.80 3.90 **4.00** 4.10 4.20 4.30 4.40 **4.50** 4.60 4.70 4.80 4.90 **5.00**													
. . . becoming reddish brown from 0.80mbgl.				0.90	2	D	2	2	2	2	2	2	**8**		
				2.40	3	D	2	2	2	2	3	3	**10**		
. . . becoming stiff from 3.00mbgl.			**5.00 (4.80)**				5	4	5	6	6	6	**23**		
							4	5	6	10	7	10	**33**		
							5	7	7	7	7	7	**28**		

Borehole terminated at 5.00mbgl.

Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks

Remarks:

1. Gas/groundwater monitoring standpipe installed to 5.00m (GL to 1.00m plain/bentonite, 1.00m to 5.00m slotted/gravel).
2. No groundwater encountered.
3. Borehole remianed stable.

Logged By:	Checked By:	Date	Scale
PD	PD	01.07.23	NTS

Appendix C

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Watford,
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WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 23-42792

Project / Site name:	Barton Road, Barlestone	**Samples received on:**	03/07/2023
Your job number:	EAL 288 22	**Samples instructed on/ Analysis started on:**	03/07/2023
Your order number:	EAL 288 22	**Analysis completed by:**	10/07/2023
Report Issue Number:	1	**Report issued on:**	10/07/2023
Samples Analysed:	5 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
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

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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: 23-42792
Project / Site name: Barton Road, Barlestone
Your Order No: EAL 288 22

Lab Sample Number				2734769	2734770	2734771	2734772	2734773
Sample Reference				WS01	WS02	WS04	WS05	HD03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.30	0.10	0.10
Date Sampled				30/06/2023	30/06/2023	30/06/2023	30/06/2023	30/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	9	9.4	8.7	9.8
Total mass of sample received	kg	0.001	NONE	0.9	0.8	0.9	0.9	0.9
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	KSZ	N/A	KSZ	N/A	KSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.1	6.4	7.3	6.2	6.6
Total Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-
Total Sulphate as SO4	mg/kg	50	MCERTS	620	580	580	430	330
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	12	13	9.1	17	12
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0061	0.0063	0.0045	0.0085	0.0058
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	6.1	6.3	4.5	8.5	5.8
Organic Matter (automated)	%	0.1	MCERTS	4.3	5.4	3.5	3.9	4.8

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.15	0.12	0.13	0.19	0.16
Fluorene	mg/kg	0.05	MCERTS	0.23	0.1	0.12	0.17	0.14
Phenanthrene	mg/kg	0.05	MCERTS	0.33	0.15	0.19	0.29	0.26
Anthracene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	< 0.05	0.06
Fluoranthene	mg/kg	0.05	MCERTS	0.09	0.08	0.08	0.14	0.48
Pyrene	mg/kg	0.05	MCERTS	0.08	0.06	0.07	0.13	0.54
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05	0.06	0.2
Chrysene	mg/kg	0.05	MCERTS	0.05	< 0.05	< 0.05	< 0.05	0.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	0.06	0.07	0.06	0.24
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.06	0.18
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.12

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.05	< 0.80	< 0.80	1.1	2.72

Analytical Report Number: 23-42792
Project / Site name: Barton Road, Barlestone
Your Order No: EAL 288 22

Lab Sample Number				2734769	2734770	2734771	2734772	2734773
Sample Reference				WS01	WS02	WS04	WS05	HD03
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.10	0.30	0.10	0.10
Date Sampled				30/06/2023	30/06/2023	30/06/2023	30/06/2023	30/06/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	7.6	9.5	7.4	10
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.3	0.4	0.3	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	24	17	20	15	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	17	22	18	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	35	41	31	40
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	12	16	9.9	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	27	31	23	23
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84	68	77	63	81
Pesticide and Herbicide Screen								
GCMS Pesticide Screen		N/A	NONE	None Detected	-	-	-	None Detected
Acid Herbicides								
2,3,6-TBA	µg/kg	50	NONE	-	-	< 50	-	-
2,4,5-T	µg/kg	10	NONE	-	-	< 10	-	-
2,4,5-TP (Fenoprop)	µg/kg	10	NONE	-	-	< 10	-	-
2,4-D	µg/kg	10	NONE	-	-	< 10	-	-
2,4-DB	µg/kg	10	NONE	-	-	< 10	-	-
4-CPA	µg/kg	20	NONE	-	-	< 20	-	-
Bromacil	µg/kg	10	NONE	-	-	< 10	-	-
Bromoxynil	µg/kg	10	NONE	-	-	< 10	-	-
Clopyralid	µg/kg	100	NONE	-	-	< 100	-	-
Dicamba	µg/kg	20	NONE	-	-	< 20	-	-
Diclofop	µg/kg	10	NONE	-	-	< 10	-	-
Dichlorprop	µg/kg	10	NONE	-	-	< 10	-	-
Dinoseb	µg/kg	10	NONE	-	-	< 10	-	-
Flamprop	µg/kg	50	NONE	-	-	< 50	-	-
Flamprop-Isopropyl	µg/kg	10	NONE	-	-	< 10	-	-
Ioxynil	µg/kg	10	NONE	-	-	< 10	-	-
MCPA	µg/kg	10	NONE	-	-	< 10	-	-
MCPB	µg/kg	20	NONE	-	-	< 20	-	-
MCPP (Mecoprop)	µg/kg	10	NONE	-	-	< 10	-	-
Picloram	µg/kg	50	NONE	-	-	< 50	-	-

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

Analytical Report Number : 23-42792
Project / Site name: Barton Road, Barlestone

* 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 *
2734769	WS01	None Supplied	0.2	Brown loam and clay with gravel and vegetation.
2734770	WS02	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2734771	WS04	None Supplied	0.3	Brown loam and clay with gravel and vegetation.
2734772	WS05	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2734773	HD03	None Supplied	0.1	Brown loam and clay with gravel and vegetation.

Analytical Report Number : 23-42792
Project / Site name: Barton Road, Barlestone

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
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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 (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
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 (Skalar)	L080-PL	W	MCERTS
Acid Herbicides by LC-MS	Detemination of Acid Herbicides by LC MS	In-house method	L057B-PL	W	NONE
GC Pesticide Screen (TIC)	Analysis of unknown pesticides by GCMS	GC Pesticide Screen (TIC)	L064B	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	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

Analytical Report Number : 23-42792
Project / Site name: Barton Road, Barlestone

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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-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.

Philip Devitt
Erda Associates Ltd
102 Scalpcliffe Road
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i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
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Watford,
Herts,
WD18 8YS

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

Analytical Report Number : 23-43065

Project / Site name:	Barton Road, Barlestone	**Samples received on:**	04/07/2023
Your job number:	EAL.288.22	**Samples instructed on/ Analysis started on:**	04/07/2023
Your order number:	EAL.288.22	**Analysis completed by:**	12/07/2023
Report Issue Number:	1	**Report issued on:**	12/07/2023
Samples Analysed:	5 soil samples		

Signed:

Elżbieta Suchy
Junior Reporting Specialist
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: 23-43065
Project / Site name: Barton Road, Barlestone
Your Order No: EAL.288.22

Lab Sample Number				2736539	2736540	2736541	2736542	2736543
Sample Reference				TP1	TP3	TP4	TP8	TP11
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.50	0.10	1.40	0.10
Date Sampled				29/07/2023	29/07/2023	29/07/2023	29/07/2023	29/07/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	18	12	13	34	6.4
Total mass of sample received	kg	0.001	NONE	0.4	0.4	0.4	0.4	0.4
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	ASE	ASE	ASE	ASE	ASE

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.7	7.1	7.2	6.4	7.2
Total Sulphate as SO4	mg/kg	50	MCERTS	720	650	340	1300	370
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	32	12	8.8	690	14
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.0058	0.0044	0.35	0.0068
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.2	5.8	4.4	347	6.8
Organic Matter (automated)	%	0.1	MCERTS	3.9	3.5	4.3	9.1	2.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.06	< 0.05	0.15
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.19	0.08	0.13	< 0.05	0.3
Pyrene	mg/kg	0.05	MCERTS	0.17	0.08	0.11	< 0.05	0.27
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.08	< 0.05	< 0.05	< 0.05	0.15
Chrysene	mg/kg	0.05	MCERTS	0.08	< 0.05	0.08	< 0.05	0.14
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.13	< 0.05	0.06	< 0.05	0.19
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05	< 0.05	0.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.06	< 0.05	0.16
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05	< 0.05	0.11
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.07	< 0.05	< 0.05	< 0.05	0.12

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	0.95	< 0.80	< 0.80	< 0.80	1.69

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.7	6.9	6.8	8.5	6.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	0.3	< 0.2	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	16	15	21	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	19	19	22	16
Lead (aqua regia extractable)	mg/kg	1	MCERTS	42	32	33	19	26
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	13	11	11	17	8.3
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	29	25	24	32	18
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	71	61	60	52	56

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

Analytical Report Number : 23-43065
Project / Site name: Barton Road, Barlestone

* 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 *
2736539	TP1	None Supplied	0.1	Brown sand with gravel and vegetation.
2736540	TP3	None Supplied	0.5	Brown sand with gravel and vegetation.
2736541	TP4	None Supplied	0.1	Brown sand with gravel and vegetation.
2736542	TP8	None Supplied	1.4	Brown clay and sand with gravel.
2736543	TP11	None Supplied	0.1	Brown sand with gravel and vegetation.

Analytical Report Number : 23-43065
Project / Site name: Barton Road, Barlestone

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
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.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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	A001-PL	D	ISO 17025
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	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
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
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.	L019-UK/PL	D	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	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
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-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.

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

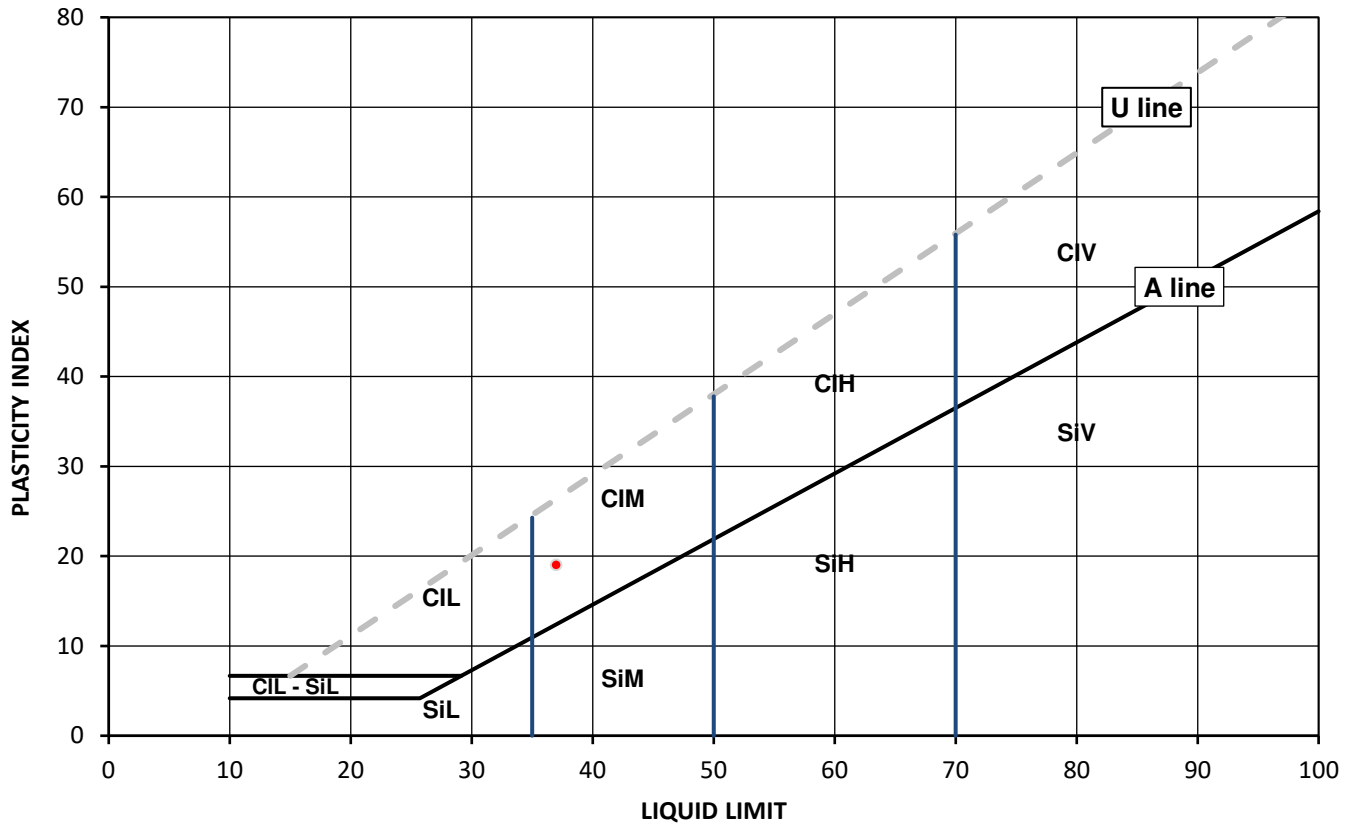
Client:	Erda Associates Ltd	Client Reference:	EAL.288.22
Client Address:	102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB	Job Number:	23-42732-1
		Date Sampled:	30/06/2023
		Date Received:	03/07/2023
Contact:	Philip Devitt	Date Tested:	12/07/2023
Site Address:	Barton Road, Barlestone	Sampled By:	Client- PD

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2734546	Depth Top [m]:	1.40
Hole No.:	WS02	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425 µm		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	37	18	19	82



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:
Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 19/07/2023

GF 232.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client:	Erda Associates Ltd	Client Reference:	EAL.288.22
Client Address:	102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB	Job Number:	23-42732-1
		Date Sampled:	30/06/2023
		Date Received:	03/07/2023
Contact:	Philip Devitt	Date Tested:	12/07/2023
Site Address:	Barton Road, Barlestone	Sampled By:	Client- PD

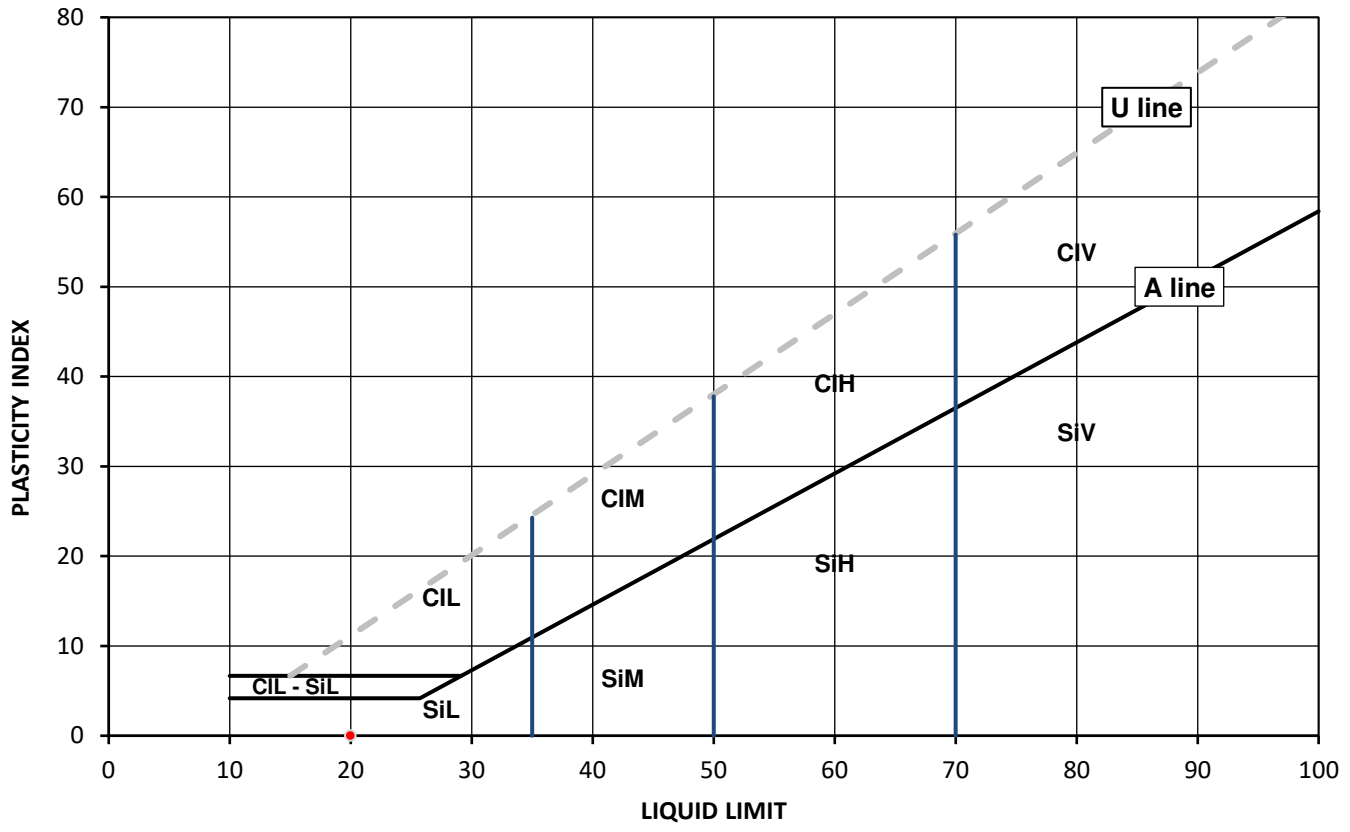
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2734547	Depth Top [m]:	2.30
Hole No.:	WS03	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly SAND		

Sample Preparation: Tested after >425 µm removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	20	NP	NP	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks: NP - non plastic

Signed: Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 19/07/2023

GF 232.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

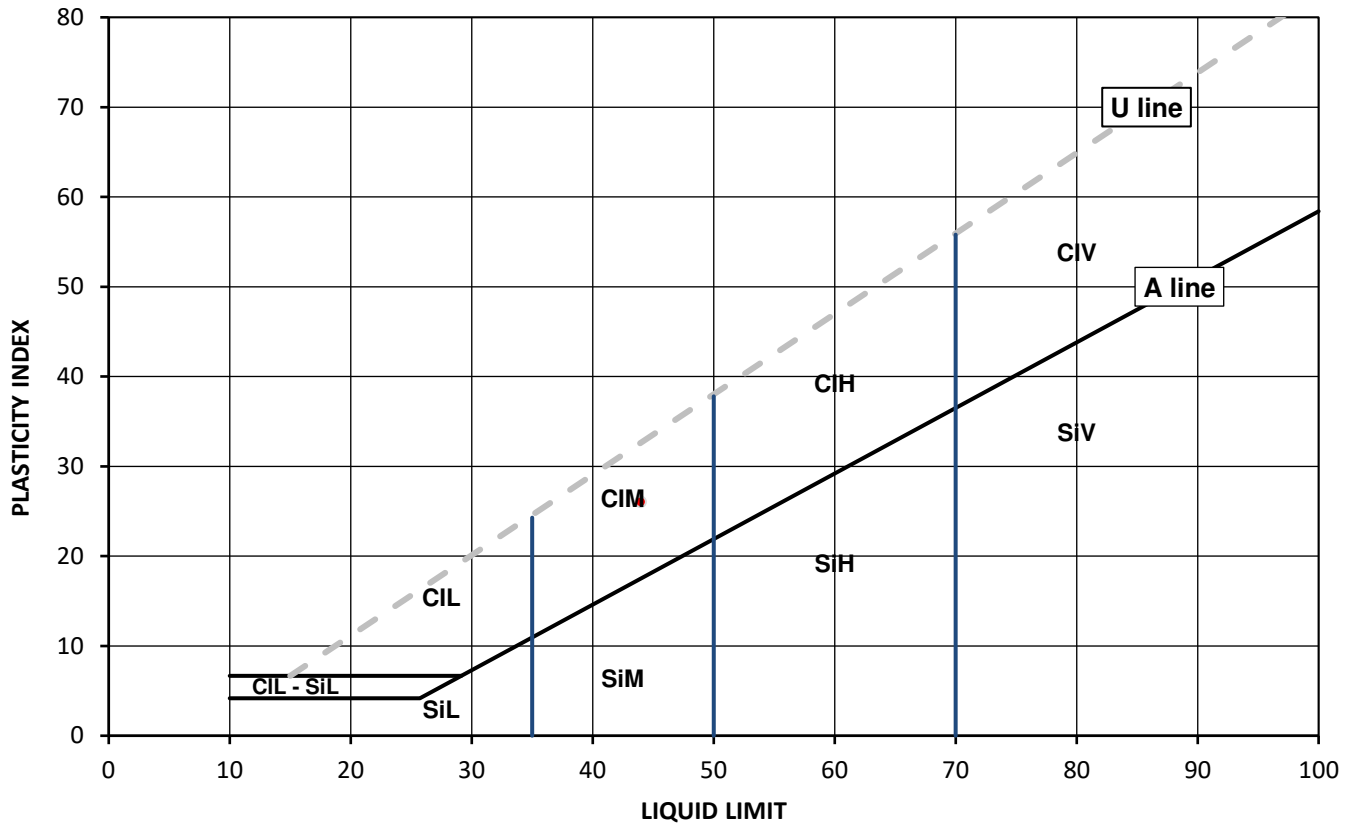
Client:	Erda Associates Ltd	Client Reference:	EAL.288.22
Client Address:	102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB	Job Number:	23-42732-1
		Date Sampled:	30/06/2023
		Date Received:	03/07/2023
Contact:	Philip Devitt	Date Tested:	12/07/2023
Site Address:	Barton Road, Barlestone	Sampled By:	Client- PD

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2734548	Depth Top [m]:	1.20
Hole No.:	WS05	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425 µm removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
15	44	18	26	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 19/07/2023

GF 232.13

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Erda Associates Ltd

Client Address: 102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB

Contact: Philip Devitt

Site Address: Barton Road, Barlestone

Water Content by BS 1377-2:1990: Clause 3.2Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

Client Reference: EAL.288.22
Job Number: 23-42732-1
Date Sampled: 30/06/2023
Date Received: 03/07/2023
Date Tested: 12/07/2023
Sampled By: Client- PD

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-1 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2734546	WS02	Not Given	1.40	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	18		82	37	18	19						
2734547	WS03	Not Given	2.30	Not Given	D	Brown slightly gravelly SAND	Atterberg 1 Point	18		99	20	NP	NP						
2734548	WS05	Not Given	1.20	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	15		99	44	18	26						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 19/07/2023

GF 234.16

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Erda Associates Ltd

Client Address: 102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB

Contact: Philip Devitt

Site Address: Barton Road, Barlestone

Client Reference: EAL.288.22
Job Number: 23-42732-1
Date Sampled: 30/06/2023
Date Received: 03/07/2023
Date Tested: 12/07/2023
Sampled By: Client- PD

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2734546	WS02	Not Given	1.40	Not Given	D	Brown slightly gravelly sandy CLAY		18	Sample was quartered, oven dried at 107.9 °C			
2734547	WS03	Not Given	2.30	Not Given	D	Brown slightly gravelly SAND		18	Sample was quartered, oven dried at 107.9 °C			
2734548	WS05	Not Given	1.20	Not Given	D	Brown slightly gravelly sandy CLAY		15	Sample was quartered, oven dried at 107.9 °C			

Comments:

Signed: Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 19/07/2023

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

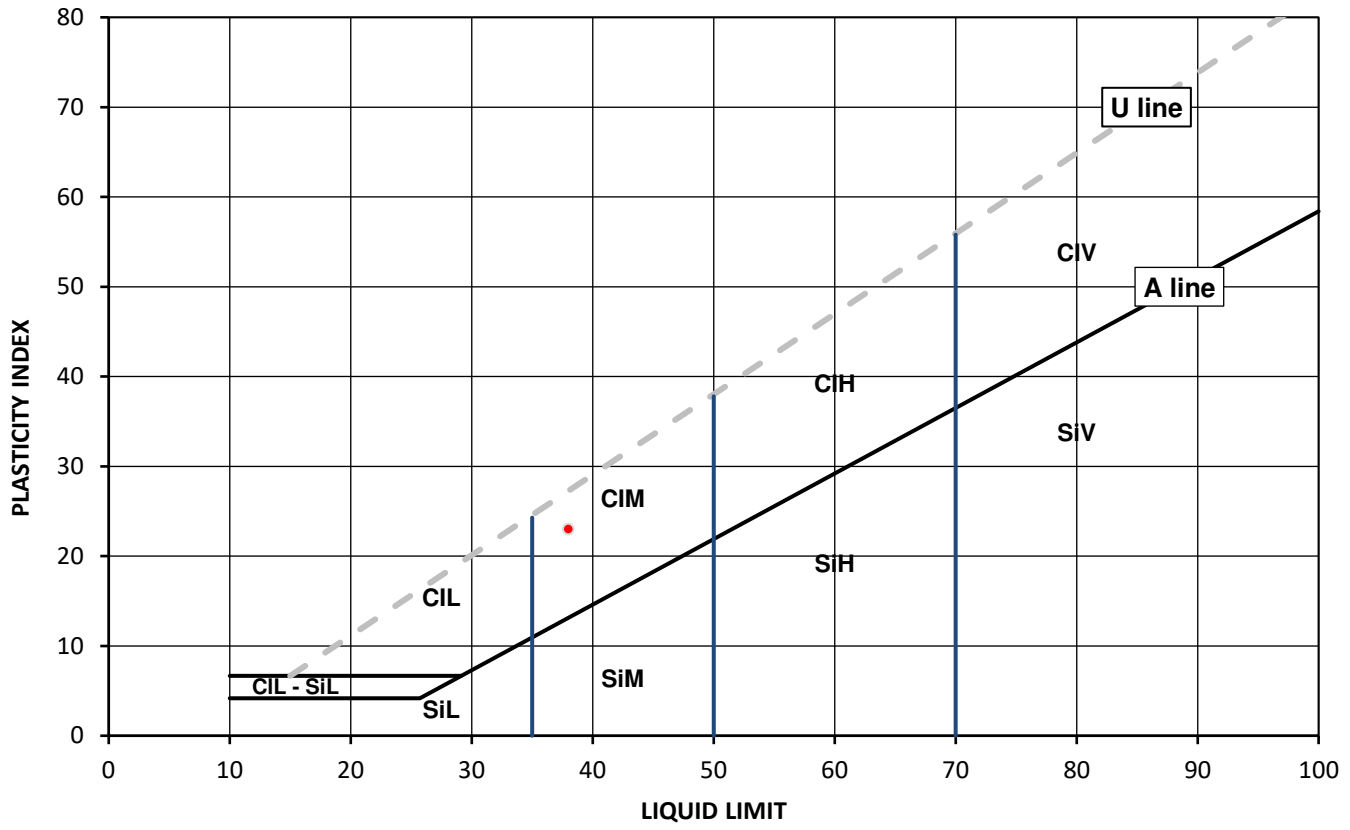
Client:	Erda Associates Ltd	Client Reference:	EAL 288 22
Client Address:	102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB	Job Number:	23-42847-1
		Date Sampled:	29/07/2023
		Date Received:	04/07/2023
Contact:	Philip Devitt	Date Tested:	12/07/2023
Site Address:	Barton Road, Barlestone	Sampled By:	i2 - DW

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2735137	Depth Top [m]:	0.90
Hole No.:	TP3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425 µm removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
12	38	15	23	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 20/07/2023

GF 232.13

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

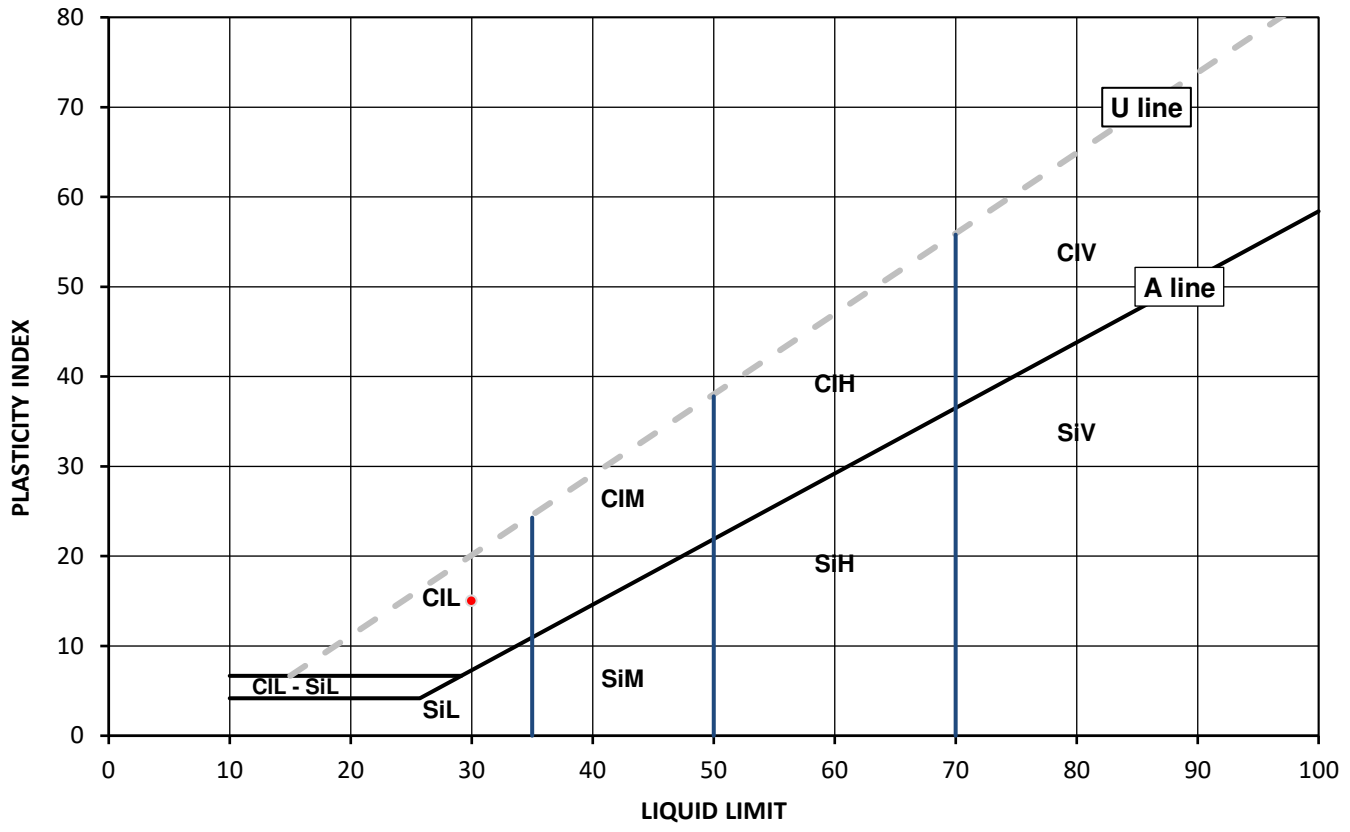
Client:	Erda Associates Ltd	Client Reference:	EAL 288 22
Client Address:	102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB	Job Number:	23-42847-1
		Date Sampled:	29/07/2023
		Date Received:	04/07/2023
Contact:	Philip Devitt	Date Tested:	12/07/2023
Site Address:	Barton Road, Barlestone	Sampled By:	i2 - DW

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2735138	Depth Top [m]:	0.80
Hole No.:	TP3	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after >425 µm removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
18	30	15	15	99



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Katarzyna Koziel

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 20/07/2023

GF 232.13

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Erda Associates Ltd

Client Address: 102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB

Contact: Philip Devitt

Site Address: Barton Road, Barlestone

Client Reference: EAL 288 22
Job Number: 23-42847-1
Date Sampled: 29/07/2023
Date Received: 04/07/2023
Date Tested: 12/07/2023
Sampled By: i2 - DW

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-1 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2735137	TP3	Not Given	0.90	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	12		99	38	15	23						
2735138	TP3	Not Given	0.80	Not Given	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	18		99	30	15	15						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 20/07/2023

GF 234.16

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Erda Associates Ltd

Client Address: 102 Scalpcliffe Road, BURTON-ON-TRENT, DE15 9AB

Contact: Philip Devitt

Site Address: Barton Road, Barlestone

Client Reference: EAL 288 22
Job Number: 23-42847-1
Date Sampled: 29/07/2023
Date Received: 04/07/2023
Date Tested: 12/07/2023
Sampled By: i2 - DW

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2735137	TP3	Not Given	0.90	Not Given	D	Brown slightly gravelly sandy CLAY		12	Sample was quartered, oven dried at 107.9 °C			
2735138	TP3	Not Given	0.80	Not Given	D	Brown slightly gravelly very sandy CLAY		18	Sample was quartered, oven dried at 107.9 °C			

Comments:

Signed:

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 20/07/2023

GF 099.17

Appendix D

Tier 1 Assessment Criteria

Determinand	Residential With Produce (mg/kg) - 1% SOM			Source
Arsenic	37.00			LQM S4UL
Boron	290.00			LQM S4UL
Cadmium	22.00			C4SL
Chromium III	910.00			LQM S4UL
Chromium VI	6.00			LQM S4UL
Lead	200.00			C4SL
Mercury, elemental	1.20			LQM S4UL
Mercury, inorganic	40.00			LQM S4UL
Mercury, methyl	11.00			LQM S4UL
Selenium	250.00			LQM S4UL
Nickel	180.00			LQM S4UL
Copper	2400.00			LQM S4UL
Vanadium	410.00			LQM S4UL
Zinc	3700.00			LQM S4UL
Total Cyanide	34.00			In House*
Polycyclic Aromatic Hydrocarbons				
	SOM 1%	**SOM 2.5%**	**SOM 6%**	
Benzo(a)pyrene	2.20	2.70	3.00	LQM S4UL
Dibenz(ah)anthracene	0.24	0.28	0.30	LQM S4UL
Acenaphthene	210.00	510.00	1100.00	LQM S4UL
Acenaphthylene	170.00	420.00	920.00	LQM S4UL
Anthracene	2400.00	5400.00	11000.00	LQM S4UL
Benzo(a)anthracene	7.20	11.00	13.00	LQM S4UL
Benzo(b)fluoranthene	2.60	3.30	3.70	LQM S4UL
Benzo(ghi)perylene	320.00	340.00	350.00	LQM S4UL
Benzo(k)fluoranthene	77.00	93.00	100.00	LQM S4UL
Chrysene	15.00	22.00	27.00	LQM S4UL
Fluoranthene	280.00	560.00	890.00	LQM S4UL
Fluorene	170.00	400.00	860.00	LQM S4UL
Indeno(123cd)pyrene	27.00	36.00	41.00	LQM S4UL
Phenanthrene	95.00	220.00	440.00	LQM S4UL
Pyrene	620.00	1200.00	2000.00	LQM S4UL
Naphthalene	2.30	5.60	13.00	LQM S4UL

Note:

* Values calculated using CLEA v1.071

Tier 1 Assessment Criteria

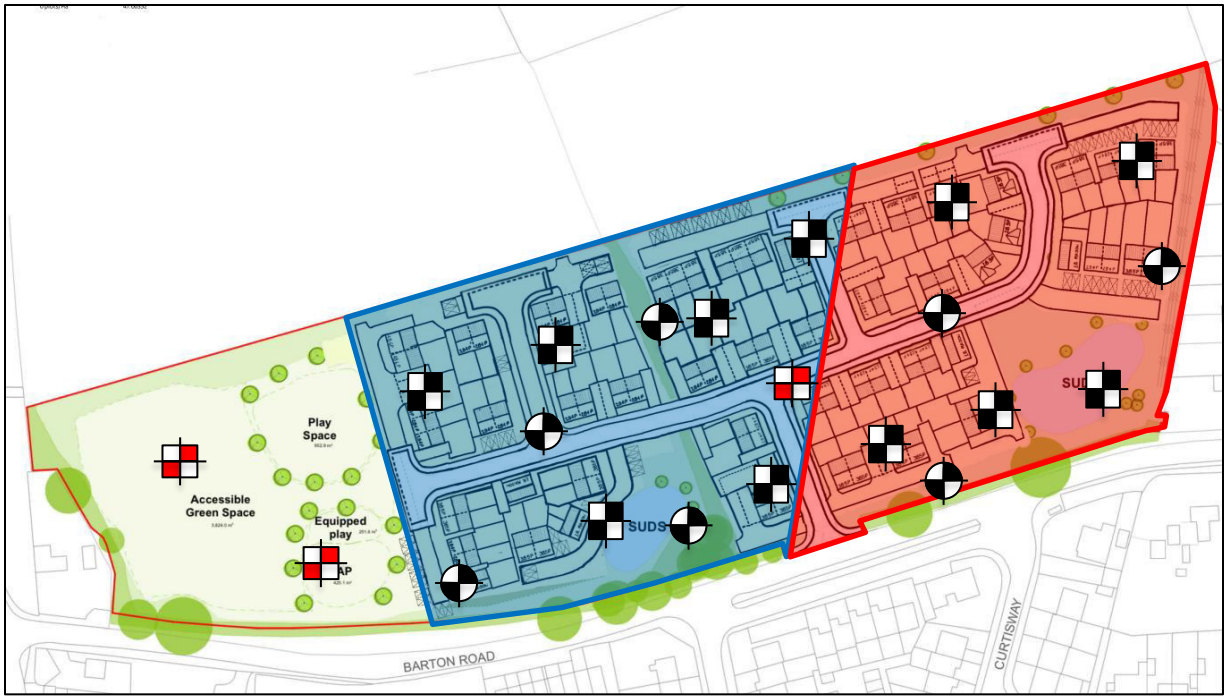
Determinand	Residential With Produce			Source
	1% SOM	2.5% SOM	6% SOM	
Benzene	0.087	0.17	0.37	LQM S4UL
Ethylbenzene	47.00	110.00	260.00	LQM S4UL
Phenol	280.00	550.00	1100.00	LQM S4UL
Toulene	130.00	290.00	660.00	LQM S4UL
Xylene, o-	60.00	140.00	330.00	LQM S4UL
Xylene, m-	59.00	140.00	320.00	LQM S4UL
Xylene, p-	56.00	130.00	310.00	LQM S4UL
Aliphatic C5-C6	42	78	160	LQM S4UL
Aliphatic C6-C8	100	230	530	LQM S4UL
Aliphatic C8-C10	27	65	150	LQM S4UL
Aliphatic C10-C12	130 (48) [vap]	330 (118) [vap]	760 (283) [vap]	LQM S4UL
Aliphatic C12-C16	1100 (24) [sol]	2400 (59) [sol]	4300 (142) [sol]	LQM S4UL
Aliphatic C16-C35	65000 (8.48) [sol]	92000 (21) [sol]	110000	LQM S4UL
Aliphatic C35-C44	65000 (8.48) [sol]	92000 (21) [sol]	110000	LQM S4UL
Aromatic C5-C7	70	140	300	LQM S4UL
Aromatic C7-C8	130	290	660	LQM S4UL
Aromatic C8-C10	34	83	190	LQM S4UL
Aromatic C10-C12	74	180	380	LQM S4UL
Aromatic C12-C16	140	330	660	LQM S4UL
Aromatic C16-C21	260	540	930	LQM S4UL
Aromatic C21-C35	1100	1500	1700	LQM S4UL
Aromatic C35-C44	1100	1500	1700	LQM S4UL
Combined Aliphatic and Aromatic C44-C70	1600	1800	1900	LQM S4UL

Note:

[VAP] - S4UL presented exceed the vapour saturation limit, which is presented in brackets.

[sol] - S4UL presented exceeds the solubility saturation limit, which is presented in brackets.

Appendix E



KEY:

Area requiring piled/vibro foundations

Area where traditional foundations may be suitable subject to structural engineer assessment. Any foundations that require deepening (due to tree influence or in the area of the former pond) should be piled or vibro. Consideration should be given to presence of loose granular deposits at depth and plot specific investigation may be required.

DO NOT SCALE

Verda Associates ltd

TITLE:

Foundation Zoning Plan

PROJECT:

Barton Road, Barlestone

PROJECT No:	DATE:
EAL.288.22	07/2023

SCALE :	DRAWN :	DWG No:
NTS	PD	Figure 5