

Hillmoren Limited,
32 Shaw Lane,
Markfield,
LE67 9PU

To whom it may concern,

Ground Investigation at Hall Farm, Markfield

Introduction

Erda Associates Ltd were instructed by Hillmoren Limited to assist with a Ground Investigation at the site known as Hall Farm, Markfield.

The ground investigation is to assist with the proposed redevelopment of the site through the demolition of the existing buildings and the construction of two new commercial units with car parking

Site location plans and development proposals are included in **Appendix A**.

Site History & Setting

Publicly available historical maps and other resources were used to understand the site history. Below is a brief summary of the history of the site and the surroundings.

The earliest available maps (published in 1884), show the site as being largely undeveloped, however four buildings are present in the centre of the site.

The site is in a predominantly rural area and no significant industries, other than a quarry over 650m to the south west, are noted.

The site has remained largely unchanged to the modern day; however, a motorway and dual carriageway is present immediately to the west and north of the site

There are no significant waterways in vicinity of the site.

A landfill is recorded over 450m to the south east.

The BGS reports that the site is underlain by superficial deposits of Oadby Member and solid strata deposits of the Gunthorpe Member, a mudstone.

The site is located in an area where between 3 and 5% of properties are affected by radon, and therefore basic radon protection is necessary

The Oadby Member is reported as a Secondary Undifferentiated Aquifer whilst the Gunthorpe Member is a Secondary B Aquifer

Site Description

The site is accessed from the north east through a gate off of Altar Stones Lane. An access track passes through tall trees to the former farm buildings.

The farm buildings are comprised of the main farm house in the east and a number of outbuildings which appear to have been used as store rooms, stables and kennels. The buildings were not occupied on the date of the site investigation.

The remainder of the site was primarily formed of the grounds of the farm, which were mostly overgrown with trees and shrubs. Two fields of grass were present to the north and west of the farm buildings. The northern and western boundary were formed of dense vegetation and trees. The central portion of the site was accessible but was also noted to be overgrown with small openings and partially cleared areas.

A circular feature, thought to be a former pond was noted centrally, but was dry.

Possible contaminants of concern

Upon consideration of the sites former and current uses, the identified possible contaminants of concern are Heavy Metals, PAHs, petroleum hydrocarbons and asbestos fibres.

The risk from ground gases (carbon dioxide and methane) is considered very low; a significant ground gas generating source has not been identified. However, basic radon protection is required for the new units.

Pathways for the end user of the site include direct contact (dermal) with soil dust; ingestion and inhalation of soil dust.

Pathways for the end user of the site include direct contact (dermal) with potentially contaminated soil dust; ingestion and inhalation of potentially contaminated soil dust; inhalation of potential ground gas and fibres

The primary receptors for the site are construction workers and end users of the site (workers).

Site Investigation

On the 22nd and 23rd July 2024, Erda Associates Ltd attended the site to undertake a ground investigation.

A total of eight machine excavated trial pits (TP01-TP08) were advanced to depths up to 2.7m. A further two trial pits were excavated to 1.5m (SK01 & SK02) which soakaway tests were undertaken.

Some areas of the site were inaccessible due to the presence of dense vegetation.

Refer to **Appendix A** for exploratory hole locations.

Ground Conditions

Topsoil or Made Ground was present in all locations at surface.

Where topsoil was present, this was typically around 0.3m thick.

Made Ground was recorded at TP02, TP03 and SK01, however was also generally thin, extending to a maximum depth of 0.6m. Generally, the Made Ground comprised reworked topsoil over either pea gravel (TP02) or a gravelly sand with gravels of brick and concrete (TP03 and SK01)

Natural strata was present beneath Topsoil and Made Ground.

At TP01, TP02, TP05 and SK02 a soft grey silty, slightly gravelly clay was noted. This was recorded to extend to 2.0m, 2.4m, 2.0m and 1.5m respectively (TP05 terminated at 2.0m on a boulder refusal and SK01 was terminated at 1.5m to allow for a soakaway test to be undertaken). The gravels were noted to be fine to coarse, rounded to subrounded mixed lithologies with granite.

Elsewhere, occasionally beneath a thin layer of a sandy clay, a firm slightly sandy slightly gravelly clay, with fine to coarse, angular to rounded mixed lithologies with boulders was noted.

These two deposits, are thought to be representative of the Oadby Diamicton superficial deposits. Whilst soft strata was noted in four locations, it is possible that further soft spots are present in areas which could not be investigated due to obstructions.

Suspected solid strata deposits were recorded in two locations, TP01 and TP02 and comprised a firm slightly gravelly clay with mudstone gravels. This is thought to be representative of weathered top horizons of the Gunthorpe Member.

Refer to **Appendix B** for exploratory hole logs.

Chemical Laboratory Data & Assessment

From each location soil samples were taken and sent to a UKAS accredited laboratory for analysis. The laboratory results from this were compared against LQM S4UL and DEFRA C4SL values (GACs) for an industrial/commercial end use.

There were no recorded exceedances when compared against relevant GACs.

Hydrocarbons were not detected at concentrations above limits of detection.

Asbestos fibres were detected at a single location; Chrysotile loose fibres were present at concentrations of <0.001% were present in TP2 at 0.4m within Made Ground.

Remedial measures are considered necessary to protect the end user, however, based on the current development proposal, the location where asbestos was recorded is to be located beneath a permanent cap (car parking). This is deemed sufficient to break the source-pathway-receptor linkage and no further work is considered necessary.

Furthermore, the risk posed to controlled waters is considered negligible.

Refer to **Appendix C** for Laboratory Data and **Appendix D** for Generic Assessment Criteria.

Geotechnical Testing

Geotechnical testing was undertaken on three samples of the natural strata.

Analysis for plasticity indices was carried out, with the results summarised below

Determinand	Natural Strata
Moisture Content %	11.5 to 36.2
Liquid Limit %	37 to 51
Plastic Limit %	16 to 22
Plasticity Index %	21 to 29
% passing 0.425mm %	86 to 99
Modified Plasticity Index* %	18 to 28.7

Applying the correction recommended by NHBC, the volume change potential can be classified as 'medium'.

Foundations should not terminate on either Made Ground or the soft deposits encountered at shallow depth in TP01, TP02, TP05 and SK02.

Therefore, foundations will require deepening onto the firm deposits beneath. In some places the soft deposits extended to depths of up to 2.4m (TP02).

The firm deposits should provide a presumed allowable bearing capacity of 100kN/m².

A minimum foundation depth of 0.9m is required due to the 'medium' volume change potential of the shallow soils. However, due to the presence of a number of unidentified mature trees, which are likely to be within influencing distance of the foundations, deepening of foundations may be required in accordance with NHBC Standards Chapter 4.2 Building near Trees.

This additional deepening of foundations may prove to be uneconomical and subsequently an alternative deeper foundation solution may be necessary.

Should the use of deeper foundations, such as piles, be preferred, it is recommended that a specialist piling contractor is appointed to assist with the design and installation of the piles. It may also be necessary to undertake further assessment through a deeper ground investigation.

Refer to **Appendix C** for Laboratory Data

Soakaway Testing

At two locations, SK01 and SK02, soakaway testing was undertaken in general accordance with BRE 365.

Negligible infiltration was recorded over the monitoring period, with less than 5mm of infiltration noted over 4 hours at both locations.

The use of soakaways are therefore not considered suitable for the proposed development.

Conclusions

Remedial measures are considered necessary to make the site safe for the proposed end user due to the presence of asbestos fibres at TP02.

However, the development proposal incorporates a permanent cap over much of the site, including at the location of TP02. This is considered sufficient to break the source-pathway-receptor linkage and no further remedial measures will be required.

Basic radon protection measures are required.

Soft spots were identified in locations around the site, which extended up to 2.4m in depth. Foundations should not terminate on the soft deposits.

Due to the 'medium' volume change potential of the soils, a minimum foundation depth of 0.9m is required outside the influencing distance of trees. However, a number of unidentified mature trees were observed and it is likely that additional deepening of foundations may be required.

It therefore may be prudent to adopt an alternative foundation solution, such as piles, for which a specialist piling contractor should be appointed. An additional deeper ground investigation may be required to assist with this.

Yours Sincerely

A handwritten signature in black ink, appearing to be 'D Wade', written in a cursive style.

Daniel Wade
Senior Geo-environmental Engineer

Encl.

Appendix A – Site Figures

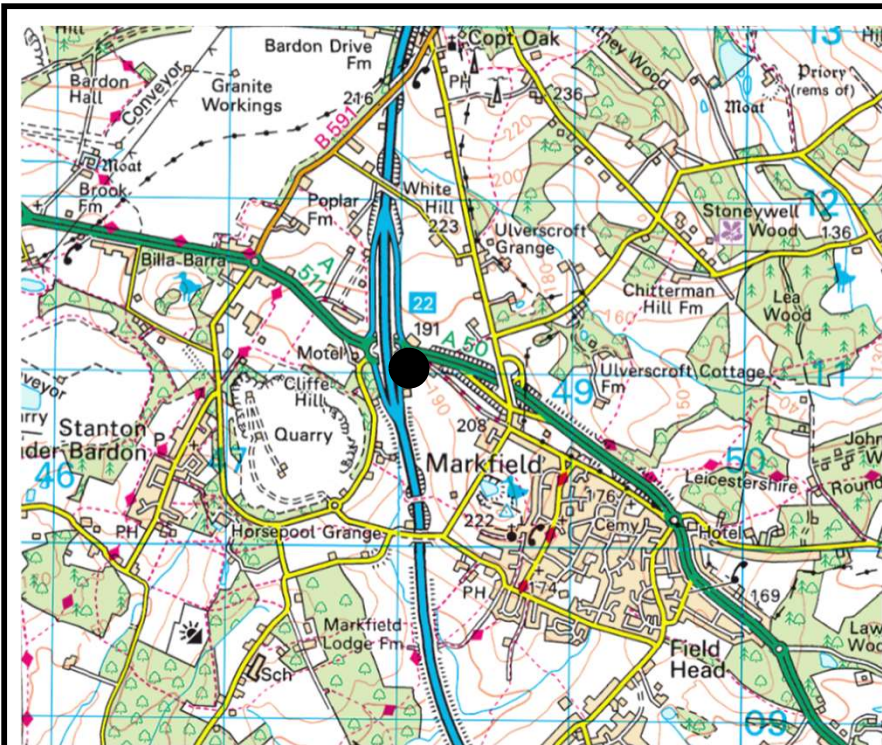
Appendix B – Exploratory Hole Logs

Appendix C – Laboratory Results

Appendix D – Generic Assessment Criteria

Appendix A





KEY:

● Approximate Site Location

DO NOT SCALE



TITLE:

Site Location Plan

PROJECT:

Hall Farm, Markfield

PROJECT No:

EAL.91.24

DATE:

07/2024

SCALE:

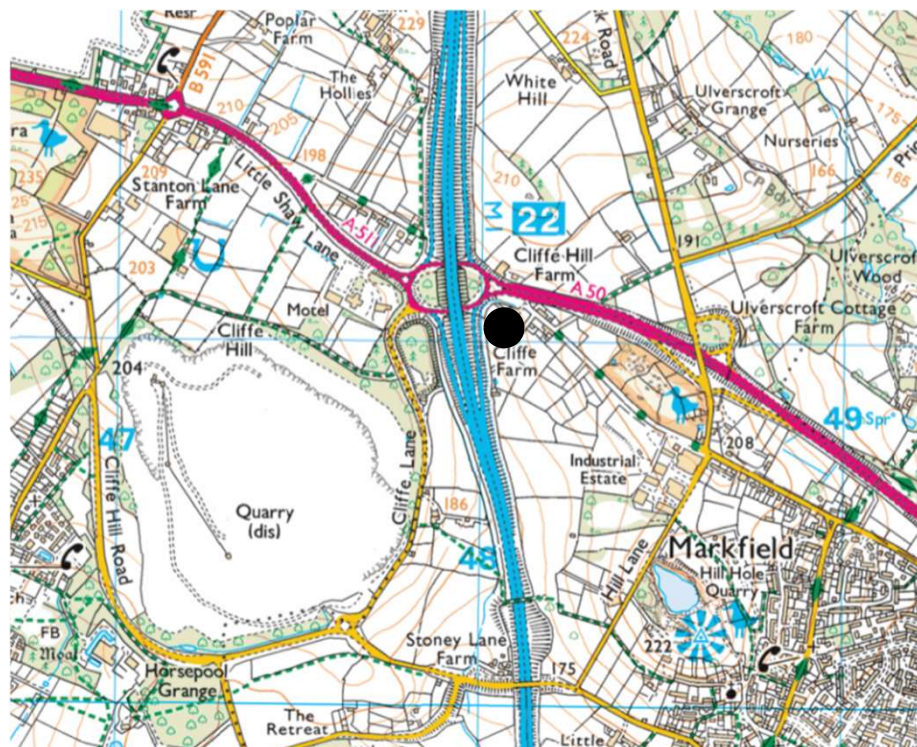
NTS

DRAWN:

DW

DWG No:

Figure 1





KEY:



Site Boundary

DO NOT SCALE



TITLE:

Site Layout

PROJECT:

Hall Farm, Markfield

PROJECT No:

EAL.91.24

DATE:

07/2024

SCALE:

NTS

DRAWN:

DW

DWG No:

Figure 2



KEY:

DO NOT SCALE



TITLE:

Development Proposal

PROJECT:

Hall Farm, Markfield

PROJECT No:

EAL.91.24

DATE:

07/2024

SCALE:

NTS

DRAWN:

DW

DWG No:

Figure 3



KEY:



Trial Pit



Soakaway

DO NOT SCALE



TITLE:

Exploratory Hole Location Plan

PROJECT:

Hall Farm, Markfield

PROJECT No:

EAL.91.24

DATE:

07/2024

SCALE:

NTS

DRAWN:

DW

DWG No:

Figure 4

Appendix B





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Email: p.devitt@erda-ltd.co.uk
Mob: 07531 051197

Date: 22nd and 23rd July 2024

BOREHOLE NO.

TP01

Sheet No. 1 of 1

Job No.

EAL.91.24

Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results						N' Value	Installation	Test Sample Details
				Depth	No	Type	Seating		Test Drive						
							75mm	75mm	75mm	75mm	75mm	75mm			
TOPSOIL	0.10 0.20 0.30		0.3	0.2	I	ES									HSV - 35/30/40kPa
Light brown slightly sandy CLAY.	0.40 0.50		0.2												
Soft greyish brown silty slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies including granite.	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		1.5				1.0 1.2	I	D						
Firm reddish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular mudstone.	2.10 2.20 2.30 2.40 2.50		0.5	2.4											
Trial pit terminated at 2.5m	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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling								Logged By:	Checked By:	Date	Scale
								DW	DW	07.08.2024	NTS

 Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. TP02						
HILLMOREN LIMITED				Plant: Excavator				Sheet No. 1 of 1						
HALL FARM, MARKFIELD								Job No. EAL.91.24						
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Detail
				Depth	No	Type	Seating		Test Drive					
MADE GROUND: TOPSOIL	0.10 0.20		0.2	0.4	1	ES								HSV - 30/40/50kPa
MADE GROUND: Light brown pea gravel with plastic pipe in side wall	0.30 0.40 0.50		0.3											
Soft greyish brown silty slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies including granite.	0.60		1.9	0.8										HSV - 45/45/40kPa
	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	2.0											HSV - 75/85/85kPa		
2.10														
2.20														
2.30														
2.40	2.5													
Firm reddish brown slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular mudstone. (suspected Gunthorpe Member)				2.50 2.60 2.70				0.3						
Trial pit terminated at 2.7m				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										

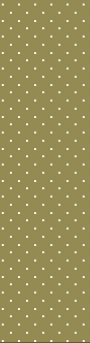
Casing record			Chiselling records								
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
Remarks: 1. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling							Logged By:	Checked By:	Date	Scale	
							DW	DW	07.08.2024	NTS	

 HILLMOREN LIMITED				Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. TP03			
HALL FARM, MARKFIELD				Plant: Excavator				Sheet No. 1 of 1				Job No. EAL.91.24			
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details	
				Depth	No	Type	Seating		Test Drive						
							75mm	75mm	75mm	75mm	75mm				75mm
MADE GROUND: Topsoil	0.10 0.20 0.30		0.3	0.3	1	ES								HSV - 80/85/100kPa	
MADE GROUND: Brown gravelly sand. Gravel is fine to coarse, angular to subangular brick and concrete.	0.40 0.50 0.60		0.3												
Firm brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60		1.0	1.0	1	D									
	1.2														
Trial pit terminated at 1.6m on boulder	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														

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling								Logged By:	Checked By:	Date	Scale
								DW	DW	07.08.2024	NTS

 HILLMOREN LIMITED				Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. TP04			
HALL FARM, MARKFIELD				Plant: Excavator				Sheet No. 1 of 1				Job No. EAL.91.24			
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details	
				Depth	No	Type	Seating		Test Drive						
							75mm	75mm	75mm	75mm	75mm				
TOPSOIL	0.10 0.20		0.2	0.1	1	ES									HSV - 65/75/80kPa
Firm brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular siltstone and rounded to subrounded mixed lithologies. ...becoming grey from 1.3m	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		1.8	1.2											

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling							Logged By:	Checked By:	Date	Scale	
							DW	DW	07.08.2024	NTS	

 HILLMOREN LIMITED				Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. TP05			
HALL FARM, MARKFIELD				Plant: Excavator				Sheet No. 1 of 1				Job No. EAL.91.24			
Description of Strata		Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details
					Depth	No	Type	Seating		Test Drive					
TOPSOIL		0.10 0.20 0.30		0.3	0.5	1	ES								HSV - 30/30/35kPa
Firm brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular siltstone and rounded to subrounded mixed lithologies.		0.40 0.50 0.60		0.3											
Brown silty CLAY		0.70 0.80		0.2											
Soft grey silty slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies including granite. ...boulder at 2m		0.90 1.00 1.10 1.20 1.30 1.40 1.50 1.60 1.70 1.80 1.90 2.00		1.2	1.3										
Trial pit terminated at 2.0m on boulder		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													

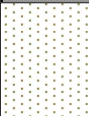
Casing record				Chiselling records							
Date	Diameter (mm)	Depth (m)	Time	From (m)	To (m)	Date	Water strike	Water level (after 20mins)	Flow	Standing level	Remarks
Remarks: 1. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling								Logged By:	Checked By:	Date	Scale
								DW	DW	07.08.2024	NTS

 Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197			Date: 22nd and 23rd July 2024			BOREHOLE NO. TP06								
HILLMOREN LIMITED			Plant: Excavator			Sheet No. 1 of 1								
HALL FARM, MARKFIELD						Job No. EAL.91.24								
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Detail
				Depth	No	Type	Seating		Test Drive					
TOPSOIL with common rootlets	0.10 0.20 0.30		0.3	0.2	I	ES								HSV - 75/75/85kPa
Light brown sandy CLAY	0.40 0.50 0.60		0.3											
Firm light brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded mixed lithologies with boulders.	0.70		1.8											
	0.80													
	0.90													
	1.00													
	1.10													
	1.20													
	1.30			1.3	I	D								
	1.40													
	1.50			1.5										
	1.60													
	1.70													
	1.80													
	1.90													
	2.00													
	2.10													
	2.20													
	2.30													
	2.40													
	2.50													
Trial pit terminated at 2.5m	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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling							Logged By:	Checked By:	Date	Scale	
							DW	DW	07.08.2024	NTS	

 HILLMOREN LIMITED			Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197			Date: 22nd and 23rd July 2024			BOREHOLE NO. TP07						
HALL FARM, MARKFIELD			Plant: Excavator			Sheet No. 1 of 1			Job No. EAL.91.24						
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details	
				Depth	No	Type	Seating		Test Drive						
							75mm	75mm	75mm	75mm	75mm				75mm
TOPSOIL	0.10 0.20 0.30		0.3	0.5	1	ES									
Light brown sandy CLAY.	0.40 0.50		0.2												
Trial pit terminated at 0.5m	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														

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling								Logged By:	Checked By:	Date	Scale
								DW	DW	07.08.2024	NTS

 HILLMOREN LIMITED				Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. TP08			
HALL FARM, MARKFIELD				Plant: Excavator				Sheet No. 1 of 1				Job No. EAL.91.24			
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details	
				Depth	No	Type	Seating		Test Drive						
							75mm	75mm	75mm	75mm	75mm				
TOPSOIL	0.10 0.20 0.30 0.40		0.4	0.6	I	ES								HSV - 85/85/90kPa	
Light brown sandy CLAY.	0.50 0.60		0.2												
Firm brownish orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, angular to rounded mixed lithologies. ...boulder at 2.0m	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						1.0								
Trial pit terminated at 2.0m on boulder	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														

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling								Logged By:	Checked By:	Date	Scale
								DW	DW	07.08.2024	NTS

 Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. SK01						
HILLMOREN LIMITED				Plant: Excavator				Sheet No. 1 of 1						
HALL FARM, MARKFIELD				Dimensions 0.6 x 1.4 x 1.5m				Job No. EAL.91.24						
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Details
				Depth	No	Type	Seating		Test Drive					
							75mm	75mm	75mm	75mm	75mm			
MADE GROUND: Topsoil	0.10 0.20 0.30		0.3											
MADE GROUND: Brown gravelly sand. Gravel is fine to coarse, angular to subangular brick and concrete.	0.40 0.50 0.60		0.3											
Firm brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies.	0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50		0.9											
	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													

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling							Logged By:	Checked By:	Date	Scale	
							DW	DW	07.08.2024	NTS	

 Web: www.erda-ltd.co.uk Email: p.devitt@erda-ltd.co.uk Mob: 07531 051197				Date: 22nd and 23rd July 2024				BOREHOLE NO. SK02						
HILLMOREN LIMITED				Plant: Excavator				Sheet No. 1 of 1						
HALL FARM, MARKFIELD				Dimensions 0.6 x 1.6 x 1.5m				Job No. EAL.91.24						
Description of Strata	Reduced level (m)	Legend	Depth (Thickness) m	SAMPLES/TESTS			SPT Results					N Value	Installation	Test Sample Detail
				Depth	No	Type	Seating		Test Drive					
							75mm	75mm	75mm	75mm	75mm			
TOPSOIL	0.10 0.20 0.30		0.3											
Light brown slightly sandy CLAY.	0.40 0.50		0.2											
Soft greyish brown silty slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded mixed lithologies including granite.	0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50		1.0											
	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													

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. Trial pit backfilled with arisings 2. Groundwater not encountered 3. Trial pit remained stable throughout drilling							Logged By:	Checked By:	Date	Scale	
							DW	DW	07.08.2024	NTS	

Appendix C



Client: Erda Associates Ltd
Client Address: 102 Scalpcliffe Road, Burton Upon Trent, Staffs, DE15 9AB

Client Reference: EAL.91.24
Job Number: 24-032319-1
Date Sampled: 22/07/2024
Date Received: 24/07/2024
Date Tested: 30/07/2024
Sampled By: Client - DW

Contact: Dan Wade
Site Address: Hall Farm, Markfield

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

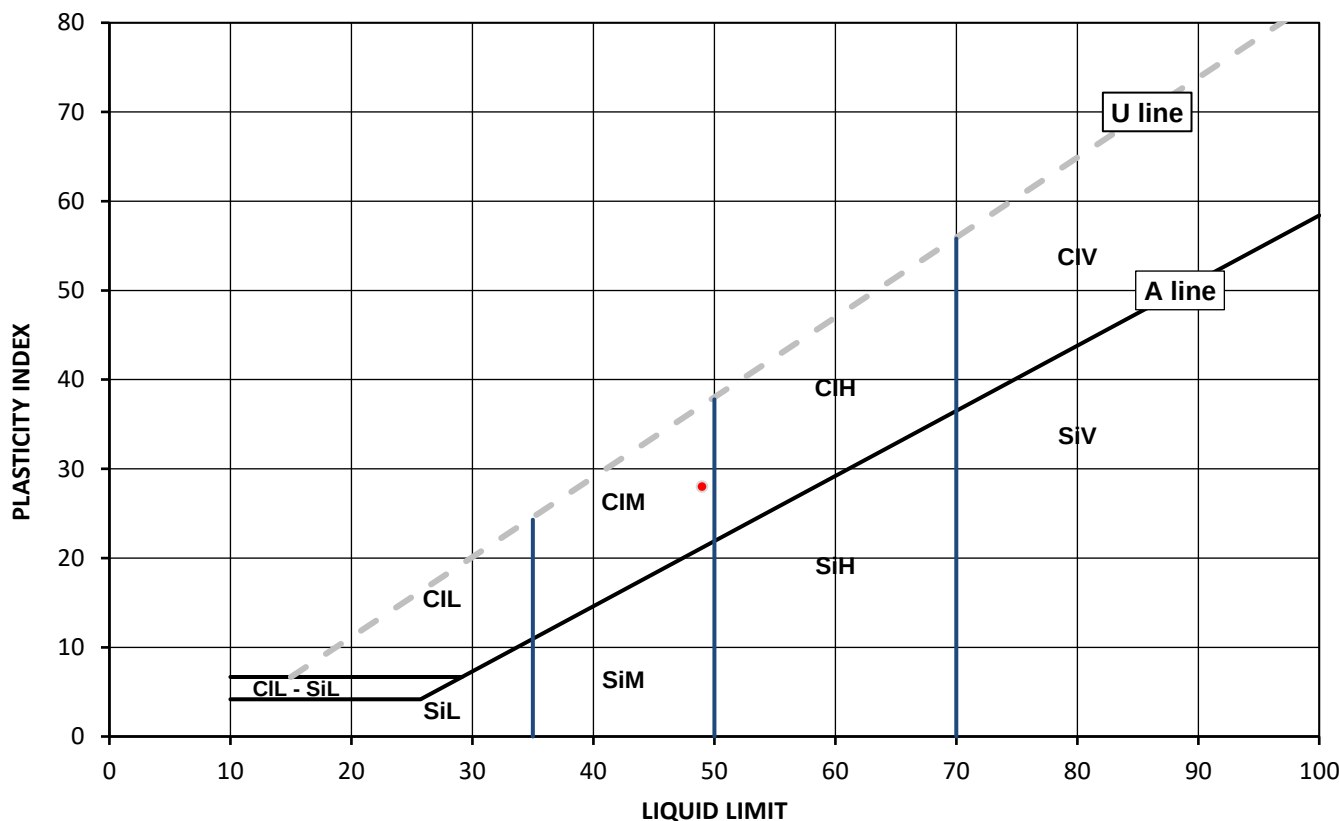
Test Results:

Laboratory Reference: 265953
Hole No.: TP1
Sample Reference: Not Given
Sample Description: Greyish brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.00
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425mm removed by hand; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
36.2	49	21	28	0.54	0.46	94



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

Cl	Clay	Plasticity	L	Low	Liquid Limit	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 EN 17892-1: 2014; # Non accredited

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:
Monika Siewior

Monika Siewior
Reporting Specialist

for and on behalf of i2 Analytical Ltd

Client: Erda Associates Ltd
Client Address: 102 Scalpclyffe Road, Burton Upon Trent, Staffs, DE15 9AB

Client Reference: EAL.91.24
Job Number: 24-032319-1
Date Sampled: 22/07/2024
Date Received: 24/07/2024
Date Tested: 30/07/2024
Sampled By: Client - DW

Contact: Dan Wade
Site Address: Hall Farm, Markfield

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

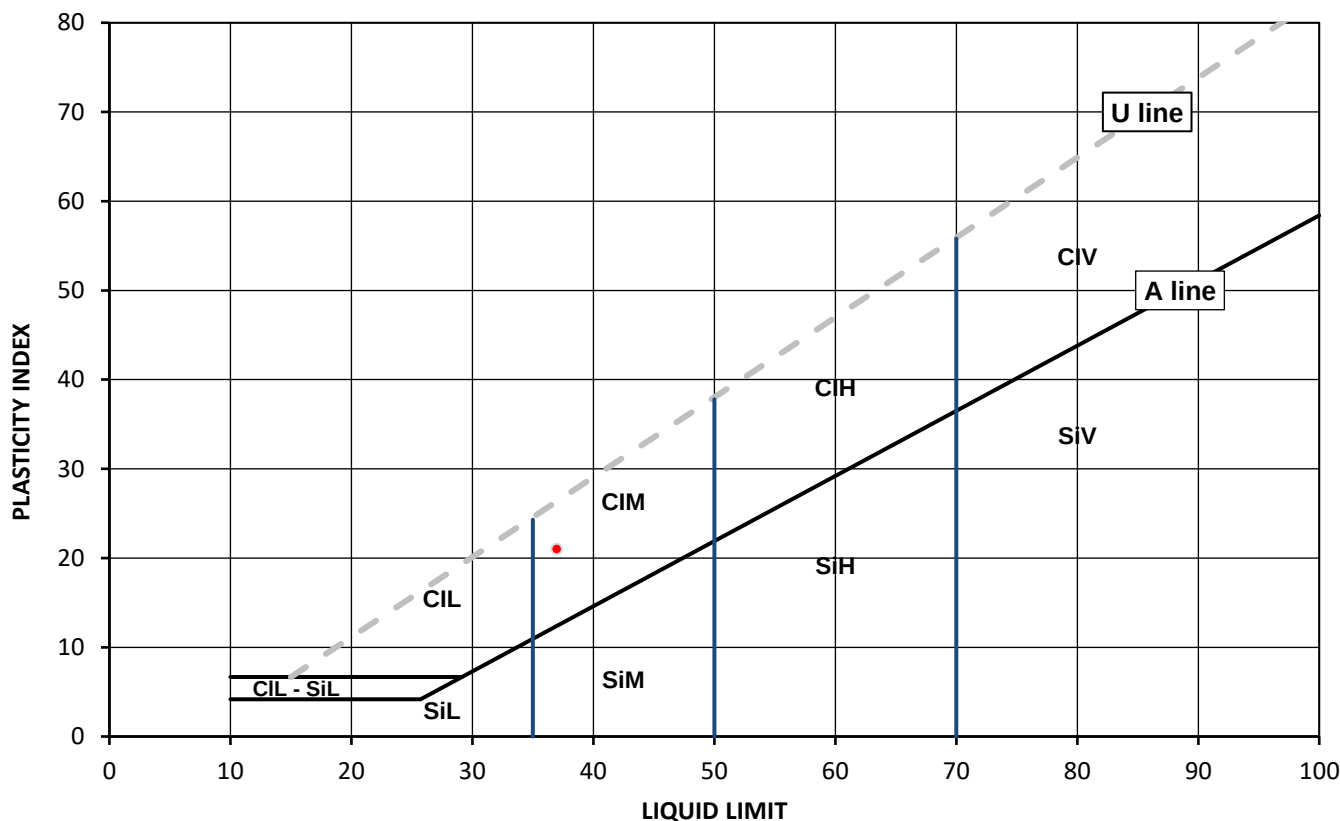
Test Results:

Laboratory Reference: 265954
Hole No.: TP3
Sample Reference: Not Given
Sample Description: Brown slightly gravelly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >0.425mm; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
14.9	37	16	21	-0.05	1.05	86



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 EN 17892-1: 2014; # Non accredited

Remarks:

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Signed:

Monika Siewior

Monika Siewior
Reporting Specialist

for and on behalf of i2 Analytical Ltd

Client: Erda Associates Ltd
Client Address: 102 Scalpcliffe Road, Burton Upon Trent, Staffs, DE15 9AB

Client Reference: EAL.91.24
Job Number: 24-032319-1
Date Sampled: 22/07/2024
Date Received: 24/07/2024
Date Tested: 30/07/2024
Sampled By: Client - DW

Contact: Dan Wade
Site Address: Hall Farm, Markfield

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

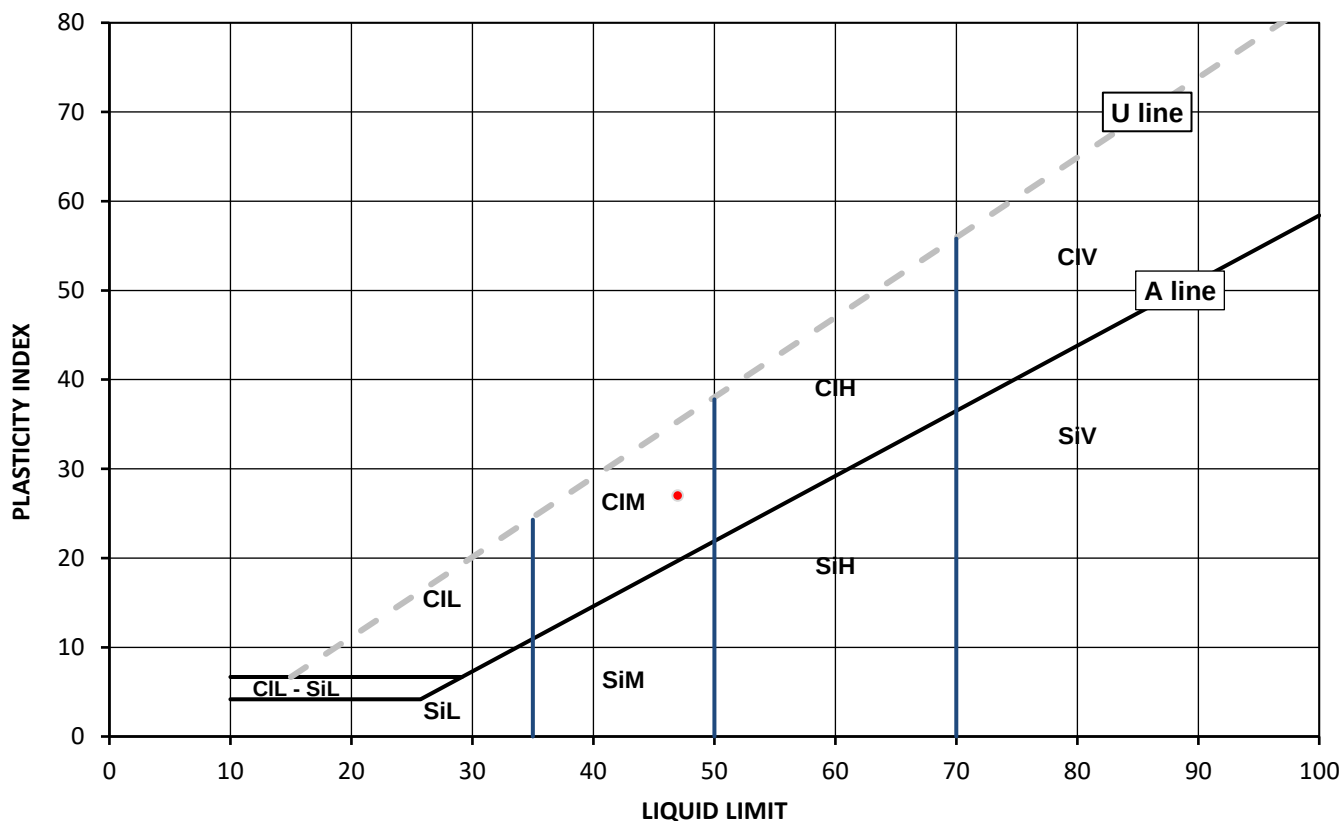
Test Results:

Laboratory Reference: 265955
Hole No.: TP6
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.30
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425mm removed by hand; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
11.5	47	20	27	-0.30	1.30	88



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

	Clay	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 EN 17892-1: 2014; # Non accredited

Remarks:

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Signed:
Monika Siewior

Monika Siewior
Reporting Specialist

for and on behalf of i2 Analytical Ltd

Client: Erda Associates Ltd
Client Address: 102 Scalpcliffe Road, Burton Upon Trent, Staffs, DE15 9AB

Client Reference: EAL.91.24
Job Number: 24-032319-1
Date Sampled: 22/07/2024
Date Received: 24/07/2024
Date Tested: 30/07/2024
Sampled By: Client - DW

Contact: Dan Wade
Site Address: Hall Farm, Markfield

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

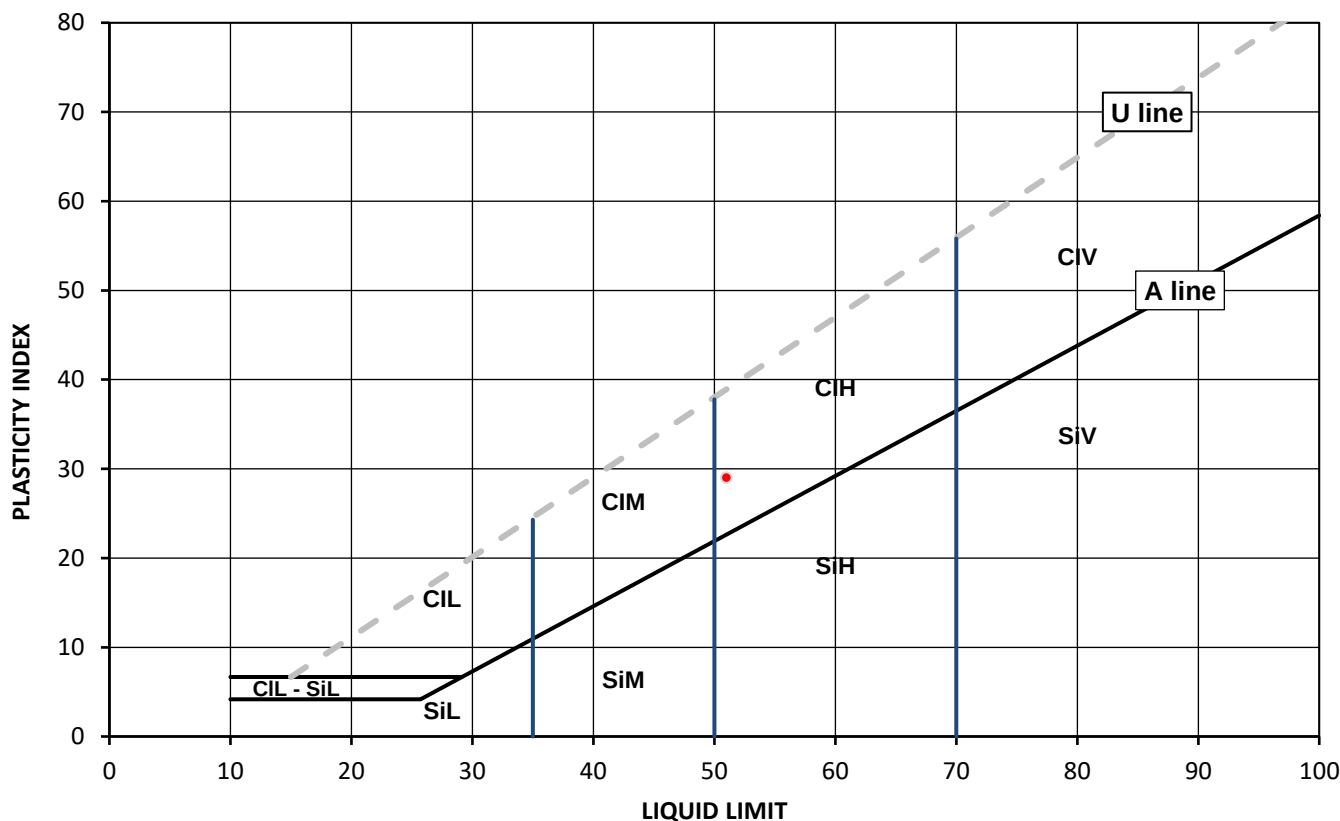
Test Results:

Laboratory Reference: 265956
Hole No.: TP8
Sample Reference: Not Given
Sample Description: Brown slightly gravelly slightly sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >0.425mm removed by hand; The water content in the sample was increased
Cone Type: 80g/30deg

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] % #	Consistency Index [IC] % #	% Passing 425µm BS Test Sieve
21.5	51	22	29	0.00	1.00	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 EN 17892-1: 2014; # Non accredited

Remarks:

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Signed:
Monika Siewior

Monika Siewior
Reporting Specialist

for and on behalf of i2 Analytical Ltd

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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



Client:

Client Address:

Contact:

Site Address:

Erda Associates Ltd

102 Scalpcliffe Road, Burton Upon Trent,
Staffs, DE15 9AB

Dan Wade

Hall Farm, Markfield

BS EN ISO 17892-12:2018+A2:2022 cl 5.3 and 5.5, Fall Cone Method, 4 Pt
Test, BS 1377-2:2022, cl 5.2 and 6. W by BS EN ISO 17892-1:2014+A1:2022.

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

Client Reference: EAL.91.24

Job Number: 24-032319-1

Date Sampled: 22/07/2024

Date Received: 24/07/2024

Date Tested: 30/07/2024

Sampled By: Client - DW

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top	Depth Base	Type				% Passing 425um	WL*	Correlation Factor	Wp	Ip	Cone type	Sample Preparation	bulk	dry	PD
			m	m														
265953	TP1	Not Given	1.00	Not Given	D	Greyish brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	36.2	94	49	-	21	28	80g/30 deg	R / I			
265954	TP3	Not Given	1.20	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	14.9	86	37	-	16	21	80g/30 deg	W / I			
265955	TP6	Not Given	1.30	Not Given	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	11.5	88	47	-	20	27	80g/30 deg	R / I			
265956	TP8	Not Given	1.20	Not Given	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 4 Point	21.5	99	51	-	22	29	80g/30 deg	R / I			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, W - Tested after washing to remove >425mm; I - The water content in the sample was increased , D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Erda Associates Ltd
102 Scalpcliffe Road, Burton Upon Trent, Staffs, DE15 9AB

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

e: d.wade@erda-ltd.co.uk

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

Analytical Report Number : 24-032320

Project / Site name:	Hall Farm, Markfield	Samples received on:	24/07/2024
Your job number:	EAL.91.24	Samples instructed on/ Analysis started on:	24/07/2024
Your order number:	EAL.91.24	Analysis completed by:	31/07/2024
Report Issue Number:	1	Report issued on:	01/08/2024
Samples Analysed:	4 soil samples		



Signed: _____

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

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

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

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

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

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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: 24-032320
 Project / Site name: Hall Farm, Markfield
 Your Order No: EAL91.24

Lab Sample Number				265957	265958	265959	265960
Sample Reference				TP1	TP3	TP6	TP8
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.20	1.30	1.20
Date Sampled				22/07/2024	22/07/2024	22/07/2024	22/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	13	14	14
Total mass of sample received	kg	0.1	NONE	0.6	0.6	0.5	0.6

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.8	7.7	8.2	7.7
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	61	23	37	55
Water Soluble SO ₄ 16hr extraction (2:1)	mg/l	1.25	MCERTS	30.2	11.3	18.3	27.4

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

Analytical Report Number : 24-032320

Project / Site name: Hall Farm, Markfield

* 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 *
265957	TP1	None Supplied	1	Brown clay and sand with vegetation
265958	TP3	None Supplied	1.2	Brown clay and sand with gravel and vegetation
265959	TP6	None Supplied	1.3	Brown clay and sand with gravel
265960	TP8	None Supplied	1.2	Brown clay and sand with vegetation

Analytical Report Number : 24-032320
Project / Site name: Hall Farm, Markfield

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
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	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 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

Erda Associates Ltd
102 Scalpcliffe Road, Burton Upon Trent, Staffs, DE15 9AB

i2 Analytical Ltd.
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Croxley Green
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Watford,
Herts,
WD18 8YS

e: d.wade@erda-ltd.co.uk

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

Analytical Report Number : 24-032477

Replaces Analytical Report Number: 24-032477, issue no. 1
Additional analysis undertaken.
Asbestos Quantification added to sample 266962 as per client's request.

Project / Site name:	Hall Farm Markfield	Samples received on:	24/07/2024
Your job number:	EAL 91 24	Samples instructed on/ Analysis started on:	24/07/2024
Your order number:	EAL 91 24	Analysis completed by:	31/07/2024
Report Issue Number:	2	Report issued on:	31/07/2024
Samples Analysed:	8 soil samples		


Signed:

Trevor Hill
Customer Service Advisor
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: 24-032477
Project / Site name: Hall Farm Markfield
Your Order No: EAL 91 24

Lab Sample Number				266961	266962	266963	266964	266965
Sample Reference				TP1	TP2	TP3	TP4	TP5
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.30	0.10	0.50
Date Sampled				22/07/2024	22/07/2024	22/07/2024	22/07/2024	22/07/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status		

Stone Content	%	0.1	NONE	< 0.1	16.7	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	28	10	22	29	25
Total mass of sample received	kg	0.1	NONE	0.5	0.5	0.5	0.5	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	NNI	MJN	NNI	NNI	NNI
Actinolite detected	Type	N/A	ISO 17025	-	Not-detected	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	Not-detected	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	Not-detected	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	Detected	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	Not-detected	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	Not-detected	-	-	-

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	< 0.001	-	-	-
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	Loose Fibres	-	-	-
---	------	-----	-----------	---	--------------	---	---	---

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	5.7	7.1	6.5	5.3	5.6
Total Sulphate as SO ₄	mg/kg	50	MCERTS	760	510	640	980	560
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	32	39	28	19	15
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	16.1	19.5	14	9.65	7.38
Organic Matter (automated)	%	0.1	MCERTS	6.8	3.5	6.5	5.4	3.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 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	0.11	0.12	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	0.08	0.07	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.27	1.9	1.8	0.09	0.08
Anthracene	mg/kg	0.05	MCERTS	< 0.05	0.63	0.32	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.74	3.9	4.5	0.17	0.1
Pyrene	mg/kg	0.05	MCERTS	0.74	3.4	4.1	0.19	0.13
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.37	1.5	1.7	0.08	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.42	1.5	1.8	0.09	0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.56	1.8	2.3	0.13	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.28	0.79	1.1	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.49	1.7	2.1	0.08	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.3	0.93	1.2	0.06	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.24	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.32	1.1	1.4	0.07	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	4.57	19.2	22.7	0.97	< 0.80
-----------------------------	-------	-----	-----------	------	------	------	------	--------

Analytical Report Number: 24-032477
Project / Site name: Hall Farm Markfield
Your Order No: EAL 91 24

Lab Sample Number	266961	266962	266963	266964	266965
Sample Reference	TP1	TP2	TP3	TP4	TP5
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	0.40	0.30	0.10	0.50
Date Sampled	22/07/2024	22/07/2024	22/07/2024	22/07/2024	22/07/2024
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status		

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	11	13	12	13
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	0.7	0.8	0.5	0.5
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	17	25	22	31	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	43	32	26	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	78	86	60	52
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	12	30	22	21	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	60	42	54	49
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	510	270	300	130	120

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	-	-

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	-	-
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	-	-
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	20	17	-	-	-
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	20	17	-	-	-

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	< 5.0	< 5.0	-	-	-
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
p & m-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	-	-

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

Analytical Report Number: 24-032477
Project / Site name: Hall Farm Markfield
Your Order No: EAL 91 24

Lab Sample Number	266966	266967	266968
Sample Reference	TP6	TP7	TP8
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	0.50	0.60
Date Sampled	22/07/2024	22/07/2024	22/07/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	13	11
Total mass of sample received	kg	0.1	NONE	0.5	0.4	0.5

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	NNI	NNI	NNI
Actinolite detected	Type	N/A	ISO 17025	-	-	-
Amosite detected	Type	N/A	ISO 17025	-	-	-
Anthophyllite detected	Type	N/A	ISO 17025	-	-	-
Chrysotile detected	Type	N/A	ISO 17025	-	-	-
Crocidolite detected	Type	N/A	ISO 17025	-	-	-
Tremolite detected	Type	N/A	ISO 17025	-	-	-

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	-
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Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-
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General Inorganics

pH (L099)	pH Units	N/A	MCERTS	6.5	5.9	6.5
Total Sulphate as SO ₄	mg/kg	50	MCERTS	510	220	200
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	35	16	27
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	17.5	7.79	13.6
Organic Matter (automated)	%	0.1	MCERTS	4.4	1.1	0.7

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.15	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.21	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.2	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	< 0.80
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Analytical Report Number: 24-032477
Project / Site name: Hall Farm Markfield
Your Order No: EAL 91 24

Lab Sample Number	266966	266967	266968
Sample Reference	TP6	TP7	TP8
Sample Number	None Supplied	None Supplied	None Supplied
Depth (m)	0.20	0.50	0.60
Date Sampled	22/07/2024	22/07/2024	22/07/2024
Time Taken	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	18	9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	29	17
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	6.6	7.9
Lead (aqua regia extractable)	mg/kg	1	MCERTS	49	28	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	15	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	50	86	49
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	48	47

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-
TPHCWG - Aliphatic >EC6 - EC8 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-
TPHCWG - Aliphatic >EC8 - EC10 HS_1D_AL	mg/kg	0.01	MCERTS	-	< 0.010	-
TPHCWG - Aliphatic >EC10 - EC12 EH_CU_1D_AL	mg/kg	1	MCERTS	-	< 1.0	-
TPHCWG - Aliphatic >EC12 - EC16 EH_CU_1D_AL	mg/kg	2	MCERTS	-	< 2.0	-
TPHCWG - Aliphatic >EC16 - EC21 EH_CU_1D_AL	mg/kg	8	MCERTS	-	< 8.0	-
TPHCWG - Aliphatic >EC21 - EC35 EH_CU_1D_AL	mg/kg	8	MCERTS	-	< 8.0	-
TPHCWG - Aliphatic >EC5 - EC35 EH_CU+HS_1D_AL	mg/kg	10	NONE	-	< 10	-

TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	-
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	MCERTS	-	< 0.010	-
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.02	MCERTS	-	< 0.020	-
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	-	< 1.0	-
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	-	< 2.0	-
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	-	< 10	-
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	-	< 10	-
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	-	< 10	-

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-
Benzene	µg/kg	5	MCERTS	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-
p & m-Xylene	µg/kg	5	MCERTS	-	< 5.0	-
o-Xylene	µg/kg	5	MCERTS	-	< 5.0	-

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



Analytical Report Number: 24-032477
Project / Site name: Hall Farm Markfield
Your Order No: EAL 91 24

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
266962	TP2	0.40	110	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 24-032477
Project / Site name: Hall Farm Markfield

* 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 *
266961	TP1	None Supplied	0.2	Brown loam with vegetation
266962	TP2	None Supplied	0.4	Brown loam with stones
266963	TP3	None Supplied	0.3	Brown loam with gravel and vegetation
266964	TP4	None Supplied	0.1	Brown loam and clay with gravel and vegetation
266965	TP5	None Supplied	0.5	Brown loam and clay with gravel and vegetation
266966	TP6	None Supplied	0.2	Brown loam with gravel and vegetation
266967	TP7	None Supplied	0.5	Brown sandy clay with gravel and vegetation
266968	TP8	None Supplied	0.6	Brown sandy clay with gravel and vegetation

Analytical Report Number : 24-032477
Project / Site name: Hall Farm Markfield

Water matrix abbreviations:

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088	D/W	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	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 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 24-032477
Project / Site name: Hall Farm Markfield

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
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Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

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

Appendix D



Tier 1 Assessment Criteria

Determinand	Commercial/Industrial (mg/kg) - 1% SOM			Source
Arsenic	640.00			LQM S4UL
Boron	240000.00			LQM S4UL
Cadmium	410.00			C4SL
Chromium III	8600.00			LQM S4UL
Chromium VI	33.00			LQM S4UL
Lead	2300.00			C4SL
Mercury, elemental	58.00 ^{vap} (25.80)			LQM S4UL
Mercury, inorganic	1100.00			LQM S4UL
Mercury, methyl	320.00			LQM S4UL
Selenium	12000.00			LQM S4UL
Nickel	980.00			LQM S4UL
Copper	68000.00			LQM S4UL
Vanadium	9000.00			LQM S4UL
Zinc	730000.00			LQM S4UL
	Polycyclic Aromatic Hydrocarbons			
	SOM 1%	SOM 2.5%	SOM 6%	
Benzo(a)pyrene	35.00	35.00	36.00	LQM S4UL
Dibenz(ah)anthracene	3.50	3.60	3.60	LQM S4UL
Acenaphthene	84000 (57) ^{sol}	97000 (141) ^{sol}	100000.00	LQM S4UL
Acenaphthylene	83000 (86) ^{sol}	97000 (212) ^{sol}	100000.00	LQM S4UL
Anthracene	520000.00	540000.00	540000.00	LQM S4UL
Benzo(a)anthracene	170.00	170.00	180.00	LQM S4UL
Benzo(b)fluoranthene	44.00	44.00	45.00	LQM S4UL
Benzo(ghi)perylene	3900.00	4000.00	4000.00	LQM S4UL
Benzo(k)fluoranthene	1200.00	1200.00	1200.00	LQM S4UL
Chrysene	350.00	350.00	350.00	LQM S4UL
Fluoranthene	23000.00	23000.00	23000.00	LQM S4UL
Fluorene	63000 (30) ^{sol}	68000.00	71000.00	LQM S4UL
Indeno(123cd)pyrene	500.00	510.00	510.00	LQM S4UL
Phenanthrene	22000.00	22000.00	23000.00	LQM S4UL
Pyrene	54000.00	54000.00	54000.00	LQM S4UL
Naphthalene	190 (76) ^{sol}	460 (183) ^{sol}	1100 (432) ^{sol}	LQM S4UL

Note:

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* Values calculated using CLEA v1.071

^{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.

Tier 1 Assessment Criteria

Determinand	Commercial/Industrial (mg/kg)			Source
	1% SOM	2.5% SOM	6% SOM	
Benzene	27.00	47.00	90.00	LQM S4UL
Ethylbenzene	5700 ^{vap} (518)	13000 ^{vap} (1220)	27000 ^{vap} (2840)	LQM S4UL
Phenol	760.00	1500.00	3200.00	LQM S4UL
Toulene	56000 ^{vap} (869)	110000 ^{vap} (1920)	180000 ^{vap} (4360)	LQM S4UL
Xylene, o-	6600 ^{sol} (478)	15000 ^{sol} (1120)	33000 ^{sol} (2620)	LQM S4UL
Xylene, m-	6200 ^{vap} (625)	14000 ^{vap} (1470)	31000 ^{vap} (3460)	LQM S4UL
Xylene, p-	5900 ^{sol} (576)	14000 ^{sol} (1350)	30000 ^{sol} (3170)	LQM S4UL
Aliphatic C5-C6	3200 (304) ^{sol}	5900 (558) ^{sol}	12000 (1150) ^{sol}	LQM S4UL
Aliphatic C6-C8	7800 (144) ^{sol}	17000 (322) ^{sol}	40000 (736) ^{sol}	LQM S4UL
Aliphatic C8-C10	2000 (78) ^{sol}	4800 (190) ^{vap}	11000 (451) ^{vap}	LQM S4UL
Aliphatic C10-C12	9700 (48) ^{sol}	23000 (118) ^{vap}	47000 (283) ^{vap}	LQM S4UL
Aliphatic C12-C16	59000 (24) ^{sol}	82000 (59) ^{sol}	90000 (142) ^{sol}	LQM S4UL
Aliphatic C16-C35	1600000	1700000	1800000	LQM S4UL
Aliphatic C35-C44	1600000	1700000	1800000	LQM S4UL
Aromatic C5-C7	26000 (1200) ^{sol}	46000 (2260) ^{sol}	86000 (4710) ^{sol}	LQM S4UL
Aromatic C7-C8	56000 (869) ^{vap}	110000 (1920) ^{sol}	180000 (4360) ^{vap}	LQM S4UL
Aromatic C8-C10	3500 (613) ^{vap}	8100 (1500) ^{vap}	17000 (3580) ^{vap}	LQM S4UL
Aromatic C10-C12	16000 (364) ^{sol}	28000 (899) ^{sol}	34000 (2150) ^{sol}	LQM S4UL
Aromatic C12-C16	36000 (169) ^{sol}	37000	38000	LQM S4UL
Aromatic C16-C21	28000	28000	28000	LQM S4UL
Aromatic C21-C35	28000	28000	28000	LQM S4UL
Aromatic C35-C44	28000	28000	28000	LQM S4UL
Combined Aliphatic and Aromatic C44-C70	28000	28000	28000	LQM S4UL

Note:

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^{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.