



Main Investigation Report

at
**St Crispin's Church Hall, Church Place, Pulborough,
West Sussex RH20 1AF**

for
Chartwood Homes

**Reference: 22384/MIR Rev1.0
May 2026**

Control Document

Project

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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.



Commission

This document comprises the Main Investigation Report (MIR) and incorporates the results, discussion, and conclusions to this intrusive works. General site data is recorded below:

Commission Record	
Client	Chartwood Homes
Site Name	St Crispin's Church Hall, Church Place, Pulborough, West Sussex RH20 1AF
Grid Reference	TQ 04661 18876
Soils Limited Quotation Ref	Q31077 dated 3 rd March 2026
Clients Purchase Order	Q31077 dated 19 th March 2026

The record of revision to this document is presented below:

Record Of Revisions		
Revision	Date	Reason
1.0	May 2026	Original to the Client

Note(s): The latest revised document supersedes all previous revisions of the MIR produced by Soils Limited.

Documents associated with this development that must be referred to are given below.

Record Of Associated Documents			
Reference	Type	Date	Creator
18171/DS Rev1.0	Desk Study	March 2022	Soils Limited

Limitations and Disclaimers

The report was prepared solely for the brief described in our quotation and Section 1.1 of this report. We disclaim any responsibility to the Client and others in respect of any matters outside the scope of our engagement.

We have exercised all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Conditions of Contract of Business and taking into account the resources devoted to us by agreement with the Client.

This report is a snapshot of the site and conditions taken only at the time of our investigation works and described in our reporting. The ground is a product of continuing natural and artificial processes, and has variation by depth and location that cannot be determined absolutely. While a ground investigation will aim to understand and mitigate, risk cannot be eliminated.

Current regulations and good practice were used in the preparation of this report. Consideration of any subsequent changes to regulations or practice that may have occurred following issue of this report is the responsibility of the user.

If the term "competent person" is used in this report or any Soils Limited document, it means an engineering geologist or civil engineer with a minimum of three years post graduate experience in the understanding and application of the appropriate codes of practice.

Unless the site investigation works have been designed and specified in accordance with EC7, this report is not a Ground Investigation Report as defined by Eurocode 7.

Any reference to ground level relates to the site level at the time of the investigation, unless otherwise stated. Ground elevations and coordinates are only provided when this forms part of our engagement.

A survey of the possible presence or absence of invasive species including Japanese Knotweed is outside the scope of this investigation.

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Contents

Commission	i
Limitations and Disclaimers.....	i
Section 1 Introduction.....	1
1.1 Objective of Investigation	1
1.2 Site Description.....	1
1.3 Proposed Development	1
1.4 Anticipated Geology.....	2
1.4.1 Head.....	2
1.4.2 Fittleworth Member	2
Section 2 Site Works.....	3
2.1 Proposed Project Works	3
2.1.1 Actual Project Works.....	3
2.2 Ground Conditions	3
2.3 Ground Conditions Encountered in Exploratory Holes	5
2.3.1 Made Ground/Topsoil	5
2.3.2 Head.....	5
2.3.3 Fittleworth Member	6
2.4 Roots	6
2.5 Groundwater	7
Section 3 Geotechnical In-Situ and Laboratory Testing.....	8
3.1 Dynamic Probe Tests.....	8
3.2 Infiltration Tests	8
3.3 Atterberg Limit Tests.....	9
3.4 Particle Size Distribution Tests	9
3.5 Sulphate and pH Tests	9
Section 4 Engineering Appraisal.....	10
4.1 Established Ground Conditions.....	10
4.1.1 Made Ground and Topsoil	10
4.1.2 Head.....	10
4.1.3 Fittleworth Member	10
4.1.4 Guidance on Shrinkable Soils.....	11
4.1.5 Groundwater	11

Section 5	Foundation Scheme	12
5.1	Foundation Recommendations	12
5.1.1	Shallow Foundations into Fittleworth Member	12
5.2	Subsurface Concrete	13
5.3	Excavations	14
Section 6	Site Drainage	15
6.1	Soakaways	15
Section 7	Determination of Chemical Analysis	16
7.1	Site Characterisation and Revised Conceptual Site Model	16
7.2	Soil Sampling	16
7.3	Determination of Chemical Analysis	16
Section 8	Qualitative Risk Assessment	18
8.1	Assessment Criteria	18
8.2	Representative Contamination Criteria - Soil	18
8.2.1	Risk Assessment – Made Ground/Topsoil	18
8.2.2	Risk Assessment – Head	19
8.3	Asbestos	19
8.4	Risk to Controlled Waters	19
8.5	Risk from Ground Gas Ingression	20
8.5.1	Radon	20
8.6	Generic Quantitative Risk Assessment	20
8.6.1	Soils	20
8.6.2	Controlled Waters	20
8.6.3	Ground Gas	20
8.7	Recommendations	21
8.8	Protection of Services	21
8.9	Duty of Care	21
8.10	Excavated Material	21
8.11	HazWasteOnline	21
8.12	Re-use of Excavated Material On-site	21
8.13	Imported Material	22
8.14	Discovery Strategy	22

List of Figures

Figure 1 – Site Location Map	24
Figure 2 – Aerial Photograph	25
Figure 3 – Exploratory Hole Plan	26

List of Tables

Table 2.1 Final Depth of Exploratory Holes.....	4
Table 2.2 Ground Conditions	4
Table 2.3 Established Depth of Made Ground/Topsoil	5
Table 2.4 Established Depth of Head.....	6
Table 2.5 Established Depth of Fittleworth Member.....	6
Table 2.6 Established Depth of Root Penetration	7
Table 3.1 Hammer Efficiency	8
Table 3.2 Inferred SPT Interpretation.....	8
Table 3.3 Test Records.....	8
Table 3.4 Atterberg Limit Results Classification	9
Table 3.5 Particle Size Distribution Classification	9
Table 3.6 Sulphate and pH Test Results.....	9
Table 4.1 Established Volume Change Potential by Strata	11
Table 5.1 Allowable Bearing Capacities in the Granular Soils of the Fittleworth Member	13
Table 5.2 Concrete Classification.....	14
Table 7.1 Chemical Analyses Suites - Soil.....	16
Table 8.1 Summary of GAC Exceedances – Made Ground/Topsoil.....	18
Table C.1.1 SPT "N" Blow Count Cohesive Classification	
Table C.1.2 SPT "N" Blow Count Granular Classification	
Table C.2.1 Interpretation of DPSH Blow Counts	
Table C.2.2 Interpretation of Atterberg Limit Tests	
Table C.2.3 Interpretation of PSD Tests	
Table D.1.1 CSM Revised Pre-Chemical Analyses	
Table D.1.2 CSM Revised Post-Chemical Analyses	

List of Appendices

Appendix A Standards and Resources

Appendix B Field Work

Appendix B.1 Engineers Logs

Appendix C Geotechnical In-Situ and Laboratory Testing

Appendix C.1 Classification

Appendix C.2 Interpretation

Appendix C.3 Geotechnical In-Situ and Laboratory Results

Appendix D Chemical Laboratory Analyses

Appendix D.1 Conceptual Site Model

Appendix D.2 Chemical Laboratory Results

Appendix D.3 General Assessment Criteria

Appendix E Information Provided by the Client

Section I Introduction

1.1 Objective of Investigation

The Client commissioned Soils Limited to undertake an intrusive ground investigation and to prepare a Main Investigation Report to supply the Client and their designers with information regarding ground conditions, to assist in preparing a foundation scheme for development that was appropriate to the settings present on the site.

The investigation was made by means of in-situ testing and geotechnical laboratory testing undertaken on soil samples taken from the exploratory holes.

Soil samples were to be taken for chemical laboratory testing to enable recommendations for the safe redevelopment of the site and the protection of site workers, end-users and the public from any contamination identified as dictated by the Conceptual Site Model (CSM) in the Preliminary Investigation Report undertaken for the site by Albury S.I. Ltd (report ref: 21/12217/KJC dated October 2021) and/or the Revised Conceptual Site Model presented in Appendix D.1.

1.2 Site Description

At the time of the investigation, the site comprised the former Roman Catholic Church and associated access road, parking areas and soft landscaping. The site was generally sloped toward the north/northwest at a gradient of circa 4-6°. Densely populated mature trees were noted to the north/northwest, northeast and hedgerows were noted to the southern inside borders of the site. Sporadic mature trees were noted to the eastern inside border.

There was a residential property to the northeast with other residential properties to the east, south and west. A railway line was present within a cutting on the northwest boundary and Church Place was present to the south/southeast. The wider site was generally sloping down towards north/northwest at a gradient of circa 4-6°. Semi/mature trees were noted in private gardens and open fields.

The topographical survey supplied by the Client's representative indicated that levels reduce from 22.16mOD in the southeast corner to 17.49mOD in the northwest of the site.

The site location plan is given in Figure 1. An aerial photograph of the site and its close environs has been included in

Figure 2.

1.3 Proposed Development

The proposed comprises the demolition of the existing structures and the construction of seven new dwellings including terraced and detached houses with associated private gardens and parking areas.

In compiling this report reliance was placed on the documents listed in the Record Of Associated Documents. The recommendations provided within this report are made exclusively in relation to the scheme outlined above, and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

Development plans provided by the Client are presented in Appendix E.

1.4 Anticipated Geology

The 1:50,000 BGS map showed the site to be located upon the bedrock Fittleworth Member with overlying superficial deposits of Head.

1.4.1 Head

Head deposit are drifts produced by solifluxion, the downslope movement of debris outwash during the periglacial period, and characteristically comprise poorly sorted sands gravels and soils of local derivation.

1.4.2 Fittleworth Member

Glaucinitic sandy clays and clayey sands: orange-brown where weathered; bright green where unweathered. The lower boundary is marked by the incoming of conspicuous glauconitic clayey sands and sandy clays on fine-grained to medium-grained "Bargate Beds" (now Eastbourne Member) where present.

In the area from Stedham to Storrington the upper boundary is marked by the change from glauconitic sandy clay and clayey sand upwards into fine-grained well-sorted sands of the Pulborough Sandrock.

Section 2 Site Works

2.1 Proposed Project Works

The proposed intrusive investigation was designed to provide information on the ground conditions and to aid the design of foundations for the proposed residential development. The intended investigation, as outlined within the Soils Limited quotation (Q31077 dated 3rd March 2026), was to comprise the following items:

- All exploratory holes were scanned with a Cable Avoidance Tool (CAT) and Genny prior to excavation
- 4No. (up to) 4m deep windowless sampler boreholes
- 4No. (up to) 6m deep dynamic probe DPSH
- 2-3No. machine excavated trial pits and infiltration tests
- Geotechnical laboratory testing
- General suite of contamination soils laboratory testing

2.1.1 Actual Project Works

The actual project works were undertaken on 14th to 15th April 2026, with subsequent sample logging, laboratory testing, and reporting. The actual works comprised:

- All exploratory holes were scanned with a Cable Avoidance Tool (CAT) and Genny prior to excavation
- 4No. 4.00m deep windowless sampler boreholes (WS1 to WS4)
- 4No. 6.00m deep dynamic probe DPSH (DP1 to DP4)
- 3No. 2.50m deep machine excavated trial pits and infiltration tests (TPSK1 to TPSK3)
- Geotechnical laboratory testing
- General suite of contamination soils laboratory testing

All boreholes and trial pits were backfilled with gravel and arisings.

All exploratory hole locations have been presented in Figure 3.

Following completion of site works, soil samples were logged, sub-sampled and sent to the laboratory for both contamination and geotechnical testing.

2.2 Ground Conditions

On 14th April 2026, three infiltration trial pits (TPSK1 to TPSK3) were machine excavated to a depth of 2.50m bgl.

On 15th April 2026, four windowless sampler boreholes (WS1 – WS4) were drilled, using a Premier Compact 110 rig, to a maximum depth of 4.00m below ground level (bgl) at locations selected by Soils Limited using a development plan provided by the Client.

Four super heavy dynamic probes, (DP1 – DP4) were driven prior and adjacent to their corresponding windowless sampler borehole to a maximum depth of 6.00m bgl.

The maximum depths of exploratory holes have been included in Table 2.1.

Table 2.1 Final Depth of Exploratory Holes

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
TPSK1	2.50	WS/DPI	4.00/6.00
TPSK2	2.50	WS/DP2	4.00/6.00
TPSK3	2.50	WS/DP3	4.00/6.00
		WS/DP4	4.00/6.00

Note(s): The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

The soil conditions encountered were recorded and soil sampling commensurate with the purposes of the investigation was carried out. The depths given on the exploratory hole logs and quoted in this report were measured from ground level.

For more complete information about the soils encountered within the general area of the site reference must be made to the detailed records given within Appendix B, but for the purposes of discussion, the succession of conditions encountered in the exploratory holes in descending order can be summarised as:

Made Ground (MG)
Head (HEAD)
Fittleworth Member (FIB)

The ground conditions encountered in the exploratory holes are summarised in Table 2.2.

Table 2.2 Ground Conditions

Strata	Depth Encountered (m bgl)		Typical Thickness (m)	Typical Description
	Top	Bottom		
TS	G.L.	0.25-0.45	0.36	Very soft, dark brown slightly gravelly sandy SILT/CLAY.
MG		0.45-0.50	0.48	Black, yellowish brown mottled brown clayey sandy GRAVEL, with flint and tarmacadam.
HEAD	0.25-0.50	1.30-2.50 ^{1,2}	1.79	Interbedded Very soft, dark brown to dark orangish brown, slightly sandy slightly gravelly SILT/CLAY. Greenish brown, yellowish brown mottled light brown, very clayey SAND/GRAVEL.
FIB	1.30-2.50 ^{1,2}	2.40-4.00 (6.00) ^{1,2,3}	Not Proven ²	Interbedded Very soft dark orangish brown to greenish grey with depth, sandy silty CLAY Light brown, orangish brown multicoloured with depth, clayey to very clayey SAND.

Note(s): ¹ Final depth of exploratory hole. ² Base of strata not encountered. ³ inferred by dynamic probing. The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

The soils encountered from immediately below ground surface have been described in the following manner. Where the soil incorporated an organic content such as either decomposing leaf litter or roots or has been identified as part of the in-situ weathering profile, it has been described as Topsoil both on the logs and within this report. Where man has clearly either placed the soil, or the composition altered, with say greater than an estimated 5% of a non-natural constituent, it has been referred to as Made Ground both on the log and within this report.

2.3 Ground Conditions Encountered in Exploratory Holes

The ground conditions encountered in exploratory holes have been described below in descending order. The engineering logs are presented in Appendix B.1.

2.3.1 Made Ground/Topsoil

Soils described as Made Ground were encountered in two out of the seven exploratory holes from ground level to depths ranging between 0.45m and 0.50m bgl.

The Made Ground typically comprised black, yellowish brown mottled brown clayey sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint and tarmacadam. Sand is fine to coarse. Brick and bituminous material in sand and gravel sized particles. Tarmacadam from ground level to up to 0.20m bgl.

Soils described as Topsoil were encountered in five out of seven exploratory holes from ground level to depths ranging between 0.25m and 0.45m bgl.

The Topsoil typically comprised very soft, dark brown slightly gravelly sandy SILT/CLAY. Gravel is subrounded to subangular fine to coarse flint. Sand is medium. Frequent roots and rootlets. Frequent twigs.

The established depth of Made Ground and Topsoil found at each exploratory hole location has been included in Table 2.3.

Table 2.3 Established Depth of Made Ground/Topsoil

Exploratory Hole	Stratum	Depth (m bgl)
TPSK1	TS	0.45
TPSK2	TS	0.42
TPSK3	TS	0.40
WS/DPI	MG	0.50
WS/DP2	TS	0.45
WS/DP3	TS	0.25
WS/DP4	MG	0.45

Note(s): The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

2.3.2 Head

Soils described as Head were encountered in all exploratory holes from beneath the Made Ground/Topsoil to depths ranging between 1.30m (WS2) and 2.40m bgl (WS3), where proven.

The Head typically comprised interbedded cohesive and granular soils comprising:

Very soft, dark brown to dark orangish brown, slightly sandy slightly gravelly SILT/CLAY. Sand is medium. Gravel is sub rounded to angular fine to medium flint. Frequent rootlets. Frequent organic staining and greenish brown, yellowish brown mottled light brown, very clayey SAND/GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse.

The established depth of Head found at each exploratory hole location has been included in Table 2.4.

Table 2.4 Established Depth of Head

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
TPSK1	2.50 ¹	WS/DP1	2.10
TPSK2	2.50 ¹	WS/DP2	1.30
TPSK3	2.50 ¹	WS/DP3	2.40
		WS/DP4	2.00

Note(s): ¹ Final depth of exploratory hole. The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

2.3.3 Fittleworth Member

Soils described as Fittleworth Member were encountered in all exploratory holes from beneath the Head to a depth of 4.00m bgl in the window sampler boreholes and inferred to a maximum depth of 6.00m bgl in the dynamic probes.

The Fittleworth Member typically comprised interbedded cohesive and granular soils comprising:

Very soft dark orangish brown to greenish grey with depth, sandy silty CLAY. Sand is medium. Frequent rootlets. Frequent organic staining and light brown, orangish brown multicoloured with depth, clayey to very clayey SAND. Sand is fine to medium. Occasional clay lenses. Rare rootlets.

The established depth of Fittleworth Member found at each exploratory hole location has been included in Table 2.5.

Table 2.5 Established Depth of Fittleworth Member

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
WS/DP1	4.00 ¹ /6.00 ^{1,2}	WS/DP3	4.00 ¹ /6.00 ^{1,2}
WS/DP2	4.00 ¹ /6.00 ^{1,2}	WS/DP4	4.00 ¹ /6.00 ^{1,2}

Note(s): ¹ Final depth of exploratory hole. ² inferred by dynamic probing. The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

2.4 Roots

Live roots were encountered in all exploratory holes at depths ranging between 1.20m and 3.85m bgl, as detailed in Table 2.6.

Table 2.6 Established Depth of Root Penetration

Exploratory Hole	Depth (m bgl)	Exploratory Hole	Depth (m bgl)
TPSK1	1.50	WS1	2.10
TPSK2	1.40	WS2	2.85
TPSK3	1.40	WS3	1.20
		WS4	3.85

Note(s): The depths given were taken from the ground level adjacent to each exploratory hole at the time of investigation.

Roots were recorded on windowless sampler logs, based on observations from the soil cores. Windowless sampling can identify the presence of roots at depth but provides localised information only. Trial pits allow broader visual assessment of root distribution, orientation and condition. Logging the faces of a supported excavation would give more information than can be obtained from arisings.

Root condition (e.g. live, desiccated or decayed) was assessed visually at the time of logging by the geotechnical engineer. This assessment is indicative and definitive confirmation of root viability can only be achieved through specialist arboricultural assessment.

With reference to Google Earth™ for the past 20 years, densely populated mature trees were noted to the north/northwest, northeast and hedgerows were noted to the southern inside borders of the site. Sporadic mature trees were noted to the eastern inside border.

2.5 Groundwater

No groundwater was encountered within all exploratory holes.

Changes in groundwater level occur for reasons including seasonal effects and variations in drainage. The investigation was conducted in April (2026), when groundwater levels should be falling from their annual maximum (highest) elevation, which typically occurs around March to the annual minimum (lowest) which typically occurs around September.

The topographical survey supplied by the Client's representative indicated that levels reduce from 22.16mOD in the southeast corner to 17.49mOD in the northwest of the site.

The northern part of the site was underlain by a Secondary Undifferentiated aquifer associated with the underlying Head. The Fittleworth Formation at depth was classed as a Secondary A aquifer. However, the site was not underlain by a drinking water Source Protection Zone (SPZ).

There were no abstraction points within 500m of the site. The nearest abstraction point was for surface water 676m northeast of the site at New Place Farm Reservoir. The nearest surface water feature was an inland river 60m northeast and the associated lake.

Groundwater equilibrium conditions may only be conclusively established, if a series of observations are made via groundwater monitoring wells.

Section 3 Geotechnical In-Situ and Laboratory Testing

3.1 Dynamic Probe Tests

The results were converted to equivalent SPT “N60” values based on dynamic energy using commercial computer software (Geostru). Interpretation based on the classifications outlined in Appendix C.1, Table C.1.1 to C.1.2

Table 3.1 Hammer Efficiency

Rig Reference	Energy Ratio Er (%)
Premier 2	82.62

Table 3.2 Inferred SPT Interpretation

Strata	Depth Range (m bgl)	Inferred N60 Range	Soil Classification
Head	0.50-2.40	0-12	Extremely low to medium ($C_u = <10 - 60\text{kPa}$)
FIB (c)	2.80-4.00 3.10-4.00	8-31	Medium to very high ($C_u = 40 - 155\text{kPa}$)
FIB (g)	2.10-3.90 1.30-2.80 2.40-3.10 2.00-4.00	4-39	Very loose to dense

Note(s): SPT “N60” values presented have been corrected in accordance with BS EN 22476 Part 3.

The blow counts in each soil type generally increased with depth.

A full interpretation of the DPSH tests, are outlined in Appendix A.1, Table C.2.1.

3.2 Infiltration Tests

Infiltration testing was undertaken in TPSK1 to TPSK3 within soils of the Head following the principles of BRE Digest 365 Soakaway Design: 2016.

Test records are given in Table 3.3.

Table 3.3 Test Records

Exploratory Hole	Pit Depth (m bgl)	Test Cycle	Water Depth (m bgl)		Duration (mins)	Infiltration Rate (m/sec)
			Start	End		
TPSK1	2.50	I	0.88	0.96	289	Insufficient head loss to calculate
TPSK2	2.50	I	0.92	1.24	294	
TPSK3	2.50	I	1.03	1.09	286	

Notes: Invert level was taken at the water depths at the start of the test. Soakaway performance would be impacted by slow infiltration

3.3 Atterberg Limit Tests

Atterberg Limit tests were performed on two samples from the cohesive soils of the Head. The results were classified in accordance with BRE Digest 240 and NHBC Standards Chapter 4.2.

Table 3.4 Atterberg Limit Results Classification

Strata	Depth (m bgl)	Volume Change Potential	
		NHBC	BRE 240
HEAD	1.40-1.80	Low	Low

Details are given in Table C.2.2, Appendix A.1 and the laboratory report in Appendix C.3.

3.4 Particle Size Distribution Tests

Particle Size Distribution (PSD) tests were performed on three samples from the granular soils of the Fittleworth Member and Head.

Table 3.5 Particle Size Distribution Classification

Strata	Depth (m bgl)	Volume Change Potential	
		NHBC	BRE 240
HEAD	0.60	Yes	Yes
FIB (g)	2.80-2.90	No	Yes

Note: g – granular soils

Note that a cohesive soil is only classified as having a volume change potential if it is also plastic and an Atterberg Limit test can be conducted on the strata.

A full interpretation of the PSD tests is given in Table C.2.3, Appendix A.1 and the laboratory report in Appendix C.3.

3.5 Sulphate and pH Tests

Water soluble sulphate (2:1) and pH testing was undertaken on three samples in accordance with Building Research Establishment Special Digest 1, 2005, 'Concrete in Aggressive Ground'.

Table 3.6 Sulphate and pH Test Results

Strata	Depth (m bgl)	Sulphate Concentration (mg/l)	pH
HEAD	1.30	49	6.7
FIB	2.20-3.30	<10-34	5.7-6.6

The significance of the sulphate and pH Test results are discussed in Section 5.2 and the laboratory report in Appendix C.3.

Section 4 Engineering Appraisal

4.1 Established Ground Conditions

An engineering appraisal of the soil types encountered during the site investigation and likely to be encountered during the redevelopment of this site is presented. Soil descriptions are based on analysis of disturbed samples taken from the exploratory holes.

4.1.1 Made Ground and Topsoil

Soils described as Topsoil were encountered in two out of seven exploratory holes from ground level to depths ranging between 0.25m and 0.45m bgl.

Soils described as Made Ground were encountered in two out of the seven exploratory holes from ground level to depths ranging between 0.45m and 0.50m bgl.

Foundations must not be placed on non-engineered fill unless such use can be justified on the basis of a thorough ground investigation and detailed design. Foundations must be taken through any Topsoil and/or Made Ground and either into, or onto a suitable underlying natural stratum of adequate bearing characteristics.

4.1.2 Head

Soils described as Head were encountered in all exploratory holes from beneath Made Ground/Topsoil to depths ranging between 1.30m (WS2) and 2.40m bgl (WS3), where proven.

Soils of the Head are granular soils interbedded with normally consolidated cohesive and as such are expected to display low to moderate bearing capacities with moderate to high settlement characteristics. The soils of the Head were not considered a suitable bearing stratum for the proposed development due to variations both in composition and depositional thickness.

4.1.3 Fittleworth Member

Soils described as the Fittleworth Member were encountered in all exploratory holes from underneath the Head to a maximum inferred depth of 6.00m bgl.

The Fittleworth Member was encountered from approximately 1.30m to 4.00m bgl, and inferred to 6.00m bgl. The cohesive soils of the Fittleworth Member recorded blow counts ranging from 8 to 31 which were interpreted as medium to very high strength. And the granular soils of the Fittleworth Member recorded blow counts ranging from 4 to 39 which were interpreted as very loose to dense.

For lightly loaded structures, shallow foundations may be feasible where designed using low allowable bearing pressures and with settlements checked and shown to be acceptable. For more heavily loaded or settlement-sensitive structures deep foundations will be required to transfer loads to more competent material.

4.1.4 Guidance on Shrinkable Soils

The ground conditions were established as Head, overlying bedrock of the Fittleworth Member.

The volume change potential for the strata was established and presented in Table 4.1.

Table 4.1 Established Volume Change Potential by Strata

Strata	Volume Change Potential		Established Lower Boundary (m bgl)
	BRE	NHBC	
HEAD	Yes	Yes	1.79 where proven
FIB(g)	No	No	2.80-2.90 where proven

Note: g - granular

The Head recorded low volume-change potential.

Particle size distribution (PSD) testing assessed the granular soils of the Fittleworth Member to have no volume-change potential. For a cohesive soil to have a volume change potential it must have greater than 35% of the volume of soil considered, usually up to 3.5m bgl. The Fittleworth Member was shown to have a combined clay and silt content was of approximately 20%, which is below the 35%, as defined by the NHBC. The Fittleworth Member may be considered as having no volume change potential.

4.1.5 Groundwater

No groundwater was encountered within all exploratory holes.

Section 5 Foundation Scheme

5.1 Foundation Recommendations

Foundations **must not** be constructed within any Made Ground/Topsoil or Head due to the likely variability and potential for large load induced settlements both total and differential.

Live roots were encountered in all exploratory holes at depths ranging between 1.20m (WS3) and 3.85m (WS4) bgl. If roots are encountered during the construction phase foundations **must not be placed within any live root penetrated or desiccated cohesive soils or those with a volume change potential**. Should the foundation excavations reveal such materials, the excavations **must** be extended to greater depth in order to bypass these unsuitable soils. Excavations must be checked by a suitable person prior to concrete being poured.

The site can be separated into two distinct zones. The southern portion, including the church building and the adjacent open ground, is suitable for a conventional shallow foundation solution. In contrast, the northern third of the site comprises densely wooded terrain, where the removal of mature trees and excavation of root bowls would significantly disturb the ground to depth. As such, this area is not appropriate for shallow foundations.

Given the proposed development layout, shallow foundations should therefore be restricted to the church and road-side areas only, where the ground is already open and less affected by deep-rooted vegetation. The northern wooded area if brought forward for development at a later stage would require a piled foundation scheme due to the anticipated ground disturbance and the engineering behaviour of the interbedded cohesive and granular soils of the Fittleworth Member.

Granular soils encountered between 2.10 m and 3.10 m bgl exhibit no volume change potential, and bearing capacities have been provided for shallow foundation design in the suitable southern areas. For any piled foundation solution in the northern zone, additional cable percussive boreholes will be required to confirm deeper ground conditions.

5.1.1 Shallow Foundations into Fittleworth Member

Based on a 5.00m by 0.75m strip foundation, using commercial software, Table 5.1 shows the calculated bearing values and anticipated settlement characteristics.

Head deposits were encountered across the site at depths ranging from approximately 0.70m to 2.40m bgl, so foundations must be taken beyond this depth given their poor engineering characteristics, volume change potential and the presence of roots.

The Fittleworth Member (FIB) exhibited significant variability, comprising alternating cohesive and granular horizons across the site. The granular strata were generally ranging between 1.30m and 4.00m bgl.

In WS3, the ground conditions were predominantly cohesive, with only a narrow granular horizon between 2.40m and 3.10m bgl. Generally, the granular strata are competent at 2.50m bgl.

Due to the interbedded nature of the FIB and potential lateral variability, all foundation excavations should be inspected during construction to confirm competent founding conditions and to mitigate risks associated with differential settlement. The use of reinforced trench fill foundations could be adopted to reduce the potential for differential settlement to affect the foundations.

Table 5.1 Allowable Bearing Capacities in the Granular Soils of the Fittleworth Member

Depth (m bgl)	Size (m)	Bearing Capacity (kPa)	Anticipated Settlement (mm)
2.50	5.00 x 0.75	120	10

All foundation formations must be examined, recorded, and signed off by a competent person.

Care must be exercised where foundations pass over soils of different engineering properties or different soil types to minimise the potential effects of differential settlements.

For the allowable bearing value given above, settlements should not exceed the presented values, provided that excavation bases are carefully bottomed out and blinded or concreted as soon after excavation as possible and kept dry.

Foundations must not be constructed over former structures and other hard spots. The foundations design must be suitable for the conditions present at the site.

The anticipated settlement includes both elastic settlement and long-term drained settlement (in the case of cohesive soils).

Anticipated settlements may be taken as proportional to the bearing capacity adopted (for the same configuration of foundation), therefore if the bearing value is halved the anticipated settlement will halve.

It has been assumed that the foundations to any existing structures have been grubbed out. Where foundations have been grubbed out the new foundation must be taken through any backfill material into suitable natural ground as outlined in this report.

5.2 Subsurface Concrete

The sulphate and pH tests carried out in accordance with BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground', established the site concrete classifications for each stratum as presented in Table 5.2.

Table 5.2 Concrete Classification

Stratum	Design Sulphate Class	ACEC Class
HEAD	DS-I	AC-Is
FIB	DS-I	AC-Is

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1 2005, '*Concrete in Aggressive Ground*' taking into account any possible exposure of potentially pyrite bearing natural ground and the pH of the soils.

5.3 Excavations

Shallow excavations in the Made Ground/Topsoil and Head are likely to be marginally stable in the short term at best.

Deeper excavations taken into the Fittleworth Member are likely to be unstable and require support especially the granular soils. Unsupported earth faces formed during excavation may be liable to collapse without warning and suitable safety precautions must therefore be taken to ensure that such earth faces are adequately supported or battered back to a safe angle of repose.

Excavations beneath the groundwater table are likely to be unstable and dewatering of foundation trenches may be necessary.

Section 6 Site Drainage

6.1 Soakaways

The infiltration testing recorded very slow soakage rates with insufficient fall in water level recorded in the testing period to allow infiltration rates to be calculated. This indicates that the Head is of poor drainage characteristics.

The results of the testing should be passed to a drainage engineer for confirmation.

Section 7 Determination of Chemical Analysis

7.1 Site Characterisation and Revised Conceptual Site Model

The Preliminary Investigation Report undertaken by Albury S.I. Ltd (report ref: 21/12217/KJC dated October 2021) identified a very low risk of ground contamination from previous usage of the site and offsite sources.

This investigation identified Made Ground to depths between 0.20m and 0.45m bgl.

The Made Ground typically comprised black, yellowish brown mottled brown clayey sandy GRAVEL. Gravel is angular to subrounded fine to coarse flint. Sand is fine to coarse. Brick and bituminous material in sand and Gravel sized particles. Tarmacadam from ground level to up to 0.20m bgl.

There were no significant visual or olfactory indicators of contamination noted.

The conceptual site model was updated to take account of the above findings and is presented in Appendix D.1.

7.2 Soil Sampling

Exploratory hole locations were established to provide an overview of ground conditions across the site in relation to the proposed construction, together with enabling the collection of samples to enable chemical characterisation of the underlying strata.

Representative samples for potential environmental testing were obtained from the exploratory holes at depths of between 0.10m and 0.70m to allow appropriate representation of the materials encountered, with additional samples to be obtained, if necessary, where there was visual or olfactory evidence of contamination.

Unless otherwise stated, analytical testing was based initially on a screening suite of commonly identified inorganic and organic contaminants, taking into account the prevailing site conditions and the findings of the initial conceptual site model.

7.3 Determination of Chemical Analysis

The driver for determination of the analysis suite was the information obtained from the Preliminary Investigation Report and this intrusive investigation.

The chemical analyses were carried out on two samples of Topsoil, one sample of Made Ground and one sample of the Head, as detailed in Table 7.1.

Table 7.1 Chemical Analyses Suites - Soil

No. of Tests			Determinants
MG	TS	HEAD	
1	2	1	Metal suites: Arsenic, Boron (Water Soluble), Cadmium, Chromium (total & hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc

No. of Tests			Determinants
MG	TS	HEAD	
1	2	1	Organic Matter
1	2	1	pH
1	2	1	Polycyclic aromatic hydrocarbons (PAH) – (EPA 16)
1	2	1	Phenols – total monohydric
1	2	1	Extractable petroleum hydrocarbons (EPH) – Texas banding
1	2	1	Asbestos screen

The soil testing was carried out in compliance with the MCERTS performance standard, and the results are shown in Appendix D.2, test report E26-05803-SLT - 26-17852.

Section 8 Qualitative Risk Assessment

8.1 Assessment Criteria

The assessment criteria used to determine risks to human health are derived and explained within Appendix D.3.

8.2 Representative Contamination Criteria - Soil

In compiling this report reliance was placed on listed in the Commission Section. The recommendations provided within this report are made exclusively in relation to the scheme outlined above, and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

Based on the proposed development, the results of the chemical analysis have been compared against generic assessment criteria (GAC) for a '**Residential with home grown produce**' end use, as presented in SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014 (C4SL), derived for the protection of human health. Where this document has not published screening values for determinants, GACs derived for the same end use have been adopted from the following published guidance; DEFRA Soil Guideline Values (SGV) and LQM/CIEH/Suitable 4 Use Level (S4UL).

To assess the potential toxicity of organic determinants (Petroleum Hydrocarbons and Polyaromatic Hydrocarbons) to the human health, soils samples were analysed for Soil Organic Matter (SOM). The selected samples analysed recorded, SOM values of between 0.9% and 4.1%. For each soil sample tested, the resultant SOM allowed for the correct comparison to be made with the appropriate guideline value for each organic determinant analysed.

8.2.1 Risk Assessment – Made Ground/Topsoil

Table 8.1 outlines any samples that have exceeded their relevant assessment criteria. The full laboratory report is presented in Appendix D.2.

Table 8.1 Summary of GAC Exceedances – Made Ground/Topsoil

Location	Depth (m bgl)	Contaminant	Concentration	Guidance Level
WS1	0.30	Benzo(b)fluoranthene	5.20	2.60
WS1	0.30	Di-benzo(a,h)anthracene	0.95	0.24
WS3	0.10	Di-benzo(a,h)anthracene	0.30	0.24

Note(s): Units mg/kg

The risk assessment has established potential pollutant linkages in relation to human health from elevated PAH concentrations within the Made Ground/Topsoil across the site.

8.2.2 Risk Assessment – Head

No samples tested exceeded their relevant assessment criteria, so no pollutant linkage has been established in relation to human health within the Head.

8.3 Asbestos

The test certificate for each sample submitted for contamination analysis during this investigation includes the results of an Asbestos Screen.

In each case 'Not detected' was reported.

This finding does not obviate the risk of asbestos being present on the site and the Client must seek advice from qualified and competent asbestos specialist during and prior to undertaking works to ensure compliance with appropriate legislation and guidance.

8.4 Risk to Controlled Waters

The northern part of the site is underlain by a superficial Secondary Undifferentiated aquifer associated with the underlying Head. The Fittleworth Formation at depth is classed as a Secondary A aquifer. However, the site is not underlain by a drinking water Source Protection Zone (SPZ).

There were no abstraction points within 500m of the site. The nearest abstraction point was for surface water 676m northeast of the site at New Place Farm Reservoir. The nearest surface water feature was an inland river 60m northeast and the associated lake.

The elevated PAH concentrations recorded in WS1 at 0.30m bgl are considered likely to be associated with fragments of tarmacadam from the existing ground surface, mixed into the underlying soils, rather than indicating widespread PAH contamination at this depth. This interpretation is supported by the presence of asphaltic fragments noted in the soil log.

Taking into account the ground conditions encountered and the fact that elevated PAH concentrations were limited to WS1 at 0.30m bgl and WS3 at 0.10m bgl, the potential for migration to controlled waters is considered low. The proposed development layout places WS3 beneath hardstanding road, providing an effective cover system, while the shallow soils at WS1 (0.30m bgl) will be removed during site formation works. As such, the identified PAH concentrations will not remain in situ beneath permeable surfaces or infiltration features.

The site is currently free-draining to underlying soils. The proposed development will introduce a formalised drainage regime, reducing uncontrolled infiltration and thereby improving the current situation. This represents a betterment, as future drainage pathways will be engineered to avoid uncontrolled discharge or migration towards third-party land or property.

8.5 Risk from Ground Gas Ingression

One potential very low risk source of ground gas within influencing distance of the site was identified within the CSM:

- Infilled brick field and graveyard (off site)

No deep Made Ground was found during this investigation with a maximum depth of 0.50m bgl. Thus, no further ground gas monitoring or gas protection measures are considered necessary.

8.5.1 Radon

The site **was not situated** within an area where protection or risk assessment against the ingress of radon was required. Radon protective measures **will not be required** within the proposed new development.

8.6 Generic Quantitative Risk Assessment

Quantitative risk assessments are undertaken for the soil and groundwater. The CSM has been updated to take account of the assessments below and presented in Appendix D.1. The full laboratory chemical report is presented in Appendix D.2.

8.6.1 Soils

The elevated PAH concentrations recorded in WS1 at 0.30m bgl are considered likely to be associated with fragments of tarmacadam from the existing ground surface that were mixed into the underlying soils, rather than indicating widespread PAH contamination at this depth. This interpretation is supported by the presence of asphaltic fragments noted in the soil log.

Taking into account the ground conditions encountered and the fact that elevated PAH concentrations were limited to WS1 at 0.30m bgl and WS3 at 0.10m bgl, the proposed development layout places WS3 beneath hardstanding road, providing an effective cover system, while the shallow soils at WS1 (0.30m bgl) will be removed during site formation works. As such, the identified PAH concentrations will not remain in situ.

The Tier 1 Quantitative risk assessment therefore established that there was **no significant risk to the human health receptors** of construction workers or future end-users following on site development.

8.6.2 Controlled Waters

Based on the limited extent of PAH exceedances, their likely association with tarmacadam fragments, the proposed removal or capping of affected soils, and the absence of sensitive receptors, there is **not considered to be a significant risk to controlled waters**, and no further assessment is deemed necessary at this time.

8.6.3 Ground Gas

No further ground-gas monitoring or gas protection measures are considered necessary.

8.7 Recommendations

Elevated PAH concentrations were limited to WS1 at 0.30m bgl and WS3 at 0.10m bgl and should be removed during site formation.

It is recommended that additional soil sampling in proposed soft landscaping/private gardens is undertaken following site formation works to verify that no elevated concentrations of PAHs or other contaminants remain within soft landscaping areas/private gardens. This post-excavation verification will confirm that the shallow soils containing elevated PAHs at WS1 (0.30m bgl) have been removed as planned and that no residual hotspots are present.

8.8 Protection of Services

Contamination of the ground may pose a risk to human health by permeating potable water supply pipes. To fulfil their statutory obligations, UK water supply companies require robust evidence from developers to demonstrate either that the ground in which new plastic supply pipes will be laid is free from contaminants specified in UKWIR Report 10/WM/03/21 Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (UKWIR, 2010), or that the proposed remedial strategy will mitigate any existing risk.

8.9 Duty of Care

Groundworkers must maintain a good standard of personal hygiene including the wearing of overalls, boots, gloves and eye protectors and the use of dust masks during periods of dry weather.

8.10 Excavated Material

Excavated material as waste must be defined or classified prior to any disposal, transport, recycling or re-use at or by an appropriately licensed or exempt carrier and/or off-site disposal facility. The requirements inherent in both Duty of Care and Health and Safety must also be complied with. In order to determine what is to happen, what is suitable, appropriate and most effective in the disposal of wastes, especially those subject to CDM waste management plan requirements, several factors must be considered, and competent advice must always be sought.

8.11 HazWasteOnline

Further consideration of results using HazWasteOnline™ can be undertaken on request to give an indication of potentially hazardous properties in the materials analysed.

8.12 Re-use of Excavated Material On-site

The re-use of on-site soils may be undertaken either under the Environmental Permitting Regulations 2007 (EPR), in which case soils other than uncontaminated soils are classed as waste, or under the CL:AIRE Voluntary Code of Practice (CoP) which was published in September 2008 and is accepted as an alternative regime to the EPR.

8.13 Imported Material

Any soil, which is to be imported onto the site, must undergo chemical analysis to permit classification prior to its importation and placement in order to ascertain its status with specific regard to contamination, i.e. to prove that it is suitable for the purpose for which it is intended.

8.14 Discovery Strategy

There may be areas of contamination not identified during the investigation. Such occurrences may also be discovered during the demolition and construction phases for the redevelopment of the site.

List of Figures

Figure 1 – Site Location Map	24
Figure 2 – Aerial Photograph	25
Figure 3 – Exploratory Hole Plan	26

List of Appendices

Appendix A Standards and Resources

Appendix B Field Work

Appendix B.1 Engineers Logs

Appendix C Geotechnical In-Situ and Laboratory Testing

Appendix C.1 Classification

Appendix C.2 Interpretation

Appendix C.3 Geotechnical In-Situ and Laboratory Results

Appendix D Chemical Laboratory Analyses

Appendix D.1 Conceptual Site Model

Appendix D.2 Chemical Laboratory Results

Appendix D.3 General Assessment Criteria

Appendix E Information Provided by the Client



Figure 1 – Site Location Map



Job Number
22384

Project
St Crispin's Church Hall, Church Place, Pulborough,
West Sussex RH20 1AF

Client
Chartwood Homes

Date
May 2026



Figure 2 – Aerial Photograph



Job Number 22384	Project St Crispin's Church Hall, Church Place, Pulborough, West Sussex RH20 1AF
Client Chartwood Homes	Date May 2026



Figure 3 – Exploratory Hole Plan



Job Number 22384	Project St Crispin's Church Hall, Church Place, Pulborough, West Sussex RH20 1AF
Client Chartwood Homes	Date May 2026

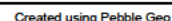
Appendix A Standards and Resources

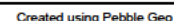
The site works, soil descriptions and testing were undertaken in accordance with the following standards where applicable:

- BS 5930:2015+A1:2020 and BS EN ISO 22476-2&3:2005+A1:2011
- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design
- BS EN ISO 14688-1:2018 - Geotechnical investigation and testing - Identification and description
- BS EN ISO 14688-2:2018 - Geotechnical investigation and testing - Principles for a classification
- BS 10175:2026 - Investigation of potentially contaminated sites
- LCRM 2021 Environment Agency
- BS 8004:2015 – Code of practice for foundations
- BS 1377:1990 Parts 1 to 8
- BRE Digest 241 “Low-rise buildings on shrinkable clay soils: Part 2
- BRE Special Digest 1, 2005, ‘Concrete in Aggressive Ground’
- N.E. Simons, B.K. Menzies, “A Short Course in Foundation Engineering”
- NHBC Standards Chapter 4.2, January 2024.
- SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination December 2014
- CIRIA C733, Asbestos in soil and made ground: a guide to understanding and managing risks and CAR2012 regulations.
- Google Earth accessed in May 2026
- British Geological Survey Website & iGeology App accessed in May 2026

Appendix B Field Work

Appendix B.1 Engineers Logs





SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

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SPT N60 = N(raw) * (Hammer Energy Ratio / 60) to nearest whole number

Created using Pebble Geo

soils LIMITED				Trial Pit				TPSK1			
				Sheet 1 of 1							
				Hole Type TP		Easting 504621.01		Northing 118892.43		Ground Level (m)	
Project Name St Crispin's Church Hall				Project No. 22384		Start Date 2026-04-14		End Date 2026-04-14			
Client Chartwood Homes				Consultant Soils Limited				Contractor Soils Limited			
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
						(0.45)		Brown, very slightly gravelly SILT. Gravel is angular to rounded, fine to medium flint. Roots and rootlets [TOPSOIL, TS]			
						0.45		Orange brown clayey silty, slightly gravelly SAND. Gravel is angular to rounded ded, fine to medium flint. Roots and rootlets. [HEAD, HEAD]		0.5	
						(1.05)				1.0	
						1.50		Orange and brown, silty CLAY. [HEAD, HEAD]		1.5	
						(0.50)					
						2.00		Orange and brown sandy CLAY [HEAD, HEAD]		2.0	
						(0.50)					
						2.50		End of Trial Pit at 2.50m		2.5	
										3.0	
										3.5	
										4.0	
										4.5	
										5.0	
Remarks Terminated as the quote to 2.50m bgl							Method, Plant, Stability, Dimensions 0.00 - 2.50m TP JCB 3CX L = 2.00m W = 0.50m			Logger JC	
Checked By: ML Status: FINAL											

soils LIMITED				Trial Pit				TPSK2 Sheet 1 of 1																																																																																																																
				Hole Type TP		Easting 504600.46		Northing 118900.91		Ground Level (m)		Scale 1:25																																																																																																												
				Project Name St Crispin's Church Hall				Project No. 22384		Start Date 2026-04-14		End Date 2026-04-14																																																																																																												
Client Chartwood Homes				Consultant Soils Limited				Contractor Soils Limited																																																																																																																
<table><tr><td rowspan="2">Inst/ Backfill</td><td rowspan="2">Water Levels</td><td colspan="3">Samples and Tests</td><td rowspan="2">Level (m)</td><td rowspan="2">Depth (m)</td><td colspan="2">Strata</td><td rowspan="2"></td></tr><tr><td>Depth (m)</td><td>Type/ Ref</td><td>Results</td><td>Legend</td><td>Description</td></tr><tr><td rowspan="4"></td><td rowspan="4"></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Brown, very slightly gravelly SILT. Gravel is angular to rounded, fine to medium flint. Roots and rootlets [TOPSOIL, TS]</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>0.40</td><td></td><td>Orange brown clayey silty, slightly gravelly SAND. Gravel is angular to rounded ded, fine to medium flint. Roots and rootlets. [HEAD, HEAD]</td><td>0.5</td></tr><tr><td></td><td></td><td></td><td></td><td>1.40</td><td></td><td>Orange and brown, silty CLAY. [HEAD, HEAD]</td><td>1.5</td></tr><tr><td></td><td></td><td></td><td></td><td>2.00</td><td></td><td>Orange and brown sandy CLAY [HEAD, HEAD]</td><td>2.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td>2.50</td><td colspan="3">End of Trial Pit at 2.50m</td><td>2.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>3.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>3.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.0</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.5</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>5.0</td></tr></table>												Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata			Depth (m)	Type/ Ref	Results	Legend	Description									Brown, very slightly gravelly SILT. Gravel is angular to rounded, fine to medium flint. Roots and rootlets [TOPSOIL, TS]						0.40		Orange brown clayey silty, slightly gravelly SAND. Gravel is angular to rounded ded, fine to medium flint. Roots and rootlets. [HEAD, HEAD]	0.5					1.40		Orange and brown, silty CLAY. [HEAD, HEAD]	1.5					2.00		Orange and brown sandy CLAY [HEAD, HEAD]	2.0						2.50	End of Trial Pit at 2.50m			2.5										3.0										3.5										4.0										4.5										5.0
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata																																																																																																																	
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						1.40		Orange and brown, silty CLAY. [HEAD, HEAD]	1.5																																																																																																															
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Checked By: ML Status: FINAL																																																																																																																								

soils LIMITED				Trial Pit				TPSK3			
				Sheet 1 of 1							
				Hole Type TP	Easting 504634.42	Northing 118889.36	Ground Level (m)	Scale 1:25			
Project Name St Crispin's Church Hall				Project No. 22384		Start Date 2026-04-14		End Date 2026-04-14			
Client Chartwood Homes				Consultant Soils Limited		Contractor Soils Limited					
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
								Brown, very slightly gravelly SILT. Gravel is angular to rounded, fine to medium flint. Roots and rootlets [TOPSOIL, TS]			
									Orange brown clayey silty, slightly gravelly SAND. Gravel is angular to rounded, fine to medium flint. Roots and rootlets. [HEAD, HEAD]	0.5	
									Orange and brown, silty CLAY. [HEAD, HEAD]	1.5	
										2.5	
								End of Trial Pit at 2.50m			
Remarks Terminated as the quote to 2.50m bgl						Method, Plant, Stability, Dimensions 0.00 - 2.50m TP JCB 3CX L = 2.00m W = 0.50m				Logger JC	
Checked By: ML Status: FINAL											

Appendix C Geotechnical In-Situ and Laboratory Testing

Appendix C.1 Classification

Classification based on SPT “N” values:

The inferred undrained strength of the cohesive soils was based on the SPT “N” blow counts, derived from the relationship suggested by Stroud (1974) and classified using Table C.1.1. (Ref: Stroud, M. A. 1974, “The Standard Penetration Test – its application and interpretation”, Proc. ICE Conf. on Penetration Testing in the UK, Birmingham. Thomas Telford, London.).

Table C.1.1 SPT “N” Blow Count Cohesive Classification

Classification	Undrained Cohesive Strength C_u (kPa)
Extremely low	<10
Very low	10 – 20
Low	20 – 40
Medium	40 – 75
High	75 – 150
Very high	150 – 300
Extremely high	> 300
Note(s): (Ref: BS EN ISO 14688-2:2004+A1:2013 Clause 5.3.)	

The relative density of granular soils was classified based of the relationship given in Table C.1.2.

The *UK National Annex to Eurocode 7: Geotechnical design – Part 2: Ground investigation and testing, NA 3.7 SPT test, BS EN 1997-2:2007, Annex F* states “Relative density descriptions on borehole records should also be based on uncorrected SPT N values, unless significantly disturbed, using the density classification in BS 5930:2015, Table 7.

Table C.1.2 SPT “N” Blow Count Granular Classification

Classification	SPT “N” blow count (blows/300mm)
Very loose	0 to 4
Loose	4 to 10
Medium dense	10 to 30
Dense	30 to 50
Very dense	Greater than 50
Note(s): (Ref: The Standard Penetration Test (SPT): Methods and Use, CIRIA Report 143, 1995)	

Appendix C.2 Interpretation

Table C.2.1 Interpretation of DPSH Blow Counts

DP	Strata	Equivalent SPT N60 Blow Counts	Inferred Cohesive Strength/Granular Density
DP1	HEAD 0.50-2.10 Sandy CLAY	4-8	Low ($C_u = 20 - 40\text{kPa}$)
	FIB 2.10 – 3.90 Clayey SAND	4-12	Loose to medium dense
	FIB 3.90 – 4.00 (6.00) ¹ Clayey SAND	12-39	Medium dense to dense
DP2	HEAD 0.30-1.30 Sandy CLAY	0 - 4	Extremely low ($C_u = <10 - 20\text{kPa}$)
	FIB 1.30-2.80 Clayey SAND	12-16	Medium dense
	FIB 2.80 – 4.00 (6.00) ¹ Sandy CLAY	8-24	Medium to high ($C_u = 40 - 120\text{kPa}$)
DP3	HEAD 0.30 – 2.40 Gravelly CLAY	0 - 8	Extremely low to low ($C_u = <10\text{kPa} - 40\text{kPa}$)
	FIB 2.40-3.10 Clayey SAND	8	Loose
	FIB 3.10-4.00 (6.00) ¹ Sandy CLAY	8-31	Medium to very high ($C_u = 40 - 155\text{kPa}$)
DP4	HEAD 0.30-0.70 Clayey SAND	0-12	Very loose to medium dense
	HEAD 0.70-2.00 Sandy CLAY	0-12	Extremely low to medium ($C_u = <10 - 60\text{kPa}$)
	FIB 2.00-4.00 (6.00) ¹ Clayey SAND	4-28	Very loose to medium dense

Note(s): ¹ Ground conditions inferred past the base of windowless sampler boreholes.

Table C.2.2 Interpretation of Atterberg Limit Tests

Stratum	M/C (%)	PI (%)	>425 μm (%)	Mod PI (%)	Class	VCP BRE	NHBC
HEAD	20-22	17-20	98	17-20	CL-CI	Low	Low

Note(s): BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results). VCP=Volume Change Potential
 NHBC Volume Change Potential refers to NHBC Standards Chapter 4.2
 Soils Classification based on British Soil Classification System

Stratum	M/C	PI	>425µm	Mod PI	Class	VCP	
	(%)	(%)	(%)	(%)		BRE	NHBC
The Atterberg Limit Tests were undertaken in accordance with BS 1377:Part 2:1990 Clauses 3.2, 4.3 and 5							

Table C.2.3 Interpretation of PSD Tests

Location	Depth (m bgl)	Soil Description	VCP		>63µm Sieve (%)
			BRE	NHBC	
WS3	0.60	Brown gravelly silty/clayey fine to coarse SAND	Yes	Yes	49
WS2	2.80	Brown silty/clayey fine to coarse SAND	Yes	No	20
WS4	2.90	Brown silty/clayey fine to coarse SAND	Yes	No	24

Note(s): (The Particle Size Distribution Tests were undertaken in accordance with BS 1377: Part 2: 1990 Clause 9).
VCP=Volume Change Potential

Appendix C.3 Geotechnical In-Situ and Laboratory Results

Contract Number: 86292

Client Ref: 22384

Client PO: 22384/ML

Date Received: 27-04-2026

Date Completed: 19-05-2026

Report Date: 19-05-2026

Client: **Soils Limited**

This report has been checked and approved by:

Contract Title: **St Crispin's Church Hall, Church Place** H20 1AF
For the attention of: **Margaret Lo**

Shaun Jones
Laboratory manager

Description	Qty
Determination of water content BS EN ISO 17892-1:2014 - * UKAS	2
1 point Liquid & Plastic Limit.. BS EN ISO 17892-12 - * UKAS	2
Particle Size Distribution BS EN ISO 17892-4 : 5.1 - * UKAS	3

Notes: Observations and Interpretations are outside the UKAS Accreditation

* - denotes test included in laboratory scope of accreditation

- denotes test carried out by approved contractor

@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:

Brendan Evans (Business Support Co-ordinator) - Darren Bourne (Quality Senior Technician) - Jason Jenkins (Business Development Manager)
Luke Williams (Senior Laboratory Technician) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Vince Williams (Site Technician)
Wayne Honey (HR & HSE Manager)

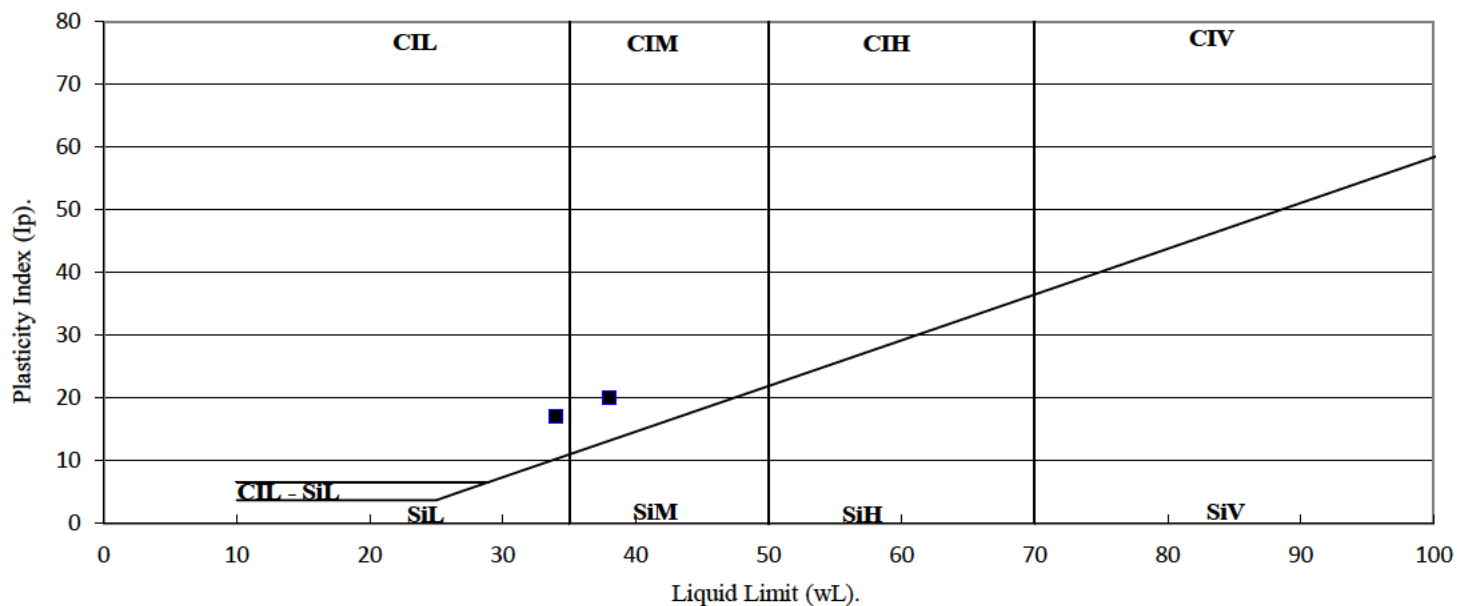
Contract Number	86292	
Project Name	St Crispin's Church Hall, Church Place, Pullborough, RH20 1AF	
Date Tested	12/05/2026	
Test Comments	80g/30° Fall cone used	

[illegible]

SYMBOLS : NP = Non Plastic

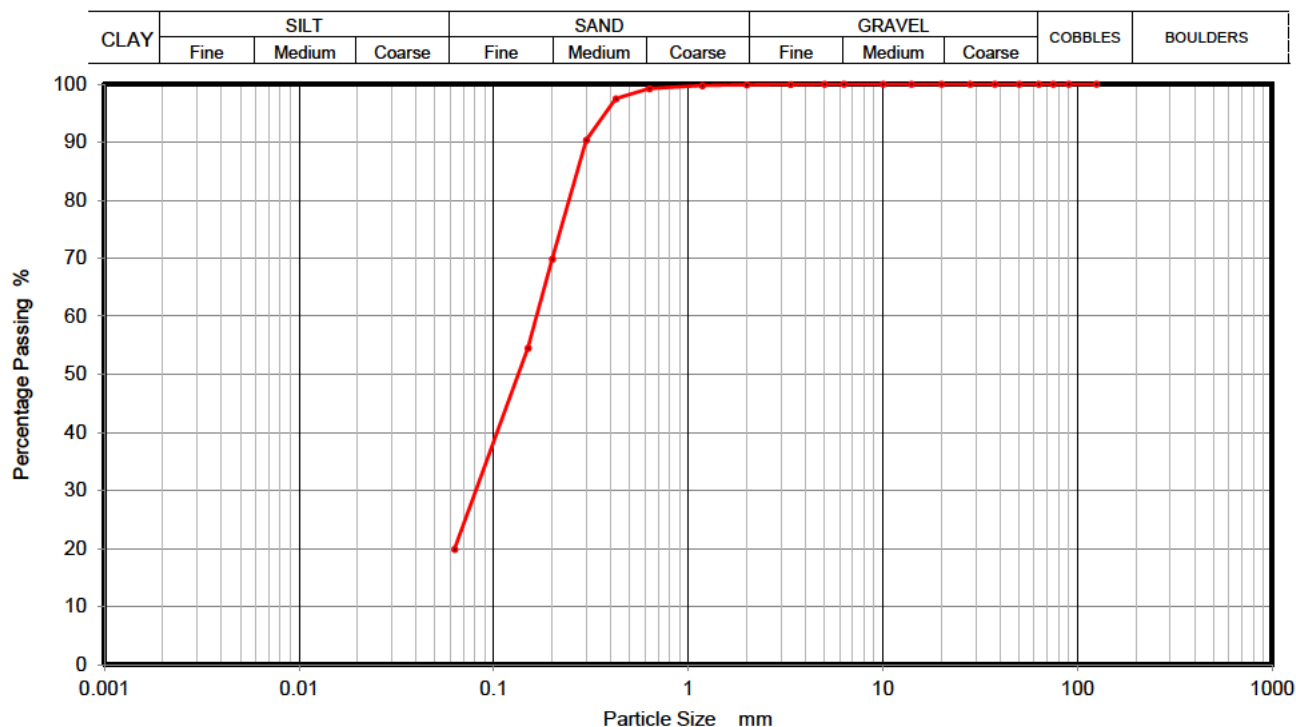
PLASTICITY CHART

BS EN ISO 14688-2:2018 Clause 4.4



***For sample descriptions please see sample descriptions sheet**

Operator
Jason. S



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.63	99		
0.425	97		
0.30	90		
0.20	70		
0.15	55		
0.063	20		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	80
Silt and Clay	20

Grading Analysis	
Uniformity Coefficient	N/A

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. E

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number **86292**

Borehole/Pit No. **WS3**

Project Name **St Crispin's Church Hall, Church Place, Pullborough, RH20 1AF**

Sample No. **1**

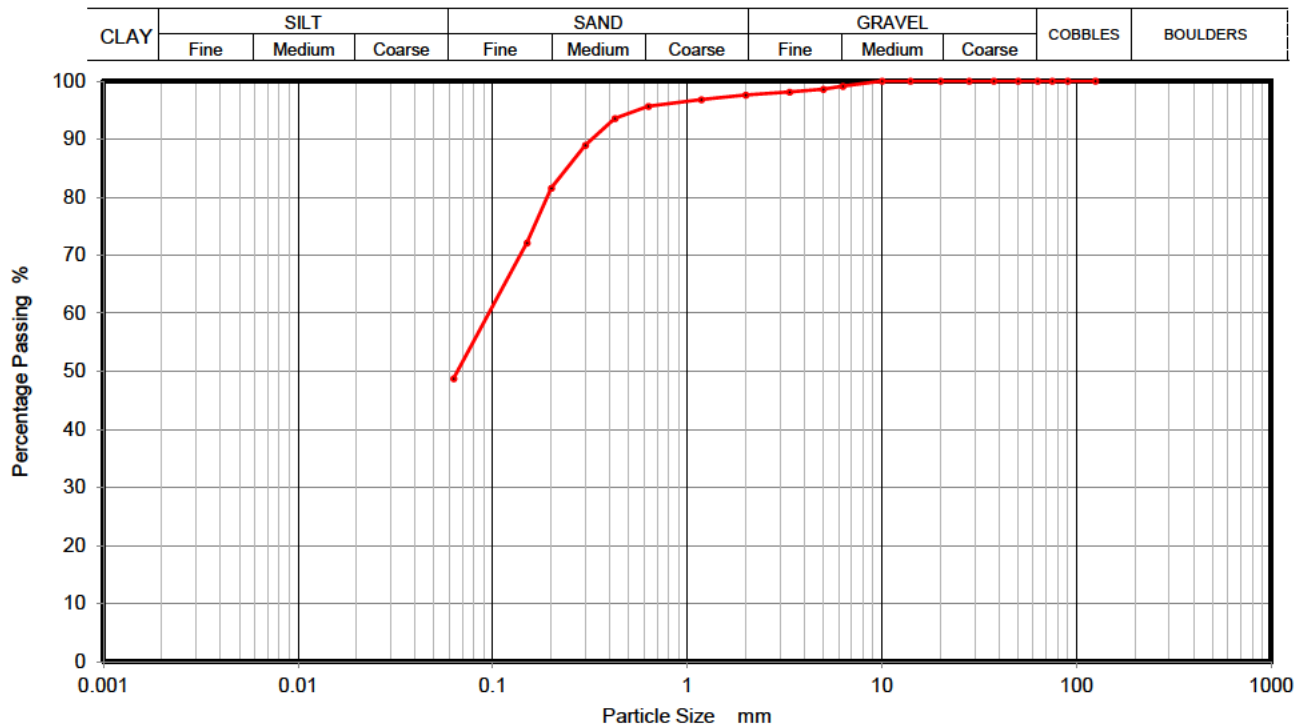
Sample Description **Brown gravelly silty/clayey fine to coarse SAND**

Depth Top **0.60**

Depth Base

Date Tested **14/05/2026**

Sample Type **D**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
3.35	98		
2	98		
1.18	97		
0.63	96		
0.425	94		
0.30	89		
0.20	82		
0.15	72		
0.063	49		

Sample Proportions	% dry mass
Cobbles	0
Gravel	2
Sand	49
Silt and Clay	49

Grading Analysis	
Uniformity Coefficient	N/A

Remarks

Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. E

PARTICLE SIZE DISTRIBUTION
BS 1377-2:2022 Clause 10 &
BS EN ISO 17892-4:2016
Wet Sieve, Clause 5.2

Contract Number	86292
Borehole/Pit No.	WS4

Project Name	St Crispin's Church Hall, Church Place, Pullborough, RH20 1AF
--------------	--

Sample No.	1
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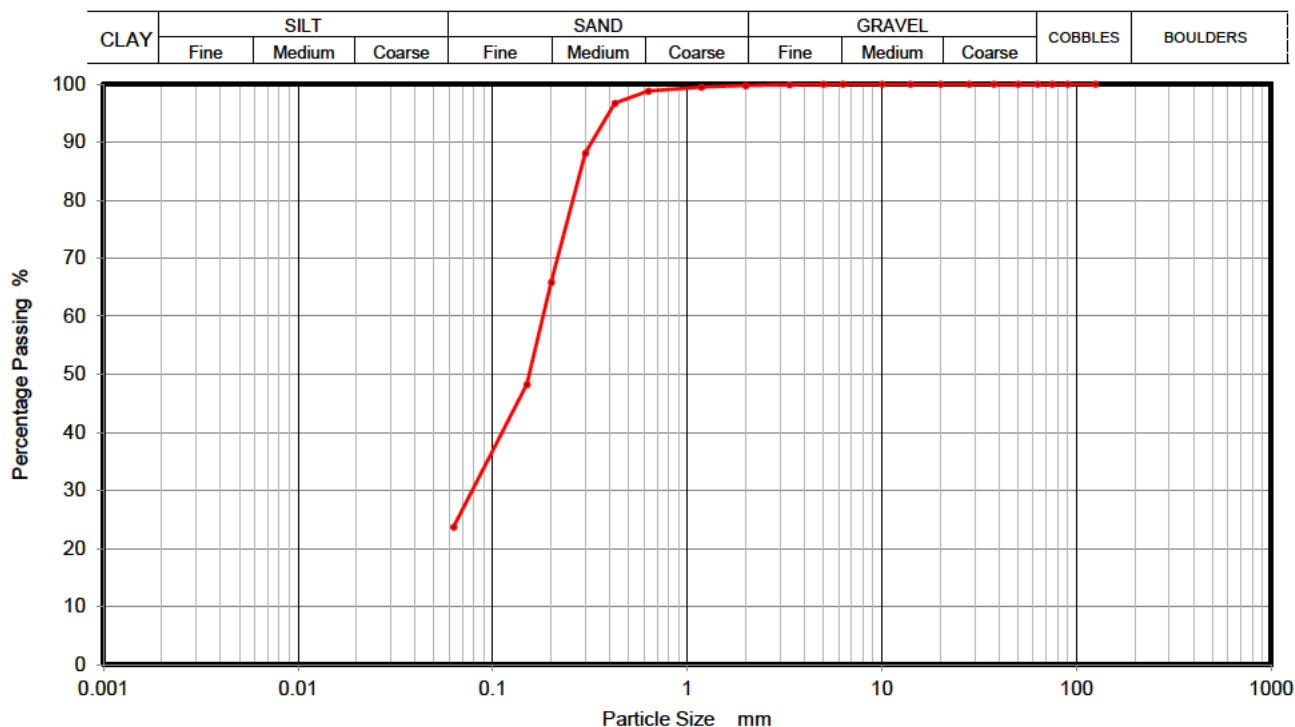
Sample Description	Brown silty/clayey fine to coarse SAND
--------------------	--

Depth Top	2.90
-----------	-------------

Depth Base	
------------	--

Date Tested	14/05/2026
-------------	------------

Sample Type	D
-------------	----------



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	99		
0.63	99		
0.425	97		
0.30	88		
0.20	66		
0.15	48		
0.063	24		

Sample Proportions	% dry mass
Cobbles	0
Gravel	0
Sand	76
Silt and Clay	24

Grading Analysis	
Uniformity Coefficient	N/A

Remarks
Preparation and testing in accordance with BS17892 unless noted below

Operator

Cameron. E

Appendix D Chemical Laboratory Analyses

Appendix D.1 Conceptual Site Model

Table D.1.1 CSM Revised Pre-Chemical Analyses

Source	Potential Contaminant	Exposure Pathway	Receptor	Initial Assessment from Desk Study and Main Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
Made Ground (on-site)	heavy metals, hydrocarbons and asbestos.	Inhalation of dust	Site Workers/Site Maintenance	Minor	Unlikely	Very low	The northern part of the site is underlain by a superficial Secondary Undifferentiated aquifer associated with the underlying Head. The Fittleworth Formation at depth is classed as a Secondary A aquifer.	Chemical testing prior to undertaking a generic quantitative risk assessment.
			End Users	Minor	Unlikely	Very low		
			Off-site Users	Minor	Unlikely	Very low		
	heavy metals, hydrocarbons and asbestos.	Ingestion and absorption via direct contact	Site Workers/Site Maintenance	Minor	Unlikely	Very low		
			End Users	Minor	Unlikely	Very low		
	heavy metals, hydrocarbons and asbestos.	Migration via surface runoff	Surface Water	Minor	Unlikely	Very low		
			Surface Water	Minor	Unlikely	Very low		
		Migration in solution via groundwater	Shallow Aquifer	Minor	Unlikely	Very low		
			Deep Aquifer	Minor	Unlikely	Very low		
			Buried structures	Minor	Unlikely	Very low		
Infilled brick field and grave yard (off site)	ground gases: carbon dioxide and methane	Inhalation of Vapour/gases (including Radon)	Site Workers/Site Maintenance	Minor	Unlikely	Very low		
			End Users	Minor	Unlikely	Very low		

Table D.1.2 CSM Revised Post-Chemical Analyses

Source	Potential Contaminant	Exposure Pathway	Receptor	Initial Assessment from Desk Study and Main Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
Made Ground (on-site)	heavy metals, hydrocarbons and asbestos.	Inhalation of dust	Site Workers/Site Maintenance	Minor	Unlikely	Very low	Elevated PAH concentrations were limited to WSI at 0.30m bgl and WS3 at 0.10m bgl and should be removed during site formation.	It is recommended that additional soil sampling in proposed soft landscaping/private gardens is undertaken following site formation works to verify that no elevated concentrations of PAHs or other contaminants remain within soft landscaping areas/private gardens. This post-excavation verification will confirm that the shallow soils containing elevated PAHs at WSI (0.30m bgl) have been removed as planned and that no residual hotspots are present.
			End Users	Minor	Unlikely	Very low		
			Off-site Users	Minor	Unlikely	Very low		
	heavy metals, hydrocarbons and asbestos.	Ingestion and absorption via direct contact	Site Workers/Site Maintenance	Minor	Unlikely	Very low		
			End Users	Minor	Unlikely	Very low		
	heavy metals, hydrocarbons and asbestos.	Migration via surface runoff	Surface Water	Minor	Unlikely	Very low		
			Surface Water	Minor	Unlikely	Very low		
		Migration in solution via groundwater	Shallow Aquifer	Minor	Unlikely	Very low		
			Deep Aquifer	Minor	Unlikely	Very low		
			Deep Aquifer	Minor	Unlikely	Very low		
		Direct contact with construction material	Buried structures	Minor	Unlikely	Very low		
			Buried Services	Minor	Unlikely	Very low		

Appendix D.2 Chemical Laboratory Results

Analytical Test Report
E26/05801/SLT/26-17850

Tested on Behalf of

Clients Project Reference

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

SOILS LIMITED

Clients Order Number

22384/ML/BRE

Newton House

Sample(s) Analysed

3

Cross Road

Sample(s) received / instructed

27/04/2026 / 27/04/2026

Surrey

Sample(s) Tested

27/04/2026 to 08/05/2026

Report issued

08/05/2026

KT20 5SR

Report issue number

1

Signed



 James Gane
 Analytical Services Manager

Notes:
General

Please be advised that CTS Chemistry & Microbiology has now become Environmental Chemistry Laboratories (ECT). This change reflects our updated organisational structure and branding; however, all laboratory facilities, instrumentation, methods, and personnel remain the same. As part of this transition, our UKAS accreditation schedule has been updated from No. 4161 to No. 4150. There is no impact on the scope of accredited testing, quality, or any operational processes. We appreciate your continued trust and look forward to supporting you under our new name: Environmental Chemistry Laboratories (ECT). If you have any questions regarding this change, please contact our team.

This report shall not be reproduced except in full

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples were supplied by customer, results apply to the samples as received.

Samples will be retained for 14 days after issue of this report unless otherwise requested.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

U = UKAS Accreditation, M = MCERTS Accreditation, N = Unaccredited, SC = Subcontracted

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analytical Test Results - ENV Analysis Solids

Lab Reference					767839	767840	767841
Client Sample ID					WS1	WS2	WS3
Client Sample Location					-	-	-
Client Sample Type					D	D	D
Client Sample Number					-	-	-
Depth - Top (m)					1.3	2.2	3.3
Depth - Bottom (m)					1.3	2.2	3.3
Date of Sampling					23/04/2026	23/04/2026	23/04/2026
Time of Sampling					-	-	-
Sample Matrix					Clay	Clay	Clay
Determinant	Code	Units	LOD	Accreditation			
Water Soluble Sulphate (as SO4)	ANIONSSBRE	mg/L	10	N	49	34	< 10
Acid Soluble Sulphate	ASSO4SBRE	%	0.01	N	0.02	0.03	0.09
Total Sulphur Content (as S)	1377TS-EBR	%	0.01	U	0.01	0.01	0.03
pH	PHSBRE	pH units	1	M	6.7	5.7	6.6
Chloride	ANIONSSBRE	mg/L	0.1	N	2.5	2.0	2.1
Nitrate as NO3	ANIONSSBRE	mg/L	1	N	< 1.0	2.5	< 1.0
Magnesium	1377MGICPB	mg/L	1.5	N	11	< 1.5	< 15.00
Ammonium (NH4)	ANIONSSBRE	mg/L	1	N	1.8	1.3	1.3

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
767839	WS1	-	SOIL	-	Brown slightly gravelly slightly sandy silty clay	-	-	67
767840	WS2	-	SOIL	-	Brown slightly sandy silty clay	-	-	100
767841	WS3	-	SOIL	-	Greyish brown sandy silty clay	-	-	100

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analysis Methodologies - Please refer to sample comments page (if present) for any changes to methods Methods

Site addresses where testing is performed: Leicester - 7-11 Harding Street, Leicester, LE1 4DH Poole - Unit D11, Admiralty Park, Station Road, Holton Heath, Poole, BH16 6HX

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Site	Test Details
1377MGICPB	BS1377 WS Magnesium (ICP)	Oven dried	Passing 2mm test sieve	Leicester	Water Soluble Magnesium testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 10.
1377TS-EBR	BS1377 Total Sulphur Content by HTC	Oven dried	BS1377 : Part 1 : 2016	Leicester	Total Sulphur Content testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.10 (using Eltra CS-800 Analyser)
ANIONSSBRE	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Leicester	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
ASSO4SBRE	MS - CL - Acid Soluble Sulphate	Oven Dried	Passing 2mm test sieve	Leicester	Determination of total sulphate in soils by acid extraction followed by ICP analysis
PHSBRE	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Leicester	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Leicester	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided

No time of sampling provided

C - Received in inappropriate container

H - Contains headspace

T - Temperature on receipt exceeds storage temperature

R - Sample(s) received outside standard identified timescales for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

W -

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
767839	WS1		D		MS - CL - pH in Soils	RX
767840	WS2		D		MS - CL - pH in Soils	RX
767841	WS3		D		MS - CL - pH in Soils	RX

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Additional Method Notes

Method	Notes
TRL 447 Suite	1. Sample preparation was in accordance with TRL 447 Appendix C. 2. Testing was carried out in accordance with methods 1, 2 and 4 of TRL 447 2001 (Updated 2005). 3. Oxidisable sulphides and total potential sulphate have been calculated in accordance with TRL 447, Appendix C Test 4. Values are reported against a dry mass of sample passing a 2mm test sieve after oven drying, where required material retained on the 2mm test sieve was recombined with the test portion prior to analysis.
BS1377 Acid Soluble Chloride	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016 2. Testing was in accordance with BS 1377 : Part 3 : 2018 + A1: 2021, acid soluble method. 3. Some information required by BS 1377 has not been reported. This information is available on request.
BS1377 Loss on Ignition	Testing was in accordance with BS 1377: Part 3: 2018 + A1: 2021 Clause 6. Determination of the mass loss on ignition. Some information required by BS1377: 2016: Part 1 has not been reported. This information is available on request.
BS1377 Organic Matter Content	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016 2. Testing was in accordance with BS 1377: Part 3: 2018 + A1: 2021 Clause 4. 3. The reported % organic content is the average organic matter content present in the soil fraction passing the 2mm test sieve to the nearest 0.1% of the original oven dry mass of soil. 4. Some information required by BS 1377 has not been reported. This information is available on request.
BS1377 pH Value	pH testing was in accordance with BS 1377 : Part 3 : 2018 + A1: 2021 Clause 12
BS1377 Sulphate (acid soluble)	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016. 2. Sulphate testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.9 & 7.5. 3. Some information required by BS 1377 has not been reported. This information is available on request.
BS1377 Total Dissolved Solids	Determination of TDS in accordance with BS 1377: Part 3
BS1377 Total Sulphur	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016.
BS1377 Water Soluble Chloride	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016 2. Testing was in accordance with BS 1377 : Part 3 : 2018 + A1: 2021, Clause 7.2, water soluble method. 3. Some information required by BS 1377 has not been reported. This information is available on request.
BS1377 Sulphate (water soluble) (ICP-OES)	1. Sample preparation was in accordance with BS 1377 : Part 1 : 2016. 2. Sulphate testing of Soil in accordance with BS 1377 : Part 3 : 2018 + A1 : 2021 Clause 7.3 & 7.5. 3. pH of the water extract was not recorded. 4. Some information required by BS 1377 has not been reported. This information is available on request.
EN1744 Acid Soluble Sulphate	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 12. Analysis subcontracted to a UKAS accredited laboratory
EN1744 Total Sulphur by HTC (Cl. 11.2)	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11.2 Analysis subcontracted to a UKAS accredited laboratory
EN1744 Total Sulphur (Cl. 11.1)	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 11. Analysis subcontracted to a UKAS accredited laboratory
EN1744 Water Soluble Chloride	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 7 (Reference Method). Analysis subcontracted to a UKAS accredited laboratory

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Additional Method Notes

Method	Notes
EN1744 Water Soluble Sulphate	Testing was in accordance with BS EN 1744-1:2009 + A1:2012 clause 10. Analysis subcontracted to a UKAS accredited laboratory
Oxidisable Sulphides Calculation (HTC)	Calculated in accordance with TRL 447 using results determined in accordance with EN1744
Oxidisable Sulphides Calculation (Grav)	Calculated in accordance with TRL 447 using results determined in accordance with EN1744
Total Potential Sulphate (Calc from 1744 Total S)	Derived from the Total sulphur concentration determined in accordance with EN1744.
BS1881 Alkali (Na ₂ O + K ₂ O)	1. Testing was in accordance with BS 1881: Part 124: 2015 Clause 12.3. 2. A concrete density of 2300kg/m³ was used in the calculation of equivalent sodium oxide content per m³ of concrete. 3. Samples received were smaller than required by Clause 4.1 of BS 1881 : Part 124 :2015. 4. Quality control samples are tested with each batch of samples.
BS1881 Calcium Oxide Content (EDTA Titration)	1. Testing was in accordance with BS 1881: Part 124: 2015 Clause 6.4. 2. Cement content (%m/m) has been calculated assuming the presence in the concrete of Ordinary Portland Cement, containing 64.5% by mass of Calcium Oxide. 3. Samples of the original constituents of the mix were not submitted. 4. Samples received were smaller than required by Clause 4.1 of BS 1881 : Part 124 :2015. 5. Quality control samples are tested with each batch of samples. 6. Samples were identified as being part of a batch and therefore the results are from a single analysis only.
BS1881 Cement Content (ICP method)	1. Testing was in accordance with BS 1881: Part 124: 2015 Clause 6.5 by ICP. 2. Cement content has been calculated assuming the presence in the concrete of Ordinary Portland Cement, containing 20.2% and 64.5% by mass of soluble silica and calcium oxide respectively. 3. Samples of the original constituents of the mix were not submitted. 4. Samples received were smaller than required by Clause 4.1 of BS 1881 : Part 124 :2015. 5. Quality control samples are tested with each batch of samples. 6. Samples were identified as being part of a batch
Chloride in Concrete by Aquakem (Acid Soluble)	1. Testing was in accordance with in house method statement MS - CL - Chloride in Hardened concrete by Aquakem. 2. Samples were not passed over the 125micron BS Test Sieve before testing. 3. Quality control samples are tested with each batch of samples.
Moisture Content of Grout Mortar & Concrete	1. Testing was in accordance with in house method statement MS Moisture Content of Grout, Mortar and Concrete
MS - Sulphate in Hardened Concrete by ICP	1. Testing undertaken in accordance with in house method statement MS - Sulphate in hardened concrete by ICP. 2. Samples received were smaller than required by Clause 4.1 of BS 1881 : Part 124 :2015. 3. Quality control samples are tested with each batch of samples.
BS1881 Water Cement Ratio	1. Testing was in accordance with BS 1881: Part 124: 2015+A1:2021. 2. Cement content was determined in accordance with BS 1881: Part 124: 2015+A1:2021 Clause 6.5 by ICP. 3. Samples of the original constituents of the mix was/was not submitted. 4. Original water/cement ratio has been calculated in accordance with BS 1881: Part 124: 2015+A1:2021 Clause 9.6. 5. Samples received were smaller than required by Clause 4.1 of BS 1881 : Part 124 :2015+A1:2021.

E26/05801/SLT/26-17850

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Additional Method Notes

Method	Notes
BS4551 Mix Proportion	1. Sample preparation was in accordance with BS4551 2005 + A2:2013 Clause 7. 4.5. 2. Testing was in accordance with BS 4551: Part 2: 2005 + A2:2013 Clause 7.5.3 and 7.5.3.4. 3. Cement content has been calculated assuming the presence in the mix of Ordinary Portland Cement containing 20.2% and 64.5% by mass of soluble silica and calcium oxide respectively.
BS6463-102 Neutralizing Value	Testing was undertaken in accordance with an in house method statement based on BS6463-102
BS3882:2015 Specification for topsoil	Testing was undertaken in accordance with the methodologies within BS3882:2015
BS8601:2013 Specification for subsoil	Testing was undertaken in accordance with the methodologies within BS8601:2013
Depth of Carbonation (BS EN 14630:2006)	1. Testing was carried out in accordance with BS EN 14630:2006 Depth of Carbonation. 2. Testing was carried out in the laboratory. 3. Indicator Solution Used– 1g of Phenolphthalein powder dissolved in a solution of 50ml of Methylated Spirits and 100ml of deionised water
HAC	1. Testing was in accordance with BRE Information Sheet IS 15/74. 2. Contaminated samples may give a false result. 3. Samples taken from extensively carbonated concrete containing Portland Cement may give a false positive result. 4. If conclusive identification of the presence of High Alumina Cement is required this result should be confirmed by a more definitive test.
pH Value of Concrete	1. Testing was in accordance with in house method statement MS – pH Value of Hardened Concrete, Grout and Water from voids
Sub - EN1744 Sulphide	Analysis was in accordance with BS EN 1744-1 : 2009 + A1 : 2012, clause 13 and subcontracted to a UKAS accredited laboratory for this test

Analytical Test Report

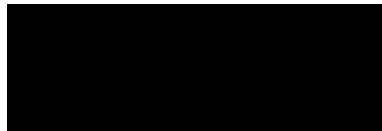
E26/05803/SLT/26-17852

Tested on Behalf of

Clients Project Reference St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384
Clients Order Number 22384/ML
Sample(s) Analysed 4
Sample(s) received / instructed 27/04/2026 / 27/04/2026
Sample(s) Tested 27/04/2026 to 06/05/2026
Report issued 08/05/2026
Report issue number 1

SOILS LIMITED
Newton House
Cross Road
Surrey
KT20 5SR

Signed



James Gane
Analytical Services Manager

Notes:

General

Please be advised that CTS Chemistry & Microbiology has now become Environmental Chemistry Laboratories (ECT). This change reflects our updated organisational structure and branding; however, all laboratory facilities, instrumentation, methods, and personnel remain the same. As part of this transition, our UKAS accreditation schedule has been updated from No. 4161 to No. 4150. There is no impact on the scope of accredited testing, quality, or any operational processes. We appreciate your continued trust and look forward to supporting you under our new name: Environmental Chemistry Laboratories (ECT). If you have any questions regarding this change, please contact our team.

This report shall not be reproduced except in full

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples were supplied by customer, results apply to the samples as received.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30°C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Stone Content was determined in accordance with CTS method statement MS - CL - Sample Prep and refers to the percentage of stones retained on a 10mm BS test sieve.

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

Please note: Where further analysis is required, samples identified as containing asbestos are screened and tested on an as received basis. No correction is made for moisture content and other than the asbestos test(s) these results are not covered by our accreditation.

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

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

U = UKAS Accreditation, M = MCERTS Accreditation, N = Unaccredited, SC = Subcontracted

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analytical Test Results - ENV Analysis Solids

Lab Reference					767846	767847	767848
Client Sample ID					WS1	WS2	WS3
Client Sample Location					-	-	-
Client Sample Type					D	D	D
Client Sample Number					-	-	-
Depth - Top (m)					0.3	0.2	0.1
Depth - Bottom (m)					0.3	0.2	0.1
Date of Sampling					23/04/2026	23/04/2026	23/04/2026
Time of Sampling					-	-	-
Sample Matrix					Clay	Clay	Clay
Determinant	Code	Units	LOD	Accreditation			
Arsenic	ICPMETS	mg/kg	10	M	< 10	< 10	< 10
Boron (Water Soluble)	WSBORONS	mg/kg	2.5	N	< 2.5	< 2.5	< 2.5
Cadmium	ICPMETS	mg/kg	0.2	M	0.9	0.5	0.7
Chromium (Total)	ICPMETS	mg/kg	1	U	3.8	5.8	8.1
Copper	ICPMETS	mg/kg	2	M	13	16	13
Lead	ICPMETS	mg/kg	1.5	M	12	57	21
Mercury	ICPMETS	mg/kg	2.5	U	< 2.5	< 2.5	< 2.5
Nickel	ICPMETS	mg/kg	1	M	15	4.8	12
Selenium	ICPMETS	mg/kg	8	N	< 8.0	< 8.0	< 8.0
Vanadium	ICPMETS	mg/kg	0.5	U	19	21	28
Zinc	ICPMETS	mg/kg	2	M	33	31	35
Total Phenols	SKALARPHS	mg/kg	1	M	< 1.0	< 1.0	< 1.0
Chromium (Hexavalent)	SKALARHCS	mg/kg	1	N	< 1.0	< 1.0	< 1.0
pH	PHS	pH units	1	M	8.3	5.7	7.0
SOM	TOCS	%	0.86	U	1.0	4.1	< 0.9
Asbestos	ASB	p/a	-	U	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Acenaphthene	PAHASRDS	mg/kg	0.02	M	< 0.20	< 0.02	0.11
Acenaphthylene	PAHASRDS	mg/kg	0.02	U	0.26	< 0.02	0.17
Anthracene	PAHASRDS	mg/kg	0.02	U	0.51	< 0.02	0.56
Benzo[a]anthracene	PAHASRDS	mg/kg	0.02	M	2.8	0.08	2.1
Benzo[a]pyrene	PAHASRDS	mg/kg	0.02	M	4.6	0.08	2.2
Benzo[b]fluoranthene	PAHASRDS	mg/kg	0.02	M	5.2	0.09	2.0
Benzo[ghi]perylene	PAHASRDS	mg/kg	0.02	M	5.1	0.06	1.3
Benzo[k]fluoranthene	PAHASRDS	mg/kg	0.02	M	1.7	0.04	0.93
Chrysene	PAHASRDS	mg/kg	0.02	M	3.2	0.07	1.7
Dibenzo[a,h]anthracene	PAHASRDS	mg/kg	0.02	M	0.95	< 0.02	0.30
Fluoranthene	PAHASRDS	mg/kg	0.02	M	7.3	0.17	4.4
Fluorene	PAHASRDS	mg/kg	0.02	M	< 0.20	< 0.02	0.09
Indeno[1,2,3-cd]pyrene	PAHASRDS	mg/kg	0.02	M	4.5	0.06	1.5
Naphthalene	PAHASRDS	mg/kg	0.02	M	< 0.20	< 0.02	< 0.02
Phenanthrene	PAHASRDS	mg/kg	0.02	M	0.87	0.06	1.6
Pyrene	PAHASRDS	mg/kg	0.02	M	6.9	0.15	4.2
Total PAH (Sum of USEPA 16)	PAHASRDS	mg/kg	0.32	U	45	1.0	23

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analytical Test Results - ENV Analysis Solids

Lab Reference	767849
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Client Sample ID	WS4
Client Sample Location	-
Client Sample Type	D
Client Sample Number	-
Depth - Top (m)	0.7
Depth - Bottom (m)	0.7
Date of Sampling	23/04/2026
Time of Sampling	-
Sample Matrix	Clay

Determinant	Code	Units	LOD	Accreditation	
Arsenic	ICPMETS	mg/kg	10	M	12
Boron (Water Soluble)	WSBORONS	mg/kg	2.5	N	< 2.5
Cadmium	ICPMETS	mg/kg	0.2	M	0.8
Chromium (Total)	ICPMETS	mg/kg	1	U	15
Copper	ICPMETS	mg/kg	2	M	12
Lead	ICPMETS	mg/kg	1.5	M	12
Mercury	ICPMETS	mg/kg	2.5	U	< 2.5
Nickel	ICPMETS	mg/kg	1	M	16
Selenium	ICPMETS	mg/kg	8	N	< 8.0
Vanadium	ICPMETS	mg/kg	0.5	U	39
Zinc	ICPMETS	mg/kg	2	M	42
Total Phenols	SKALARPHS	mg/kg	1	M	< 1.0
Chromium (Hexavalent)	SKALARHCS	mg/kg	1	N	< 1.0
pH	PHS	pH units	1	M	5.8
SOM	TOCS	%	0.86	U	< 0.9
Asbestos	ASB	p/a	-	U	No Asbestos Detected
Acenaphthene	PAHASRDS	mg/kg	0.02	M	< 0.02
Acenaphthylene	PAHASRDS	mg/kg	0.02	U	< 0.02
Anthracene	PAHASRDS	mg/kg	0.02	U	< 0.02
Benzo[a]anthracene	PAHASRDS	mg/kg	0.02	M	< 0.02
Benzo[a]pyrene	PAHASRDS	mg/kg	0.02	M	< 0.02
Benzo[b]fluoranthene	PAHASRDS	mg/kg	0.02	M	< 0.02
Benzo[ghi]perylene	PAHASRDS	mg/kg	0.02	M	< 0.02
Benzo[k]fluoranthene	PAHASRDS	mg/kg	0.02	M	< 0.02
Chrysene	PAHASRDS	mg/kg	0.02	M	< 0.02
Dibenzo[a,h]anthracene	PAHASRDS	mg/kg	0.02	M	< 0.02
Fluoranthene	PAHASRDS	mg/kg	0.02	M	< 0.02
Fluorene	PAHASRDS	mg/kg	0.02	M	< 0.02
Indeno[1,2,3,-cd]pyrene	PAHASRDS	mg/kg	0.02	M	< 0.02
Naphthalene	PAHASRDS	mg/kg	0.02	M	< 0.02
Phenanthrene	PAHASRDS	mg/kg	0.02	M	< 0.02
Pyrene	PAHASRDS	mg/kg	0.02	M	< 0.02
Total PAH (Sum of USEPA 16)	PAHASRDS	mg/kg	0.32	U	< 0.32

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analytical Test Results - EPHVPHS

Lab Reference					767846	767847	767848
Client Sample ID					WS1	WS2	WS3
Client Sample Location					-	-	-
Client Sample Type					D	D	D
Client Sample Number					-	-	-
Depth - Top (m)					0.3	0.2	0.1
Depth - Bottom (m)					0.3	0.2	0.1
Date of Sampling					23/04/2026	23/04/2026	23/04/2026
Time of Sampling					-	-	-
Sample Matrix					Clay	Clay	Clay
Determinant	Code	Units	LOD	Accreditation			
Total TPH (C6-C8) [7]	VPHS	mg/kg	0.16	N	< 0.16	< 0.16	< 0.16
Total TPH (>C8 to C10) [1]	TPHS	mg/kg	5	M	7.6	6.5	6.8
Total TPH (>C10 to C12) [1]	TPHS	mg/kg	5	M	6.5	< 5.0	< 5.0
Total TPH (>C12 to C16) [1]	TPHS	mg/kg	5	M	16	6.7	12
Total TPH (>C16 to C21) [1]	TPHS	mg/kg	5	M	120	11	87
Total TPH (>C21 to C40) [1]	TPHS	mg/kg	10	M	1300	96	260
Total TPH (C6 to C40) [3]	TPHS	mg/kg	15	N	1400	120	370

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analytical Test Results - EPHVPHS

Lab Reference	767849
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Client Sample ID	WS4
Client Sample Location	-
Client Sample Type	D
Client Sample Number	-
Depth - Top (m)	0.7
Depth - Bottom (m)	0.7
Date of Sampling	23/04/2026
Time of Sampling	-
Sample Matrix	Clay

Determinant	Code	Units	LOD	Accreditation	
Total TPH (C6-C8) [7]	VPHS	mg/kg	0.16	N	< 0.16
Total TPH (>C8 to C10) [1]	TPHS	mg/kg	5	M	< 5.0
Total TPH (>C10 to C12) [1]	TPHS	mg/kg	5	M	< 5.0
Total TPH (>C12 to C16) [1]	TPHS	mg/kg	5	M	< 5.0
Total TPH (>C16 to C21) [1]	TPHS	mg/kg	5	M	< 5.0
Total TPH (>C21 to C40) [1]	TPHS	mg/kg	10	M	< 15.0
Total TPH (C6 to C40) [3]	TPHS	mg/kg	15	N	18

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
767846	WS1	-	SOIL	-	Brown sandy gravelly silty clay	7.5	41	-
767847	WS2	-	SOIL	-	Dark brown sandy silty clay with rare organic matter	24	< 0.1	-
767848	WS3	-	SOIL	-	Dark brown sandy gravelly silty clay with rare organic matter	16	5.1	-
767849	WS4	-	SOIL	-	Brown sandy silty clay	20	< 0.1	-

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
767846	WS1	-	SOIL	-	PAHAR- 1/10 dilution.

E26/05803/SLT/26-17852

St Crispin's Church Hall, Church Place, Pulborough, RH20 1AF 22384

Analysis Methodologies - Please refer to sample comments page (if present) for any changes to methods Methods

Site addresses where testing is performed: Leicester - 7-11 Harding Street, Leicester, LE1 4DH Poole - Unit D11, Admiralty Park, Station Road, Holton Heath, Poole, BH16 6HX

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preparation	Test Site	Test Details
ASB	MS - AS - Asbestos	-	-	Leicester	Fibre identification is in accordance with in house documented methods which are based on the procedure documented in the HSE Document HSG 248 "Asbestos: The analysts guide for sampling, analysis and clearance procedures"
ICPMETS	MS - CL - ICP Metals	Air dried	Passing 10mm test sieve	Leicester	Determination of metals in soils via ICP
PAHASRDS	MS - CL - PAH (As Received)	As received	Passing 10mm test sieve	Leicester	Determination of Polyaromatic hydrocarbons in soil via GC-MS
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Leicester	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Leicester	Preparation of samples (including determination of moisture content) to allow for subsequent analysis
SKALARHCS	MS - CL - Hexavalent Chromium by Skalar	As received	Passing 10mm test sieve	Leicester	Determination of hexavalent chromium in soil using Skalar segmented flow analyser
SKALARPHS	MS - CL - Phenols by Skalar	As received	Passing 10mm test sieve	Leicester	Determination of total phenols in soil using Skalar segmented flow analyser
TOCS	MS - CL - TOC Eltra	Air Dried	Passing 10mm test sieve	Leicester	Determination of Total Organic Carbon in soils
TPHS	MS - CL - TPH (GC-FID)	As received	Passing 10mm test sieve	Leicester	Determination of Total Petroleum Hydrocarbons in soil using GC-FID
VPHS	MS - CL - VPH	As received	Passing 10mm test sieve	Leicester	Determination of VPH in soils via Headspace-GC-MS
WSBORONS	MS - CL - WS Boron	Air dried	Passing 10mm test sieve	Leicester	Determination of Water soluble Boron in soils via ICP

E26/05803/SLT/26-17852

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HWOL TPH Acronym Index

Acronym	Description
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics and Aromatics
AL	Aliphatics Only
AR	Aromatics Only
2D	GC-GC - Double Coil Gas Chromatography
#1	EH_Total but with humics mathematically subtracted
#2	EH_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (except for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry

Key of Codes	
[1]	EH_1D_TOTAL
[2]	EH_CU_1D_TOTAL
[3]	EH_CU+HS_1D_TOTAL
[4]	EH_1D+HS_MS_TOTAL
[5]	HS_MS_1D_AL
[6]	HS_MS_1D_AR
[7]	HS_MS_1D_TOTAL
[8]	EH_CU_1D_AL
[9]	EH_CU_1D_AR
[10]	EH_2D+HS_1D_TOTAL
[11]	EH_CU_2D+HS_1D_TOTAL
[12]	EH_2D_TOTAL
[13]	EH_2D_AL
[14]	EH_2D_AR
[15]	EH_CU_2D_TOTAL
[16]	EH_CU_2D_AL
[17]	EH_CU_2D_AR

Appendix D.3 General Assessment Criteria

HUMAN HEALTH RISK ASSESSMENT

Introduction

The statutory definition of contaminated land was initially defined in the Environmental Protection Act 1990, ref. 1.1, which was introduced by the Environment Act 1995, ref. 1.2, and retained in the Environment Act 2021, ref 1.3, as;

‘Land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that –

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b) pollution of controlled waters is being, or is likely to be, caused.’

The UK guidance on the assessment of contaminated land has developed as a direct result of the introduction of these Acts. The technical guidance supporting the original legislation was summarised in a number of key documents collectively known as the Contaminated Land Reports (CLRs). These have since been replaced or superseded by Land Contamination Risk Management (LCRM) 2021, ref 1.4 produced and administrated by the Environment Agency online through the .GOV.uk website <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> .

However, the basic definitions, methodology and guidance remain essentially the same utilizing the UK Contaminated Land Exposure Assessment Models (CLEA) as within the original CLR and planning guidance it replaces or supersedes.

In establishing whether a site fulfils the statutory definition of ‘contaminated land’ it remains necessary to identify, whether a pollutant linkage exists in respect of the land in question and whether the pollutant linkage:

- is resulting in significant harm being caused to the identified receptor in the pollutant linkage,
- presents a significant possibility of significant harm being caused to that receptor,
- is resulting in the pollution of the controlled waters which constitute the receptor, or
- is likely to result in such pollution.

A ‘pollutant linkage’ may therefore be defined as the confirmation of a link between a contaminant ‘source’ and a vulnerable at risk ‘receptor’ by means of a ‘pathway’ and that the risk is potentially significant. If there is no complete linkage, risk defaults to low to negligible and can never be potentially significant.

Assessment Methodology

A four-stage assessment process is followed for identifying potential pollutant linkages on a site. These stages are summarised in the table below:

No.	Process	Description
1	Hazard Identification	Establishing contaminant sources, pathways and receptors (the conceptual model).
2	Hazard Assessment	Analysing the potential for unacceptable risks (what linkages could be present, what could be the effects).
3	Risk Estimation	Trying to establish the magnitude and probability of the possible consequences (what degree of harm might result and to what receptors, and how likely is it).
4	Risk Evaluation	Deciding whether the risk is unacceptable in the context of existing and future proposals.

Stages 1 and 2 develop an initial '*conceptual model*' based upon information collated from desk-based available and existing site information and a walkover of the site as recommended in BS10175 and LCRM. The formation of any conceptual model is an iterative process and as such it should be updated and refined throughout each phase of the project to reflect any additional information obtained and unknowns being resolved and identify the potential contaminants of concern at the site, i.e. those with the potential to cause significant harm to identified receptors.

The extent of the desk studies and enquiries to be conducted should be in general accordance with BS10175 and other UK guidance to produce an initial conceptual model highlighting the known potential risks, remaining unknowns and contaminants of concern. The information from these enquiries is presented in a desk study or preliminary report with recommendations, if necessary, for further work based upon the conceptual model findings and any identified or unresolved unknowns.

If potential pollutant linkages or potentially significant unknowns are identified within the initial conceptual model, further site investigation and report will be recommended and usually required under planning. Such investigation should be based on and driven by the findings of the initial conceptual model and planned in general accordance with BS10175, LCRM and other current UK guidance where relevant. The number of exploratory holes and samples collected for analysis should be consistent with the size, extent and nature of the site, the identified contaminants of concern and the level of initial risk identified in the initial conceptual model. This will enable a contamination risk assessment to be conducted in accordance with current UK requirements, at which point the conceptual model can be updated and any relevant pollutant linkages can be further quantified and any remaining unknowns resolved. As previously this is an iterative process that may highlight or require additional investigation to resolve to the satisfaction of the regulator.

A two-stage investigation process may therefore be more appropriate where time constraints are less of an issue with the first intrusive investigation being conducted as an initial or screening assessment to confirm or validate the presence of potential sources on site identified in the initial conceptual model and to investigate if additional unknown sources not previously identified are present. This helps to define the scope, extent and requirements of a second more refined and targeted investigation to delineate wherever possible the extent of the identified contamination, contaminants of concern and/or remaining unknowns.

All site works should be undertaken in general accordance with the British Standards BS 10175, ref. 5, for environmental only investigations and BS 5930:2015, ref. 1.6, in the case of combined Geoenvironmental and/or Geotechnical investigations.

The results of analysis are compared initially against generic guidance values which are dependent on the proposed end-use of the development and which must ultimately be based on traceable, scientifically valid and justified exposure and chemical data using the UKCLEA methodology.

The end-use and therefore potential exposure pathways may be defined as one of the following under current UK guidance;

- Residential with homegrown produce i.e. typical low rise and low-density housing with gardens where vegetables and fruits may be grown for home consumption.
- Residential without homegrown produce i.e. low-density housing where no gardens are present where vegetables and fruits could be grown for home consumption.
- Allotments – i.e. areas where vegetables and fruits are grown for home consumption but are not specifically associated with a residential property.
- Public open space residential – i.e. grassed areas adjacent and/or directly related to high density housing and other common or communal open areas on which underlying soils could be exposed but on which vegetables and fruits are not grown for consumption.
- Public open space – i.e. areas such as parks, playing fields and other recreational areas to which public access is possible but otherwise to which there is no direct residential linkage.
- Commercial – i.e. industrial premises where there is limited exposure to soil and residents are not present on site.

Standard Land-use Scenarios

The standard land-use scenarios used to develop exposure models are further detailed in the following sections:

Residential with homegrown produce

Generic scenario assumes a house built on a ground bearing slab with a private garden having a lawn, flowerbeds and a small fruit and vegetable patch.

-
- Critical receptor is assumed to be a young female child (zero to six years old)
 - Exposure pathways include direct soil and indoor dust ingestion, consumption of home-grown produce and any adhering soil, skin contact with soils and indoor dust and inhalation of indoor and outdoor dust and vapours.
-

A sub-set of the Residential land-use is **Residential without Homegrown produce**. The generic scenario assumes low density housing with communal landscaped gardens where the consumption of homegrown vegetables will not occur and the pathways of direct ingestion and produce inputs are suitably moderated.

Allotments

Areas of open space commonly made available to local users but remote from residential properties, but on which tenants may grow fruit and vegetables for their own consumption. Typically, there are a number of plots to a site which may have a total area of up to 1 hectare. The tenants are assumed to be adults and that young children make only occasional accompanied visits.

Although some allotment holders may choose to keep animals on allotments, potential exposure to animal products is not currently considered within the CLEA model.

-
- Critical receptor is a young female child (zero to six years old)
 - Exposure pathways include direct soil ingestion, consumption of homegrown produce and any adhering soil, skin contact with soils and inhalation of outdoor dust and vapours but at reduced exposure levels reflecting non-residential status.
-

Commercial

This generic scenario assumes a typical commercial or light industrial property at which employees spend most time indoors and are involved in office-based or relatively light physical work.

-
- Critical receptor is a working female adult (aged 16 to 65 years old).
 - Exposure duration is over working lifetime
 - Exposure pathways include direct soil and indoor dust ingestion, skin contact with soils and dusts and inhalation of dust and vapours but exposure reduced to reflect non-residential nature and general lack of open spaces.
-

Public Open Space within Residential Area

This generic scenario refers to any grassed area up to 0.05 ha that is associated with residential properties but is not for their exclusive use and on which no fruit or vegetables are grown for home consumption.

-
- Grassed area of up to 0.05 ha and a considerable proportion of this (up to 50%) may be bare soil which can be interacted with directly
 - Predominantly used by children for play and/or access
 - Sufficiently close proximity to home for tracking back of soil to occur, thus indoor exposure pathways apply
-

-
- older children chosen as the critical receptor on basis that they will use site most frequently (age class 4-9 years)
-
- ingestion rate assumed to be 75 mg.day⁻¹
-

Public Open Space Park

This generic scenario refers to any public park or grassed space that is more than 0.5ha in area:

-
- Public park (>0.5 ha), predominantly grassed and may also contain children's play equipment and border areas of soil containing flowers or shrubs (75% assumed cover)
-
- Female child age classes 1-6
-
- Soil ingestion rate of 50 mg.day⁻¹
-
- Occupancy period outdoors = 2 hours.day⁻¹
-
- Exposure frequency of 170 days.year⁻¹ for age classes 2-18 and 85 days.year⁻¹ for age class 1
-
- Outdoor exposure pathways only (no tracking back of soils).
-

Human Health Generic Quantitative Risk Assessment (GQRA) involves the comparison of contaminant concentrations measured in soil at the site with Generic Assessment Criteria (GAC) generated using the CLEA model based on the exposure and land use scenario assumptions noted above.

GAC's are deliberately conservative values adopted to ensure that they are applicable to the majority of possible contaminated sites and below which there is considered a low to negligible risk to identified human health receptors, i.e. there can be no harm. These values may be published Contaminated Land Exposure Assessment Model (CLEA) derived GAC's derived by a competent third party or the Environment Agency / DEFRA. It is imperative to the risk assessor to understand the uncertainties and limitations associated with these GAC's to ensure that they are used appropriately.

Where the adoption of a GAC is not appropriate, for instance when the intended land-use is at variance the CLEA standard land-uses or the contaminant is susceptible to wide variation depending on factors such as form and bioavailability, then a Detailed Quantitative Risk Assessment (DQRA) may be undertaken to develop site specific or remediation values for relevant soil contaminants based on site and contaminant specific conditions.

In 2014, the publication of Category 4 Screening Levels (C4SL), refs 1.8 and 1.9, as part of the Defra-funded research project SP1010, included modifications to certain exposure assumptions documented within EA Science Report SC050221/SR3 (herein after referred to as SR3) ref 1.7 used in the generation of SGVs. C4SL were published for six substances (cadmium, arsenic, benzene, benzo(a)pyrene, chromium VI and lead) for a sandy loam soil type with 6% soil organic matter, based on a low level of toxicological concern. Where a C4SL has been published, Soils Limited has adopted them as GAC for these six substances.

For all other substances the soils will be compared to Suitable For Use Levels (S4ULs) published by LQM, ref. 1.10, which were developed for around 85 substances and are

intended to enable a screening assessment of the risks posed by soil quality on development sites. The updated LQM/CIEH GAC publication was developed to accommodate recent developments in the understanding of chemical, toxicological and routine exposure to soil-based contaminants.

Where no S4UL or C4SL is available, assessment criteria may be generated using the Contaminated Land Exposure Assessment (CLEA) Software Version 1.07, ref. 1.11, Toxicological and physico-chemical/fate and transport data used to generate the criteria has been derived from a hierarchy of data sources as follows:

1. Environment Agency or Department of Environment Food and Rural Affairs (DEFRA) documents;
2. Other documents produced by UK Government or state organisations;
3. European institution documents;
4. International organisation documents;
5. Foreign government institutions.

In the case of the majority of contaminants considered, the toxicological data has been drawn originally from the relevant CLR 9 TOX report, or updated toxicological data published by the Environment Agency (2009), where available. Where no TOX report is available reference has been made to appropriately determined health criteria values, derived from the above-noted hierarchy, as this is considered to represent appropriate peer reviewed data sources. Similarly, fate and transport data should also be determined by reference to appropriate sources and the CLEA model assumptions.

Chemical laboratory test results are processed as follows. A statistical analysis of the results is conducted, as detailed in CIEH and CL:AIRE 'Guidance on Comparing Soil Contamination Data with a Critical Concentration', ref. 1.12. Individual concentrations are then compared to the selected guideline values to identify and isolate concentrations of contaminants that are in excess of the selected screening low or no risk criteria.

Where the risk estimation identifies significant concentrations of one or more contaminants, further risk evaluation needs to be undertaken often as a site specific DQRA in line with current guidance to determine and confirm if the identified exceedances are significant in the context of the proposed development or activity.

References

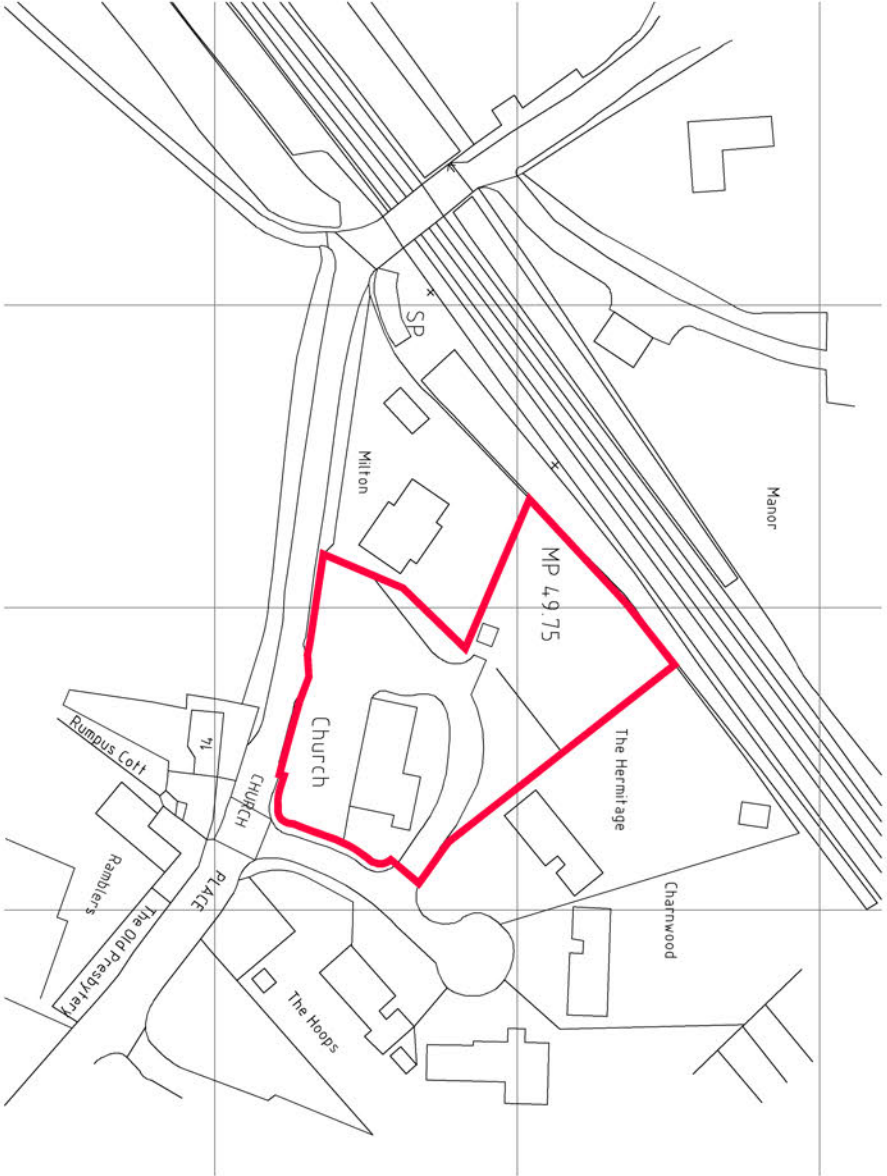
- 1.1 The Environmental Protection Act, Part IIA, Section 78, DoE 1990.
- 1.2 Environment Act 1995, Section 57, DoE 1995.
- 1.3 Environment Act 2021 OEP 2021.
- 1.4 Land Contamination Risk Management Gov.UK (EA) 2021
- 1.5 BS 10175: 2011+A2:2017 '*Investigation of potentially contaminated sites. Code of practice*', British Standards Institute, 2017
- 1.6 BS 5930: 2015+A1:2020 '*Code of practice for ground investigations*', British Standards Institute, 2015
- 1.7 Science Report SC050021/SR3 '*Updated technical background to the CLEA model*', Environment Agency, 2008
- 1.8 DEFRA SP1010: Development of Category 4 Screening Levels for the Assessment of Land Affected by Contamination, published March 2014.
- 1.9 Contaminated Land: Applications in Real Environment (CL:AIRE) (2014). '*Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*', Revision 2, DEFRA research project SP1010.
- 1.10 The LQM/S4ULs for Human Health Risk Assessment, Nathanail P, McCaffery C, Gillett A, Ogden R, and Nathanail J, Land Quality Press, Nottingham, published 2015.
- 1.11 CLEA '*Software Version 1.071*' (downloaded from the CL:AIRE website , <https://www.claire.co.uk/home/news/44-risk-assessment/178-soil-guideline-values>)
- 1.12 CIEH '*Guidance on Comparing Soil Contamination Data with a Critical Concentration*', Chartered Institute of Environmental Health (CIEH) and Contaminated Land: Applications in Real Environments (CL:AIRE), May 2008.

Land Use			Residential With or Without Plant Uptake									Public Open Space (POS)											Name	Authority	Date
			With			Without			Allotments			Commercial			Residential			Park							
			SOM	1.0	2.5	6	1	2.5							6	1	2.5	6	1	2.5	6	1			
Type	Contaminants	Species	Year																						
Metals	Antimony		2010					550						7500								EIC/AGS/ CL:AIRE	EIC/AGS/ CL:AIRE	2010	
	Arsenic		2014		37		40			49			640		79		168				C4SL	DEFRA	2014		
			2015		37		40			40			640		79		170				S4UL	LQM/CIEH	2015		
	Barium		2010					1300						22000							EIC/AGS/ CL:AIRE	EIC/AGS/ CL:AIRE	2010		
	Beryllium		2015		1.7		1.7			35			12		2.2		63				S4UL	LQM/CIEH	2015		
	Boron		2015		290		11000			45			240000		21000		46000				S4UL	LQM/CIEH	2015		
	Cadmium		2015		11		85			1.9			190		120		532				S4UL	LQM/CIEH	2015		
	Chromium	III	2014		26		149		4.9		410		220		880		C4SL	DEFRA	2014						
			2015		910		910		18000		8600		1500		33000		S4UL	LQM/CIEH	2015						
			2014		21		21		170		49		23		250		C4SL	DEFRA	2014						
		VI	2015		6		6		1.8		33		7.7		220		S4UL	LQM/CIEH	2015						
	Copper		2015		2400		7100		520		68000		12000		44000		S4UL	LQM/CIEH	2015						
	Lead		2014*		82-210		130-310		30-84		1100-6000		270-760		580-1400		C4SL	DEFRA	2014						
	Mercury	Elemental	2012		1.0		1.0		26		26				210		DEFRA	2012							
			2015		1.2		1.2		21		58		16		30		S4UL	LQM/CIEH	2015						
		Inorganic	2012		170		170		80		36000				SGV	DEFRA	2012								
			2015		40		56		19		1100		120		240		S4UL	LQM/CIEH	2015						
		Methyl	2012		11		11		8		410				SGV	DEFRA	2012								
			2015		11		15		6		320		40		68		S4UL	LQM/CIEH	2015						
	Molybdenum		2010					670						17000				EIC/AGS/ CL:AIRE	EIC/AGS/ CL:AIRE	2010					
	Nickel		2012		130		130		230		1800				SGV	DEFRA	2012								
			2015		130		180		53		980		230		800		S4UL	LQM/CIEH	2015						
	Selenium		2012		350		595		120		13000				SGV	DEFRA	2012								
			2015		250		430		88		12000		1100		1800		S4UL	LQM/CIEH	2015						
	Vanadium		2015		410		1200		91		9000		2000		5000		S4UL	LQM/CIEH	2015						
	Zinc		2015		3700		40000		620		730000		81000		170000		S4UL	LQM/CIEH	2015						
BTEX & MTBE	Benzene		2012		0.33		0.33		0.07		95			SGV	DEFRA	2012									
			2014		0.87		3.3		0.18		98		140		230		C4SL	DEFRA	2014						
			2015	0.087	0.17	0.37	0.38	0.7	1.4	0.017	0.034	0.075	27	47	90	72	72	73	90	100	110	S4UL	LQM/CIEH	2015	
	Toluene		2012		610		610		120		4400				SGV	DEFRA	2012								
			2015	130	290	660	880	1900	3900	22	51	120	56000	110000	180000	56000	56000	56000	87000	95000	100000	S4UL	LQM/CIEH	2015	
	Ethylbenzene		2012		350		350		90		2800				SGV	DEFRA	2012								
			2015	47	110	260	83	190	440	16	39	91	5700	13000	27000	24000	24000	25000	17000	22000	27000	S4UL	LQM/CIEH	2015	
	Xylenes	o-xylene	2012		250		250		160		2600				SGV	DEFRA	2012								
			2015	60	140	330	88	210	480	28	67	160	6600	15000	33000	41000	42000	43000	17000	24000	33000	S4UL	LQM/CIEH	2015	
		m-xylene	2012		240		240		180		3500				SGV	DEFRA	2012								
			2015	59	140	320	82	190	450	31	74	170	6200	14000	31000	41000	42000	43000	17000	24000	32000	S4UL	LQM/CIEH	2015	
		p-xylene	2012		230		230		160		3200				SGV	DEFRA	2012								
			2015	56	130	310	79	180	430	29	69	160	5900	14000	30000	41000	42000	43000	17000	23000	31000	S4UL	LQM/CIEH	2015	
Petroleum Hydrocarbons Fractions	Aliphatic >C5 - C6		2015	42	78	160	42	78	160	730	1700	3900	3200	5900	12000	570000	590000	600000	95000	5900	12000	S4UL	LQM/CIEH	2015	
	Aliphatic >C6 - C8		2015	100	230	530	100	230	530	2300	5600	13000	7800	17000	40000	600000	610000	620000	150000	17000	40000	S4UL	LQM/CIEH	2015	
	Aliphatic >C8 - C10		2015	27	65	150	27	65	150	320	770	1700	2000	4800	11000	13000	13000	13000	14000	4800	11000	S4UL	LQM/CIEH	2015	
	Aliphatic >C10 - C12		2015	130	330	760	130	330	770	2200	4400	7300	9700	23000	47000	13000	13000	13000	21000	23000	47000	S4UL	LQM/CIEH	2015	
	Aliphatic >C12 - C16		2015	1100	2400	4300	1100	2400	4400	11000	13000	13000	59000	82000	90000	13000	13000	13000	25000	82000	90000	S4UL	LQM/CIEH	2015	
	Aliphatic >C16 - C35		2015	65000	92000	110000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	170000	180000	S4UL	LQM/CIEH	2015	
	Aliphatic >C35 - C44		2015	65000	92000	140000	65000	92000	110000	260000	270000	270000	1600000	1700000	1800000	250000	250000	250000	450000	170000	180000	S4UL	LQM/CIEH	2015	
	Aromatic >C5 - C7		2015	70	140	300	370	690	1400	13	27	57	26000	46000	86000	56000	56000	56000	76000	84000	92000	S4UL	LQM/CIEH	2015	
	Aromatic >C7 - C8		2015	130	290	660	860	1800	3900	22	51	120	56000	110000	180000	56000	56000	56000	87000	95000	100000	S4UL	LQM/CIEH	2015	

Land Use			Residential With or Without Plant Uptake									Public Open Space (POS)									Name	Authority	Date	
			With			Without			Allotments			Commercial			Residential			Park						
			SOM	1.0	2.5	6	1	2.5							6	1	2.5	6	1	2.5				6
Type	Contaminants	Species	Year																					
	Aromatic >C8 - C10		2015	34	83	190	47	110	270	8.6	21	51	3500	8100	17000	5000	5000	5000	7200	8500	9200	S4UL	LQM/CIEH	2015
	Aromatic >C10 - C12		2015	74	180	380	250	590	1200	13	31	74	16000	28000	34000	5000	5000	5000	9200	9700	10000	S4UL	LQM/CIEH	2015
	Aromatic >C12 - C16		2015	140	330	660	1800	2300	2500	23	57	130	36000	37000	38000	5100	5100	5000	10000	10000	10000	S4UL	LQM/CIEH	2015
	Aromatic >C16 - C21		2015	260	540	930	1900	1900	1900	46	110	260	28000	28000	28000	3800	3800	3800	7600	7700	7800	S4UL	LQM/CIEH	2015
	Aromatic >C21 - C35		2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aromatic >C34 - C44		2015	1100	1500	1700	1900	1900	1900	370	820	1600	28000	28000	28000	3800	3800	3800	7800	7800	7900	S4UL	LQM/CIEH	2015
	Aliphatic + Aromatic >C44 - C70			1600	1800	1900	1900	1900	1900	1200	2100	3000	28000	28000	28000	3800	28000	28000	7800	7800	7900	S4UL	LQM/CIEH	2015
Polycyclic Aromatic Hydrocarbons (PAH' s) (mg/kg)	Acenaphthene		2015	210	510	1100	3000	4700	6000	34	85	200	84000	97000	100000	15000	15000	15000	29000	29000	29000	S4UL	LQM/CIEH	2015
	Acenaphthylene		2015	170	420	920	2900	4600	6000	28	69	160	83000	97000	100000	15000	15000	15000	29000	29000	29000	S4UL	LQM/CIEH	2015
	Anthracene		2015	2400	5400	11000	31000	35000	37000	380	950	2200	520000	54000	540000	74000	74000	74000	150000	150000	150000	S4UL	LQM/CIEH	2015
	Benzo(a)anthracene		2015	7.2	11	13	11	14	15	2.9	6.5	13	170	170	180	29	29	29	49	56	62	S4UL	LQM/CIEH	2015
	Benzo(a)pyrene		2014			5			5.3			5.7			76			10		21	C4SL	DEFRA	2014	
			2015	2.2	2.7	3	3.2	3.2	3.2	0.79	2	3.5	35	35	36	5.7	5.7	5.7	11	12	13	S4UL	LQM/CIEH	2015
	Benzo(b)fluoranthene		2015	2.6	3.3	3.7	3.9	4.0	4.0	0.99	2.1	3.9	44	44	45	7.1	7.2	7.2	13	15	16	S4UL	LQM/CIEH	2015
	Benzo(ghi)perylene		2015	320	340	350	360	360	360	290	470	640	3900	4000	4000	640	640	640	1400	1500	1600	S4UL	LQM/CIEH	2015
	Benzo(k)fluoranthene		2015	77	93	100	110	110	110	37	75	130	1200	1200	1200	190	190	190	370	410	440	S4UL	LQM/CIEH	2015
	Chrysene		2015	15	22	27	30	31	32	4.1	9.4	19	350	350	350	57	57	57	93	110	120	S4UL	LQM/CIEH	2015
	Dibenz(a,h)anthracene		2015	0.24	0.28	0.3	0.31	0.32	0.32	0.14	0.27	0.43	3.5	3.6	3.6	0.57	0.57	0.58	1.1	1.3	1.4	S4UL	LQM/CIEH	2015
	Fluoranthene		2015	280	560	890	1500	1600	1600	52	130	290	23000	23000	23000	3100	3100	3100	6300	6300	6400	S4UL	LQM/CIEH	2015
	Fluorene		2015	170	400	860	2800	3800	4500	27	67	160	63000	68000	71000	9900	9900	9900	20000	20000	20000	S4UL	LQM/CIEH	2015
	Indeno(1,2,3-cd)pyrene		2015	27	36	41	45	46	46	9.5	21	39	500	510	510	82	82	82	150	170	180	S4UL	LQM/CIEH	2015
	Naphthalene		2015	2.3	5.6	13	2.3	5.6	13	4.1	10	24	190	460	1100	4900	4900	4900	1200	1900	3000	S4UL	LQM/CIEH	2015
	Phenanthrene		2015	95	220	440	1300	1500	1500	15	38	90	22000	22000	23000	3100	3100	3100	6200	6200	6300	S4UL	LQM/CIEH	2015
	Pyrene		2015	620	1200	2000	3700	3800	3800	110	270	620	54000	54000	54000	7400	7400	7400	15000	15000	15000	S4UL	LQM/CIEH	2015
	Coal Tar (Bap as surrogate matter)		2015	0.79	0.98	1.1	1.2	1.2	1.2	0.32	0.67	1.2	15	15	15	2.2	2.2	2.2	4.4	4.7	4.8	S4UL	LQM/CIEH	2015
Chloroalkanes & alkenes	1,2 Dichloroethane		2015	0.0071	0.011	0.019	0.0092	0.013	0.023	0.0046	0.0083	0.016	0.67	0.97	1.7	29	29	29	21	24	28	S4UL	LQM/CIEH	2015
	1,1,1 Trichloroethane		2015	8.8	18	39	9	18	40	48	110	240	660	1300	3000	140000	140000	140000	57000	76000	100000	S4UL	LQM/CIEH	2015
	1,1,2,2 Tetrachloroethane		2015	1.6	3.4	7.5	3.9	8	17	0.41	0.89	2	270	550	1100	1400	1400	1400	1800	2100	2300	S4UL	LQM/CIEH	2015
	1,1,1,2 Tetrachloroethane		2015	1.2	2.8	6.4	1.5	3.5	8.2	0.79	1.9	4.4	110	250	560	1400	1400	1400	1500	1800	2100	S4UL	LQM/CIEH	2015
	Tetrachloroethene (PCE)		2015	0.18	0.39	0.9	0.18	0.4	0.92	0.65	1.5	3.6	19	42	95	1400	1400	1400	810	1100	1500	S4UL	LQM/CIEH	2015
			2021	0.31	0.7	1.6	0.32	0.71	1.6	2	4.8	11	24	55	130	3200	3300	3400	1400	1900	2500	C4SL	CLAIRE	2021
	Tetrachloromethane (Carbon Tetrachloride)		2015	0.026	0.056	0.13	0.026	0.056	0.13	0.45	1	2.4	2.9	6.3	14	890	920	950	190	270	400	S4UL	LQM/CIEH	2015
	Trichloroethene (TCE)		2015	0.016	0.034	0.075	0.017	0.036	0.08	0.041	0.091	0.21	1.2	2.6	5.7	120	120	120	70	91	120	S4UL	LQM/CIEH	2015
			2021	0.0093	0.02	0.043	0.0097	0.02	0.045	0.032	0.072	0.16	0.73	1.5	3.4	76	78	79	41	54	69	C4SL	CLAIRE	2021
	Trichloromethane (Chloroform)		2015	0.91	1.7	3.4	1.2	2.1	4.2	0.42	0.83	1.7	99	170	350	2500	2500	2500	2600	2800	3100	S4UL	LQM/CIEH	2015
	Vinyl Chloride (Cloroethene)		2015	0.00064	0.00087	0.0014	0.00077	0.001	0.0015	0.00055	0.001	0.0018	0.059	0.077	0.12	3.5	3.5	3.5	4.8	5	5.4	S4UL	LQM/CIEH	2015
			2021	0.0064	0.01	0.017	0.015	0.019	0.029	0.0017	0.0031	0.0058	1.1	1.4	2.2	7.8	7.8	7.8	18	19	19	C4SL	CLAIRE	2021
Explosives	2,4,6 Trinitrotoluene		2015	1.6	3.7	8.1	65	66	66	0.24	0.58	1.4	1000	1000	1000	130	130	130	260	270	270	S4UL	LQM/CIEH	2015
	RDX (Hexogen/Cyclonite/1,3,5-trinitro-1,3,5-triazacyclohexane)		2015	120	250	540	13000	13000	13000	17	38	85	210000	210000	210000	26000	26000	27000	49000	51000	53000	S4UL	LQM/CIEH	2015
	HMX (Octogen/1,3,5,7-tetrenitro-1,3,5,7-tetrazacyclo-octane)		2015	5.7	13	26	6700	6700	6700	0.86	1.9	3.9	110000	110000	110000	13000	13000	13000	23000	23000	24000	S4UL	LQM/CIEH	2015
Pesticides	Aldrin		2015	5.7	6.6	7.1	7.3	7.4	7.5	3.2	6.1	9.6	170	170	170	18	18	18	30	31	31	S4UL	LQM/CIEH	2015
	Dieldrin		2015	0.97	2	3.5	7	7.3	7.4	0.17	0.41	0.96	170											

Land Use			Residential With or Without Plant Uptake									Public Open Space (POS)									Name	Authority	Date	
			With			Without			Allotments			Commercial			Residential			Park						
			SOM	1.0	2.5	6	1	2.5							6	1	2.5	6	1	2.5				6
Type	Contaminants	Species	Year																					
Chlorobenzenes	Chlorobenzene		2015	0.46	1	2.4	0.46	1	2.4	5.9	14	32	56	130	290	11000	13000	14000	1300	2000	2900	S4UL	LQM/CIEH	2015
	1,2-Dichlorobenzene		2015	23	55	130	24	57	130	94	230	540	2000	4800	11000	90000	95000	98000	24000	36000	51000	S4UL	LQM/CIEH	2015
	1,3-Dichlorobenzene		2015	0.4	1	2.3	0.44	1.1	2.5	0.25	0.6	1.5	30	73	170	300	300	300	390	440	470	S4UL	LQM/CIEH	2015
	1,4-Dichlorobenzene		2015	61	150	350	61	150	350	15	37	88	4400	10000	25000	17000	17000	1700	36000	36000	36000	S4UL	LQM/CIEH	2015
	1,2,3,-Trichlorobenzene		2015	1.5	3.6	8.6	1.5	3.7	8.8	4.7	12	28	102	250	590	1800	1800	1800	770	1100	1600	S4UL	LQM/CIEH	2015
	1,2,4,-Trichlorobenzene		2015	2.6	6.4	15	2.6	6.4	15	55	140	320	220	530	1300	15000	17000	19000	1700	2600	4000	S4UL	LQM/CIEH	2015
	1,3,5,-Trichlorobenzene		2015	0.33	0.81	1.9	0.33	0.81	1.9	4.7	12	28	23	55	130	1700	1700	1800	380	580	860	S4UL	LQM/CIEH	2015
	1,2,3,4,-Tetrachlorobenzene		2015	15	36	78	24	56	120	4.4	11	26	1700	3080	4400	830	830	830	1500	1600	1600	S4UL	LQM/CIEH	2015
	1,2,3,5,- Tetrachlobenzene		2015	0.66	1.6	3.7	0.75	1.9	4.3	0.38	0.9	2.2	49	120	240	78	79	79	110	120	130	S4UL	LQM/CIEH	2015
	1,2,4, 5,- Tetrachlobenzene		2015	0.33	0.77	1.6	0.73	1.7	3.5	0.06	0.16	0.37	42	72	96	13	13	13	25	26	26	S4UL	LQM/CIEH	2015
	Pentachlrobenzene		2015	5.8	12	22	19	30	38	1.2	3.1	7	640	770	830	100	100	100	190	190	190	S4UL	LQM/CIEH	2015
	Hexachlorobenzene		2015	1.8	3.3	4.9	4.1	5.7	6.7	0.47	1.1	2.5	110	120	120	16	16	16	30	30	30	S4UL	LQM/CIEH	2015
Phenols & Chlorophenols	Phenols		2012			420			420			280			3200							SGV	DEFRA	2012
			2015	120	200	380	440	690	1200	23	42	83	440	690	1300	440	690	1300	440	690	1300	S4UL	LQM/CIEH	2015
	Chlorophenols (4 Congeners)		2015	0.87	2	4.5	94	150	210	0.13	0.3	0.7	3500	4000	4300	620	620	620	1100	1100	1100	S4UL	LQM/CIEH	2015
	Pentachlorophenols		2015	0.22	0.52	1.2	27	29	31	0.03	0.08	0.19	400	400	400	60	60	60	110	120	120	S4UL	LQM/CIEH	2015
Others	Carbon Disulphide		2015	0.14	0.29	0.62	0.14	0.29	0.62	4.8	10	23	11	22	47	11000	11000	12000	1300	1900	2700	S4UL	LQM/CIEH	2015
	Hexachloro-1,3-Butadiene		2015	0.29	0.7	1.6	0.32	0.78	1.8	0.25	0.61	1.4	31	66	120	25	25	25	48	50	51	S4UL	LQM/CIEH	2015
	Sum of PCDDs, PCDFs and dioxin-like PCB's.		2012			8			8			8			240							SGV	DEFRA	2012
NOTE																								
	Priority	Guideline (mg kg ⁻¹)																						
	1	Site Specific Assessment Criteria (SSAC) (Soils Limited)																						
	2	2014: Category 4 Screening Level (C4SL) (Contaminated Land: Application in Real Environment (CL:ARE), 2014 and 2021) * Use upper range value for Lead unless otherwise indicated																						
	3	2012: Soil Guideline Value (SGV) (Environment Agency, 2009)																						
	4	2015: Suitable 4 Use Level (S4UL) (Nathanail et al, 2015)																						
For Generic Risk Assessment, the values in Bold should have priority unless site specific, Client or regulatory requirements dictate otherwise – which must be justified																								
Table reviewed January 2024																								

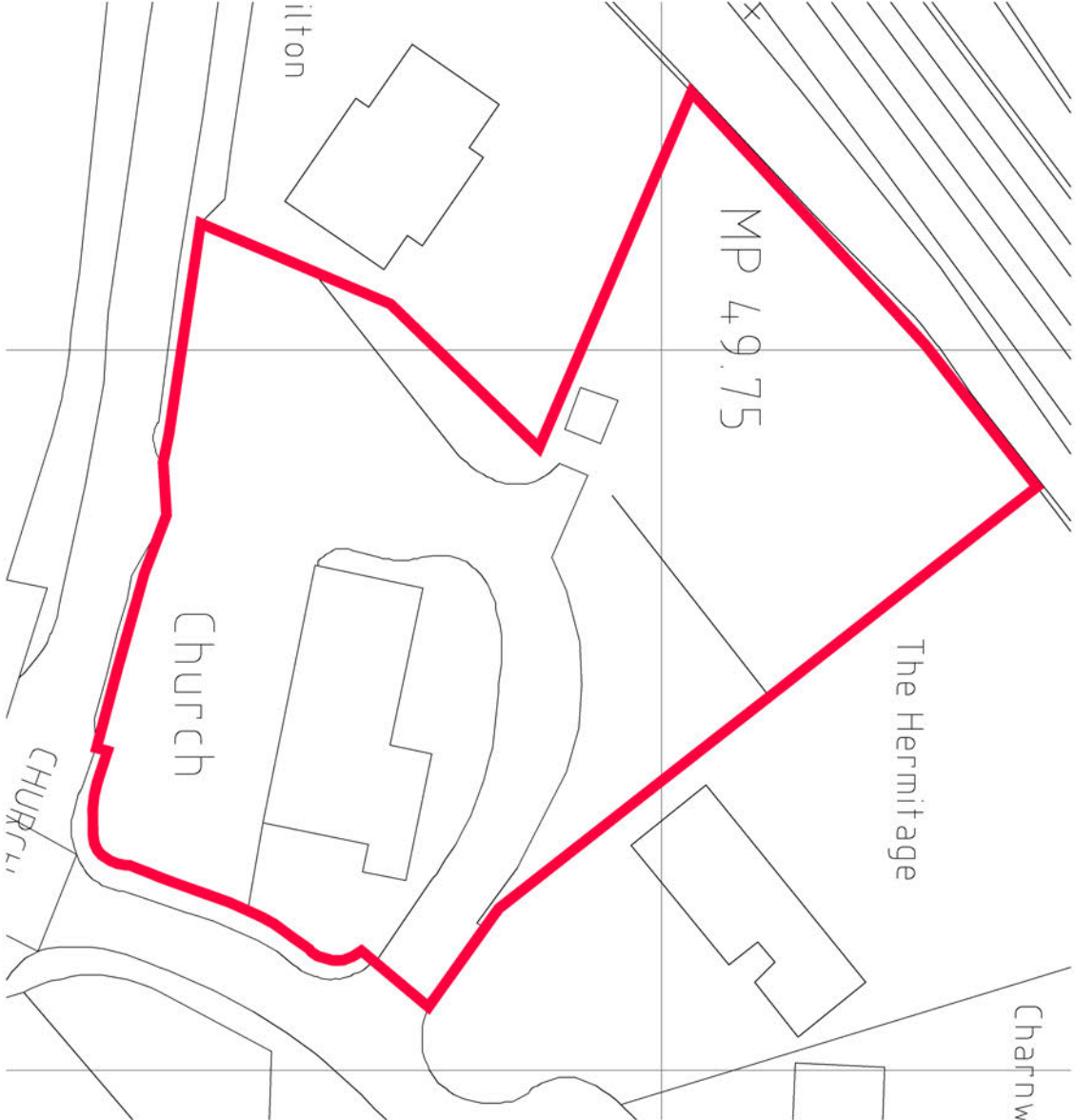
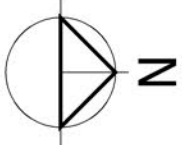
Appendix E Information Provided by the Client



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Location Plan 1:1250

-10 -5 0 10 20 50m



Site Plan 1:500

-5 0 10 20



Site Layout 1:200

-2 0 2 4 10m

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