HOMEFIELD FARM, GREAT NORTH ROAD, ALCONBURY

PHASE II GEO-ENVIRONMENTAL ASSESSMENT AND PHASE III REMEDIATION STRATEGY FOR MS SARAH BRAWN

Project Ref:
EAL.02.24

Date:
November 2024

Prepared for:
Ms Sarah Brawn

Prepared by:	[redacted]	[redacted] *Associate*
Date:	November 2024	
Version:	1.2	

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 & PHASE III REMEDIATION STRATEGY	
SITE:	Homefield Farm, Great North Road, Alconbury
CLIENT:	Ms Sarah Brawn
DATE:	November 2024
REFERENCE	EAL.02.24
DEVELOPMENT PROPOSAL:	Change of use of an existing agricultural barn to residential, to form an extension to the adjacent existing residential dwelling.
HUMAN HEALTH:	Remediation required at two locations, TP04 and TP05. This could take the form of either placement of a clean cap or a hotspot removal exercise.
CONTROLLED WATERS:	Negligible risk – no further work

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.

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1.0 INTRODUCTION

1.1 PREAMBLE

Erda Associates Ltd. (Erda) has been appointed by Ms Sarah Brawn (hereafter referred to as 'the client') to undertake a Phase II Geo-environmental Assessment to provide a pre-development contamination and geotechnical assessment of the site known as *Homefield Farm. Great North Road, Alconbury*.

Site location and boundary plans are included in **Appendix A**.

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 through undertaking a change of use of an existing agricultural barn to residential, to form an extension to the adjacent existing residential dwelling (planning permission reference 23/02290/FUL). This report has been produced to address the requirements of Condition 4 of the Decision Notice for Application 23/02290/FUL.

1.2 PROJECT BRIEF

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

- A review of previously reported Phase I Geo-environmental assessment
- 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

- 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.
- EPS, Phase I Geo-Environmental Desk Study, Homefield Farm, Alconbury dated 12th June 2023, reference UK23.6487

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 through undertaking a change of use of an existing agricultural barn to residential, to form an extension to the adjacent existing residential dwelling.

2.0 PREVIOUS INVESTIGATIONS

A Phase I Geo-environmental Assessment has been completed for the site by EPS, which was submitted as part of the Application 23/02990/FUL and considered by Environmental Protection Officers at Huntingdonshire District Council.

The below excerpt is the non-technical summary from the previous assessment. The full report should be read in conjunction with this summary.

NON-TECHNICAL CLIENT SUMMARY

This report presents the findings of a Phase I Geo-Environmental Desk Study which was carried out to identify potential contamination from previous or current uses of the site and surrounding area and to provide an initial assessment of geological and geotechnical aspects of the site and how the proposed development or surrounding environment might be affected.

- The site currently comprises a disused agricultural barn located within Homefield Farm in south Alconbury. The development is understood to comprise the conversion of the barn into an extension for the main farmhouse.
- Ground conditions are reported to comprise superficial sand and gravel deposits overlying clay bedrock, which are classified as a Secondary Aquifer and Unproductive Strata respectively. Whilst some surface water features are present in the surrounding area, the site is not considered to be particularly environmentally sensitive.
- The historic mapping dating back to late 1800s suggests the land has been utilised as part of Homefield Farm prior to the earliest mapping available. A smaller building within the footprint of the barn was present until the 1970s when the farm was redeveloped.
- On this basis, limited risks have been identified to future site users associated with interaction with possible made ground soils, which warrant some modest intrusive investigation to further assess them. This should at a minimum comprise the forming of a series of shallow hand-cored boreholes and collection of shallow soil samples for laboratory testing.
- A copy of this report should be provided to the Environmental Health department of Huntingdonshire District Council to support any future planning application. The above investigations could be carried out in response to a conditional consent, as this report should satisfy the pre-commencement aspects of the planning process.

EPS went on to develop a summary of pollutant linkages as detailed below.

Source	Pathway	Receptor
Contaminated soil (Made Ground)	Direct contact and inadvertent ingestion by eating or smoking with dirty hands & inhalation of fugitive dusts	Construction workers during redevelopment & Site users
	Direct uptake and/or adherence of contaminated soil to vegetation and subsequent ingestion.	Site users
	Ingress/diffusion through permeable potable water supply pipes	
	Direct uptake via root systems	Plants

In addition, the Phase I identified a number of tanks on or in close vicinity of the site, which are as follows;

- A general heating fuel tank of approximately 1500l is present on site, adjacent to the barn in the northwest. It was noted to bunded and raised by approximately 1m and on a concrete base.

- Two larger tanks present off site by approximately 40m, but within the same farm complex. One was 12,000l and used for diesel storage and was resting on concrete slabs. The other was 18,000l but reportedly had never been used.
- Both were bunded and there was no visible staining at either of the three tanks.

3.0 PHASE II GROUND INVESTIGATION

3.1 FIELDWORK

Condition 4 of the DecisionNotice for Application 23/02290/FUL require the preparation of a Phase II Intrusive Site Investigation Report, and a Phase III Remediation Strategy in the event that contaminated land risks are identified by the on-site investigation.

The Phase II intrusive investigation was undertaken on the 2nd May 2024 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 six hand excavated trial pits to a maximum depth of 0.8mbgl.
- The analysis of five soil samples for a standard 'CLEA' screening suite and selected site specific determinands,

The hand dug trial pits logs are contained 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.

3.4 Chemical Analysis

A total five samples were sent for analysis at a UKAS/MCERTS accredited laboratory. The samples were screened for the following contaminants.

The soil analysis results are contained within **Appendix C**.

Sample ID	Depth (mbgl)	Strata	Suite
TP01	0.2	Topsoil	CLEA & TPH CWG
TP02	0.4	River Terrace Deposits	CLEA
TP03	0.5	River Terrace Deposits	CLEA
TP04	0.1	Topsoil	CLEA
TP05	0.2	Made Ground	CLEA & TPH CWG

4.0 GROUND CONDITIONS

The intrusive investigation has revealed that topsoil or Made Ground is present across the site at surface, underlain by suspected River Terrace Deposits.

4.1 TOPSOIL

Topsoil was present at surface at locations TP01, TP02, TP03 & TP04 with a mean thickness of 0.3m.

4.2 MADE GROUND

Made Ground was observed at TP05, beneath a concrete surface.
This material comprised a gravelly clay where the gravels were formed of whetstone, concrete and ash and extended to 0.5m

At TP06 this was formed of a reworked topsoil, with rare brick fragments and extended to 0.3m.
TP06 was located in proximity of the two large tanks off site. There was no visible or olfactory evidence of contamination noted.

4.3 SUPERFICIAL STRATA

Superficial deposits were encountered in all locations and were formed of a variably sandy and variably gravelly clay, where the gravels were formed of rounded to subrounded quartzite.

These deposits were not bottomed out.

4.4 SOLID STRATA

Solid strata deposits not encountered.

4.5 FIELD OBSERVATIONS

No significant field observations were recorded.

4.6 GROUNDWATER

Groundwater was not observed.

5.0 CONTAMINATION ASSESSMENT

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 1% has been adopted for the PAH analysis.

5.1 HUMAN HEALTH

An assessment of the analysis results for metals and inorganics contained in **Appendix C**, revealed that the majority of contaminants do not exceed the respective GAC for a residential with produce end use.

However, in one location, elevated PAHs were recorded within shallow soils, as detailed below in Table 5.1.

Table 5.1 Heavy Metal and PAH Analysis Summary

Sample Ref./Depth	Strata	Contaminant	Concentration (mg/kg)	GAC Screening Value (mg/kg)
TP05 / 0.2m	Made Ground	Dibenz(a,h)anthracene	0.34	0.24

Due to the presence of Dibenz(a,h)anthracene within Made Ground at TP05, further work will be required to make the site safe, for the proposed end use.

Laboratory data is contained within **Appendix C**.

5.1.1 Hydrocarbon Contamination

No contaminants were recorded at concentrations above their relevant GACs.

A trial pit, TP06, was excavated adjacent to the large tanks identified in the Phase I report. There was no visual or olfactory evidence of contamination. As these features were located outside the red line boundary and there was no evidence of contamination, the risk posed from these features is considered negligible.

5.1.2 Asbestos

Asbestos fibres were detected at one location, in TP04 within topsoil.

The asbestos was recorded as loose fibrous debris of chrysotile. A quantification put the concentration at 0.02%.

5.2 CONTROLLED WATERS

Groundwater was not recorded within trial pits.

Whilst contaminants have been identified within shallow soils which are elevated in respect to human health, these are not considered to pose a significant risk to controlled waters. Primarily this is due to the generally low leachability of PAHs, in addition to the reported presence of a cohesive sub strata beneath the site, which will act to limit vertical contaminant migration.

The risk posed to controlled waters from this proposed development is considered to be negligible.

6.0 PHASE II CONCEPTUAL SITE MODEL

6.1 SOURCE-PATHWAY-RECEPTOR

The conceptual model for the site considers the development proposal for a change of use from agricultural to residential with private gardens along with the preceding information.

The site's former uses as an active farm, along with neighbouring land uses are considered in light of contaminative sources.

Elevated concentrations of PAHs have been identified at TP05. In addition, asbestos fibres were present in TP04.
There is no evidence of historical leaking/spills from the tanks just off site and these are therefore not considered a significant risk.

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

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

Remediation is considered necessary at TP04 and TP05 in order to make the site safe for the proposed end use.

For the controlled waters environment, the primary receptors are the underlying Secondary A Aquifer (River Terrace Deposits).

The primary pathway for controlled waters is the leaching and vertical migration of potential contaminants through the vadose zone to the saturated zone.

Whilst contaminants have been identified within shallow soils which are elevated in respect to human health, these are not considered to pose a significant risk to controlled waters. Primarily this is due to the generally low leachability of PAHs, in addition to the reported presence of a cohesive sub strata, which will act to limit vertical contaminant migration.

Therefore, no remediation is considered necessary to protect controlled waters.

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

Figure 6.1: Phase II Conceptual Site Model

HUMAN HEALTH			
SOURCE	**PATHWAY**	**RECEPTOR**	**SOLUTION**
Asbestos fibres present in TP04 Localised presence of PAHs within shallow soils at TP05.	Indoor and outdoor inhalation of soil dust, the ingestion of, and dermal contact with, soil and soil dust, ingestion of vegetables that have taken up, soil attached to vegetables.	End Users (Residents).	Remediation required – It is recommended that at each identified location a hotspot removal exercise is undertaken to excavate and remove the contamination from site.
		Construction Workers.	
	Water pipes.	End Users (Residents).	Negligible risk – no further action required
CONTROLLED WATERS			
Localised presence of PAHs within shallow soils at TP05.	Leaching of contaminants and vertical migration to the saturated zone.	Secondary A Aquifer (River Terrace Deposits).	No further action required – see Section 5.2 for justification.

7.0 REMEDIATION STRATEGY AND RISK MANAGEMENT

Previous sections have quantified the risk posed to identified receptors, which in some instances, may require remediation to protect or reduce levels of risk. The following section details measures and recommendations for dealing with risks associated with soil and ground gas contamination in respect to the development proposal for a residential without produce end use.

7.1 REMEDIATION TO PROTECT END USERS

Remediation is required in the vicinity of TP04 and TP05 in order to protect the end user.

It is recommended this takes the form of a hotspot removal exercise.

Hotspot removal

A hotspot removal exercise could be undertaken to delineate and remove the impacted soils identified at TP04 and TP05.

This would take the form of an excavation approximately 3m x 3m, and 0.3m deep in TP04 and into natural strata at TP05.

Excavated material would need to be removed from site or placed under proposed roadways or building footprints.

Validation sampling would be necessary in each of the side walls and base to prove the contamination had been removed.

In accordance with Condition 6 of the Decision Notice for Application 23/02290/FUL, a Verification Report will need to be submitted to the LPA after the Remediation Strategy has been implemented.

7.2 REMEDIATION TO PROTECT CONTROLLED WATERS

No further work required.

7.3 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.

Construction workers should be briefed on the presence of asbestos fibres in TP04 and should adopt appropriate mitigation measures working in this area.

7.4 WASTE MANAGEMENT

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

However, it is considered unlikely that waste soils will attract a higher rate of landfill tax. A full waste classification should be undertaken in accordance to the Environment Agency's WM3 and advice sought from the proposed waste receiver.

7.5 UNFORESEEN CONTAMINATION

Should further, unforeseen contamination be identified during the site works, a qualified contaminated land specialist and the Local Planning Authority should be notified immediately. The appointed contaminated land specialist should be consulted to assess the risk posed to end users and the environment. This may include scheduling of additional samples for chemical screening and modification of this Remediation Strategy accordingly.

If at any point during intrusive groundworks at a site, evidence of unforeseen contamination is encountered in the form of significant noxious odours, discolouration, or instability within soil, or sheen/ discolouration in groundwater, the following actions should be taken:

- Intrusive works in the immediate area of the impacted ground will be suspended.
- The developer will contact the supervising contaminated land consultant in order that they can appropriately assess the situation and make arrangements to determine that action may be necessary. This may require revision to the Remediation Strategy.
- The supervising contaminated land consultant should assess whether it is necessary for them to attend the site to undertake visual inspection and obtain samples for field and/or laboratory analysis.
- Where a significant risk is identified, the relevant regulating bodies (e.g. the Local Authority) shall be informed of the situation and the action being taken.
- Once appropriate action has been agreed and undertaken, a written summary will be produced by the supervising contaminated land consultant for submission to the Local Authority in accordance with planning requirements. The submission will include details of work undertaken, analytical results of investigative and validation samples obtained, and conclusions and recommendations for any further actions considered necessary.
- In all cases, works on site should only recommence when the supervising contaminated land consultant considers it safe to do so.
- Where regulatory bodies have been involved, site works should only recommence following their agreement.

8.0 REMEDIATION VERIFICATION PLAN

In accordance with Condition 6 of the Decision Notice for Application 23/02290/FUL, a Verification Report will need to be submitted to the LPA after the Remediation Strategy has been implemented.

Information regarding the removal of contaminated land or made ground (such as waste tickets) shall be retained by the client and presented within the Verification Report where appropriate.

Where new soil is to be imported to the site, documented evidence that imported soil used for capping has been verified and is suitable for use should be submitted as part of the Verification Report to the Local Planning Authority (e.g. the results of chemical screening or validation sampling from the source).

Once the contamination has been removed, validation sampling will be necessary in each of the side walls and base to prove the contamination had been removed. Samples should be sent to an MCERTS/UKAS accredited laboratory for testing. The results of the testing and photographs of the contamination removal should be presented within a Verification Report to the Local Planning Authority.

9.0 RECOMMENDATIONS

Recommendations for further assessment of the site include:

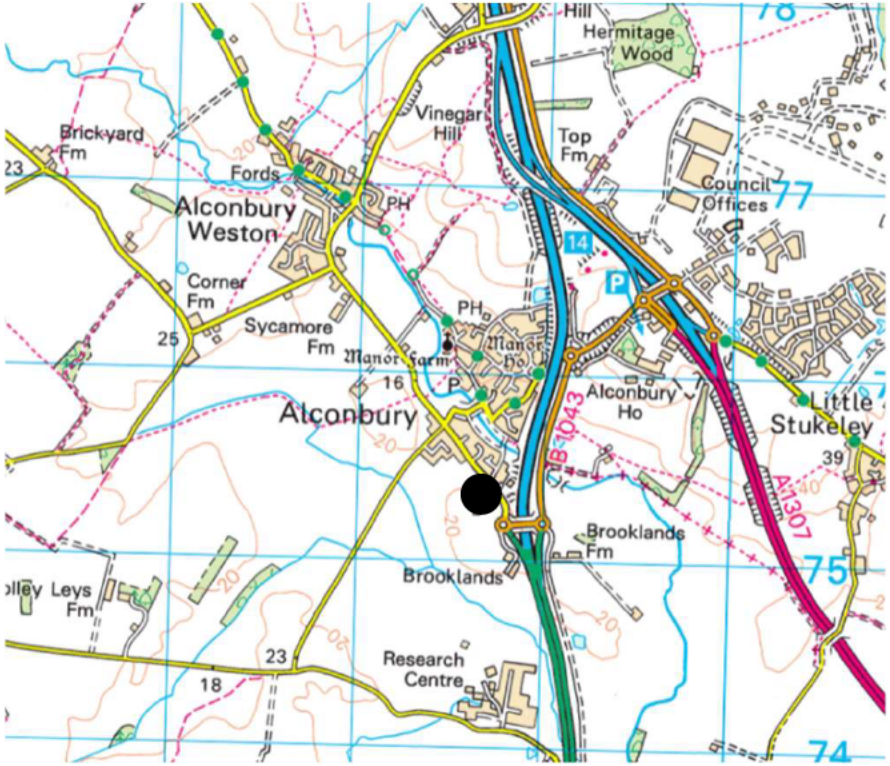
- Remedial measures are recommended in the vicinity of TP04 and TP05. A hotspot removal exercise is considered to be appropriate.

10.0 CONCLUSIONS

This Phase II geo-environmental assessment has illustrated that the proposed development of the site to a residential with produce end use poses a risk to end users of the site or environment, however, if the above remediation strategy and recommendations are followed the site can be made safe for the proposed use and end user.

Appendix A







KEY:

● Approximate Site Location

DO NOT SCALE

erda associates ltd

TITLE: Site Location Plan

PROJECT: Homefield Farm, Alconbury

PROJECT No:	DATE:
EAL.02.24	06/2024

SCALE :	DRAWN :	DWG No:
NTS		Figure 1



KEY:

Site Boundary

DO NOT SCALE

Erda Associates ltd

TITLE:

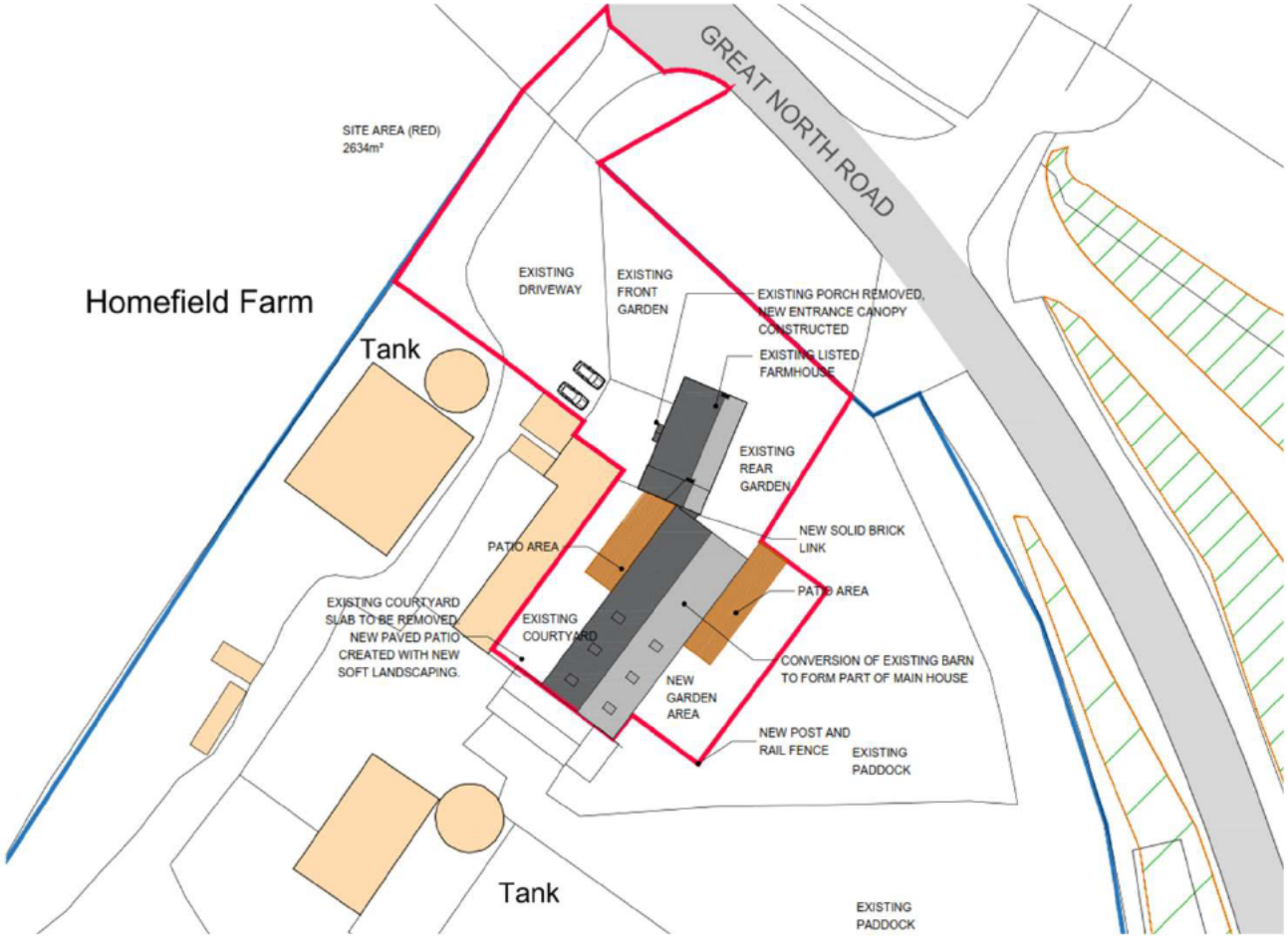
Site Layout

PROJECT:

Homefield Farm, Alconbury

PROJECT No:	DATE:
EAL.02.24	06/2024

SCALE :	DRAWN :	DWG No:
NTS		Figure 2



KEY:

DO NOT SCALE

Verda Associates ltd

TITLE:

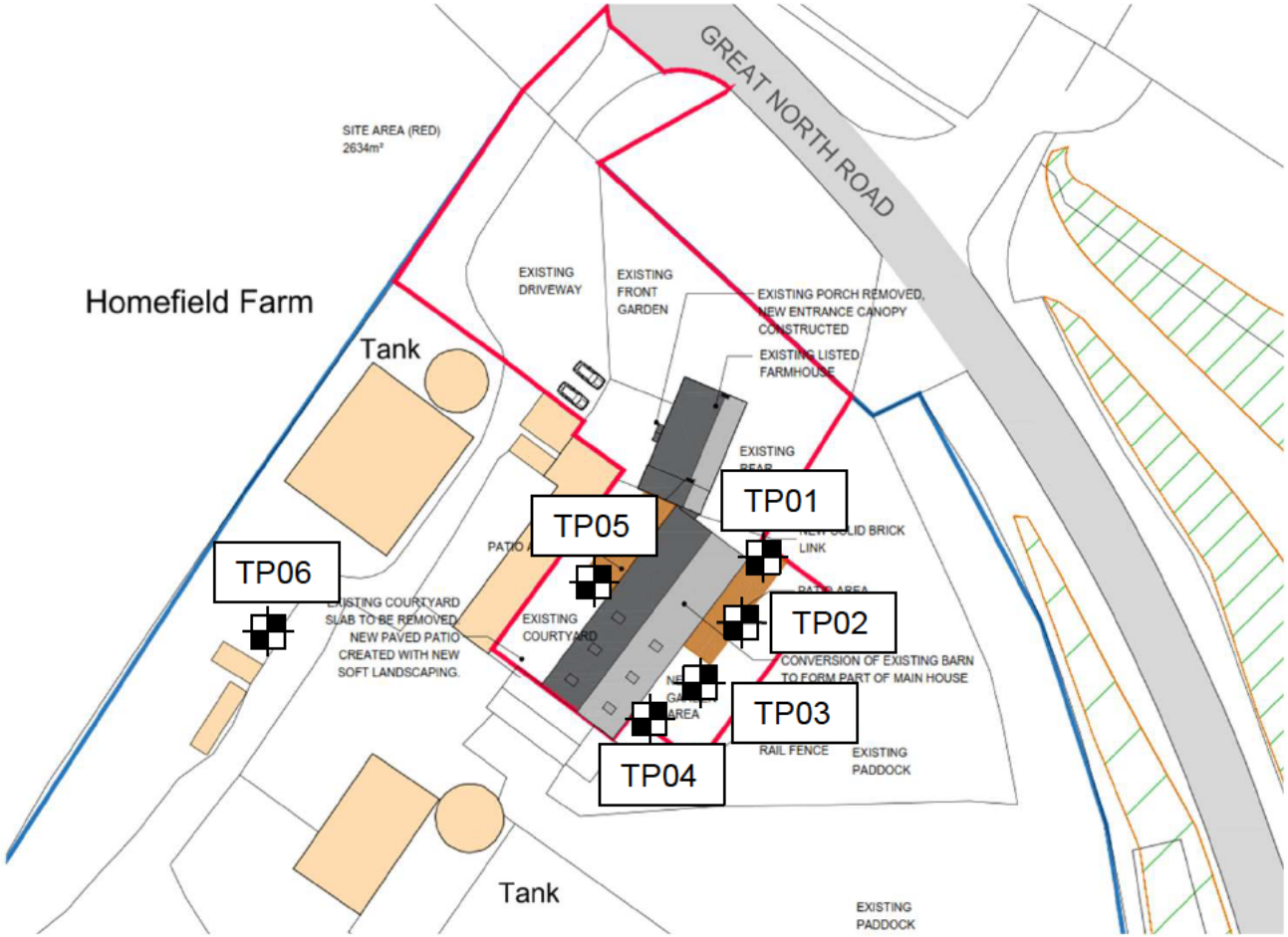
Development Proposal

PROJECT:

Homefield Farm, Alconbury

PROJECT No:	DATE:
EAL.02.24	06/2024

SCALE :	DRAWN :	DWG No:
NTS		Figure 3



KEY:

Trial Pit

DO NOT SCALE

Verda Associates ltd

TITLE:

Exploratory Hole Location Plan

PROJECT:

Homefield Farm, Alconbury

PROJECT No:	DATE:
EAL.02.24	06/2024

SCALE :	DRAWN :	DWG No:
NTS		Figure 4

Appendix B

Erda Associates ltd

Web
Email
Mob [redacted]

MS SARAH BRAWN

HOMEFIELD FARM, ALCONBURY

Date: 2nd May 2024

Plant: Hand excavated trial pits

BOREHOLE NO. **TP01**

Sheet No. 1 of 1

Job No. **EAL.02.24**

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	0.10 0.20 0.30		0.3	0.2	1	ES									
Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.40 0.50 0.60 0.70		0.4												
Hand excavated trial pit terminated	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														

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Erda Associates ltd

Web:
Email:
Mob: [redacted]

MS SARAH BRAWN

HOMEFIELD FARM, ALCONBURY

Date: 2nd May 2024

Plant: Hand excavated trial pits

BOREHOLE NO. **TP02**

Sheet No. 1 of 1

Job No. **EAL.02.24**

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	0.10 0.20 0.30		0.3												
Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.40 0.50 0.60 0.70 0.80		0.5	0.4	1	ES									
Hand excavated trial pit terminated	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													

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Web:
Email:
Mob:

Date: 2nd May 2024

BOREHOLE NO. **TP03**

MS SARAH BRAWN

Sheet No. 1 of 1

HOMEFIELD FARM, ALCONBURY

Plant: Hand excavated trial pits

Job No. **EAL.02.24**

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	0.10 0.20 0.30		0.3												
Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.40 0.50 0.60 0.70 0.80 0.90 1.00		0.7	0.5	1	ES									
Hand excavated trial pit terminated	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													

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Erda Associates ltd

Web:
Email:
Mob:

MS SARAH BRAWN

HOMEFIELD FARM, ALCONBURY

Date: 2nd May 2024

Plant: Hand excavated trial pits

BOREHOLE NO. **TP04**

Sheet No. 1 of 1

Job No. **EAL.02.24**

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	0.10 0.20 0.30		0.3	0.1	1	ES									
Brown slightly sandy gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.40 0.50 0.60 0.70 0.80		0.5												
Hand excavated trial pit terminated	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													

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Web:
Email:
Mob: [redacted]

Date: 2nd May 2024

BOREHOLE NO.
TP05

MS SARAH BRAWN

Sheet No. 1 of 1

HOMEFIELD FARM, ALCONBURY

Plant: Hand excavated trial pits

Job No.
EAL.02.24

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
CONCRETE	0.10		0.15												
MADE GROUND: Dark brown gravelly clay. Gravel is fine to coarse, angular to subangular whetstone, concrete and ash.	0.20 0.30 0.40 0.50		0.35	0.2	1	ES									
Brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.60 0.70		0.2												
Hand excavated trial pit terminated	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														

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Erda Associates ltd

Web:
Email:
Mob:

MS SARAH BRAWN

HOMEFIELD FARM, ALCONBURY

Date: 2nd May 2024

Plant: Hand excavated trial pits

BOREHOLE NO. **TP06**

Sheet No. 1 of 1

Job No. **EAL.02.24**

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: Topsoil with rare brick fragments.	0.10 0.20 0.30		0.3												
Brown slightly sandy gravelly CLAY. Gravel is fine to coarse, rounded to subrounded quartzite.	0.40 0.50		0.2												
Hand excavated trial pit terminated	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														

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. Trial pit backfilled with arisings
2. Groundwater not encountered

Logged By:	Checked By:	Date	Scale
DW	DW	05.06.2024	NTS

Appendix C

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

e: p.devitt@erda-ltd.co.uk

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

Analytical Report Number : 24-017816

Replaces Analytical Report Number: 24-017816, issue no. 1
Additional analysis undertaken.
Asbestos Quantification added to sample 189343 as per client's request.

Project / Site name:	Homefield Farm Alconbury	**Samples received on:**	03/05/2024
Your job number:	EAL-02-24	**Samples instructed on/ Analysis started on:**	03/05/2024
Your order number:	EAL-02-24	**Analysis completed by:**	11/05/2024
Report Issue Number:	2	**Report issued on:**	21/05/2024
Samples Analysed:	5 soil samples		

[redacted]
Signed:

[redacted]
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 24-017816
Project / Site name: Homefield Farm Alconbury
Your Order No: EAL-02-24

Lab Sample Number				189340	189341	189342	189343	189344
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	0.50	0.10	0.20
Date Sampled				02/05/2024	02/05/2024	02/05/2024	02/05/2024	02/05/2024
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	14	13	13	18	22
Total mass of sample received	kg	0.1	NONE	0.4	0.7	0.6	0.7	0.4
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	MJN	MJN	MJN	MJN	MJN
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	-	-	-	0.002	-
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	-	Loose Fibrous Debris	-
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	6.7	7.1	7.9	7.9	11
Total Sulphate as SO_4	mg/kg	50	MCERTS	560	300	420	990	3800
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	7.9	18	30	88	380
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	3.97	8.8	15.2	44	189
Organic Matter (automated)	%	0.1	MCERTS	3.8	2.1	2.9	10	5.7
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.14
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	0.09	0.12	0.1
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.09	0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.19	< 0.05	0.66	1.3	0.77
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05	0.21	0.1
Fluoranthene	mg/kg	0.05	MCERTS	0.36	< 0.05	0.66	1.8	1.9
Pyrene	mg/kg	0.05	MCERTS	0.29	< 0.05	0.51	1.6	1.7
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.1	< 0.05	0.14	0.82	0.99
Chrysene	mg/kg	0.05	MCERTS	0.16	< 0.05	0.27	0.92	1.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.17	< 0.05	0.24	1.1	1.8
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	0.1	0.34	0.7
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.12	< 0.05	0.17	0.79	0.94
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	< 0.05	0.13	0.47	0.83
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.34
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.11	< 0.05	0.16	0.52	0.95
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	1.66	< 0.80	3.18	9.99	12.4

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-017816
Project / Site name: Homefield Farm Alconbury
Your Order No: EAL-02-24

Lab Sample Number				189340	189341	189342	189343	189344
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	0.50	0.10	0.20
Date Sampled				02/05/2024	02/05/2024	02/05/2024	02/05/2024	02/05/2024
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	21	23	18	15	16
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
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	28	32	28	24	27
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	17	17	23	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	20	28	59	32
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	27	33	27	22	20
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	53	58	48	43	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	87	89	150	400
Petroleum Hydrocarbons								
TPHCWG - Aliphatic >C5 - C6 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	-	-	-	< 0.020
TPHCWG - Aliphatic >C6 - C8 HS_1D_AL	mg/kg	0.02	NONE	< 0.020	-	-	-	< 0.020
TPHCWG - Aliphatic >C8 - C10 HS_1D_AL	mg/kg	0.05	NONE	< 0.050	-	-	-	< 0.050
TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL	mg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL	mg/kg	2	MCERTS	< 2.0	-	-	-	< 2.0
TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-	-	-	< 8.0
TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL	mg/kg	8	MCERTS	< 8.0	-	-	-	48
TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL	mg/kg	10	NONE	< 10	-	-	-	48
TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	-	-	-	< 0.010
TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR	mg/kg	0.01	NONE	< 0.010	-	-	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR	mg/kg	0.05	NONE	< 0.050	-	-	-	< 0.050
TPHCWG - Aromatic >EC10 - EC12 EH_CU_1D_AR	mg/kg	1	MCERTS	< 1.0	-	-	-	1.3
TPHCWG - Aromatic >EC12 - EC16 EH_CU_1D_AR	mg/kg	2	MCERTS	< 2.0	-	-	-	3.8
TPHCWG - Aromatic >EC16 - EC21 EH_CU_1D_AR	mg/kg	10	MCERTS	< 10	-	-	-	11
TPHCWG - Aromatic >EC21 - EC35 EH_CU_1D_AR	mg/kg	10	MCERTS	12	-	-	-	41
TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR	mg/kg	10	NONE	12	-	-	-	58
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

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The results included within the report relate only to the sample(s) submitted for testing.

4041

Analytical Report Number: 24-017816
Project / Site name: Homefield Farm Alconbury
Your Order No: EAL-02-24

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
189343	TP4	0.10	111	Loose Fibrous Debris	**Chrysotile**	0.002	**0.002**

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

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 24-017816
Project / Site name: Homefield Farm Alconbury

* 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 *
189340	TP1	None Supplied	0.2	Brown loam and clay with gravel and vegetation
189341	TP2	None Supplied	0.4	Brown loam and clay with gravel and vegetation
189342	TP3	None Supplied	0.5	Brown loam and clay with gravel and vegetation
189343	TP4	None Supplied	0.1	Brown loam and clay with gravel and vegetation
189344	TP5	None Supplied	0.2	Brown loam and clay with rubble and vegetation

Analytical Report Number : 24-017816
Project / Site name: Homefield Farm Alconbury

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 SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
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 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 24-017816
Project / Site name: Homefield Farm Alconbury

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

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:

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* 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:

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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.