



EARTH ENVIRONMENTAL
& GEOTECHNICAL

PHASE II GEOTECHNICAL SITE INVESTIGATION

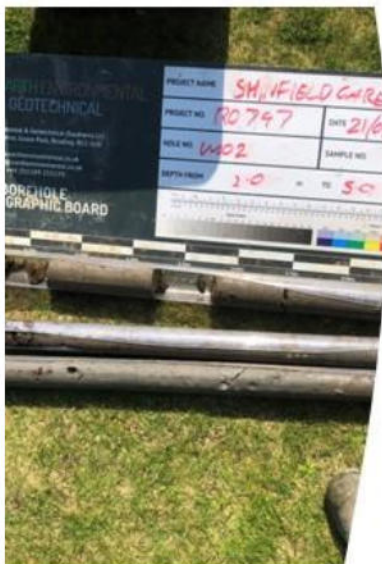
SHINFIELD VIEW CARE HOME

SHNFIELD

RG2 9EH

REPORT REF: R0747/22

MAY 2022



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Report Ref: R0747/22

May 2022

Prepared on Behalf of:

Shinfield Lodge Care Ltd

By:

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Shinfield View Care Home, Shinfield, RG2 9EH

Report Reference: R0747/22

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Date: 19th May 2022

Prepared for: Shinfield Lodge Care Ltd

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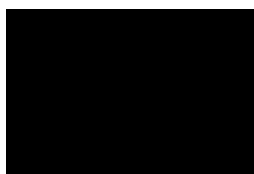
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1.0 INTRODUCTION

1.1 Background

A Geotechnical Site Investigation has been commissioned by Shinfield Lodge Care Ltd (the Client) to examine ground conditions, retrieve soil samples for geotechnical testing, assess current foundations and provide information to be used for foundation design for a proposed new extension at a site in Shinfield, Reading.

1.2 Terms of Reference

Earth Environmental and Geotechnical (Southern) Ltd (EEGSL) was commissioned by the Client to undertake an environmental site investigation in accordance with proposal R0747 dated 24th of March 2022.

The objectives of this investigation are as follows:

- *Undertake site investigation and assessment of ground conditions for geotechnical design.*
- *Provide an Interpretive Ground Investigation Report.*

1.3 Report Scope

This report presents full factual records of the site work carried out, the ground conditions encountered in the exploratory holes and the in-situ and laboratory test results. All information collected has been used to provide an interpretation of the ground conditions together with recommendations to inform on parameters used in foundation design.

1.4 Limitations of the Study

The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information, improved practices or changes in legislation may require a reinterpretation of the report in whole or in part.

EEGSL reserves the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use by the Client and is confidential to them.

Recommendations within this report are also based on exploratory records and examination of samples and, where applicable, laboratory tests. No liability can be accepted for conditions not revealed by the boreholes, particularly at intervening locations.

Whilst every effort is made to ensure accuracy of data supplied, all opinions expressed as to the spatial distribution of strata between sampling locations is for guidance only and no responsibility is accepted as to its accuracy.

2.0 THE SITE

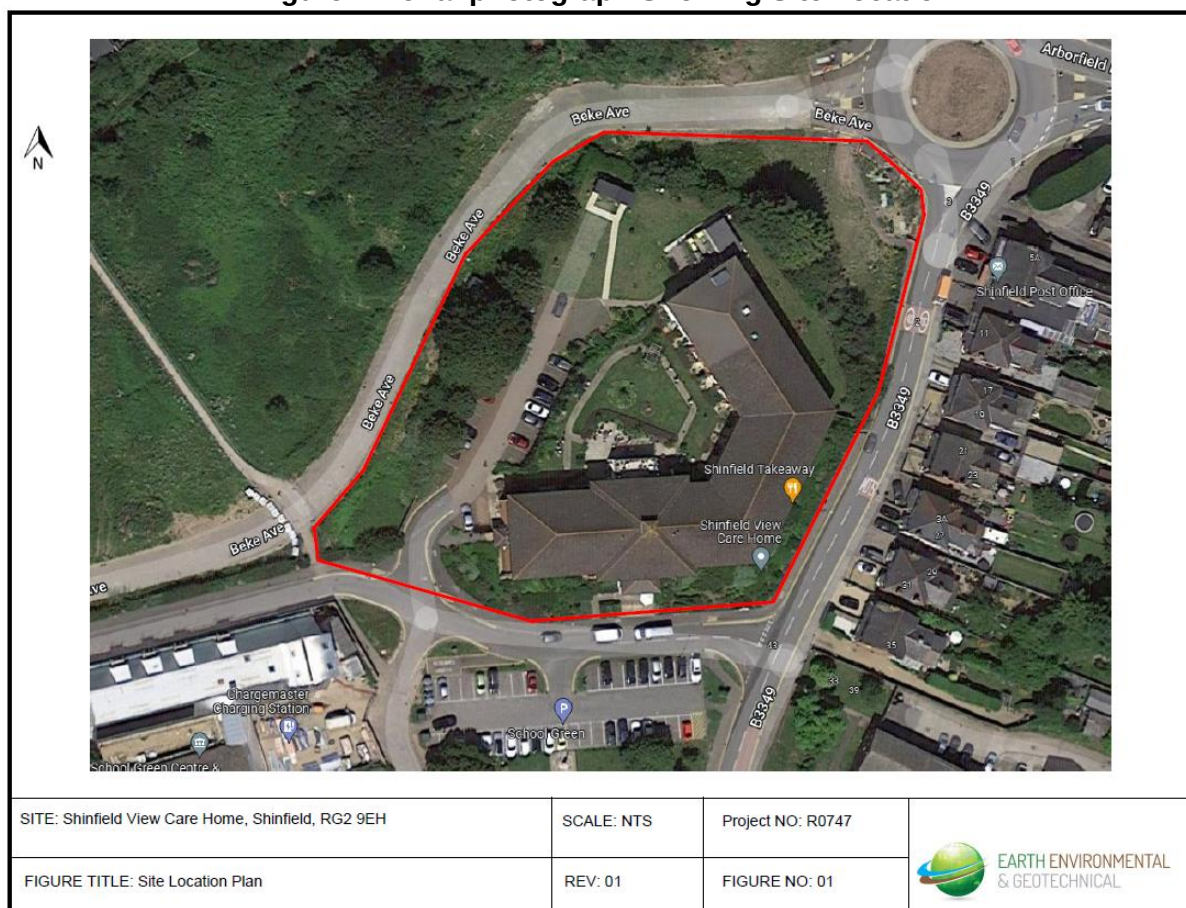
2.1 Site Location & Description

The site is located at Shinfield View Care Home, Shinfield, RG2 9EH at approximate National Grid Reference SU733678 (E:473381, N:167849) and comprised a U-shaped building with associated areas of soft landscaping and hardstanding.

The assessment site is bounded directly to the north by a roundabout connecting Hollow lane, Arborfield Road, B3349 and Beke Avenue with residential developments beyond, directly to the east by B3349 and residential developments, directly to the south by a small recreational field and residential developments, and directly to the west by Beke Avenue and a wooded area with residential developments beyond.

An aerial photograph of the site is presented in Figure 1.

Figure1: Aerial photograph Showing Site Location

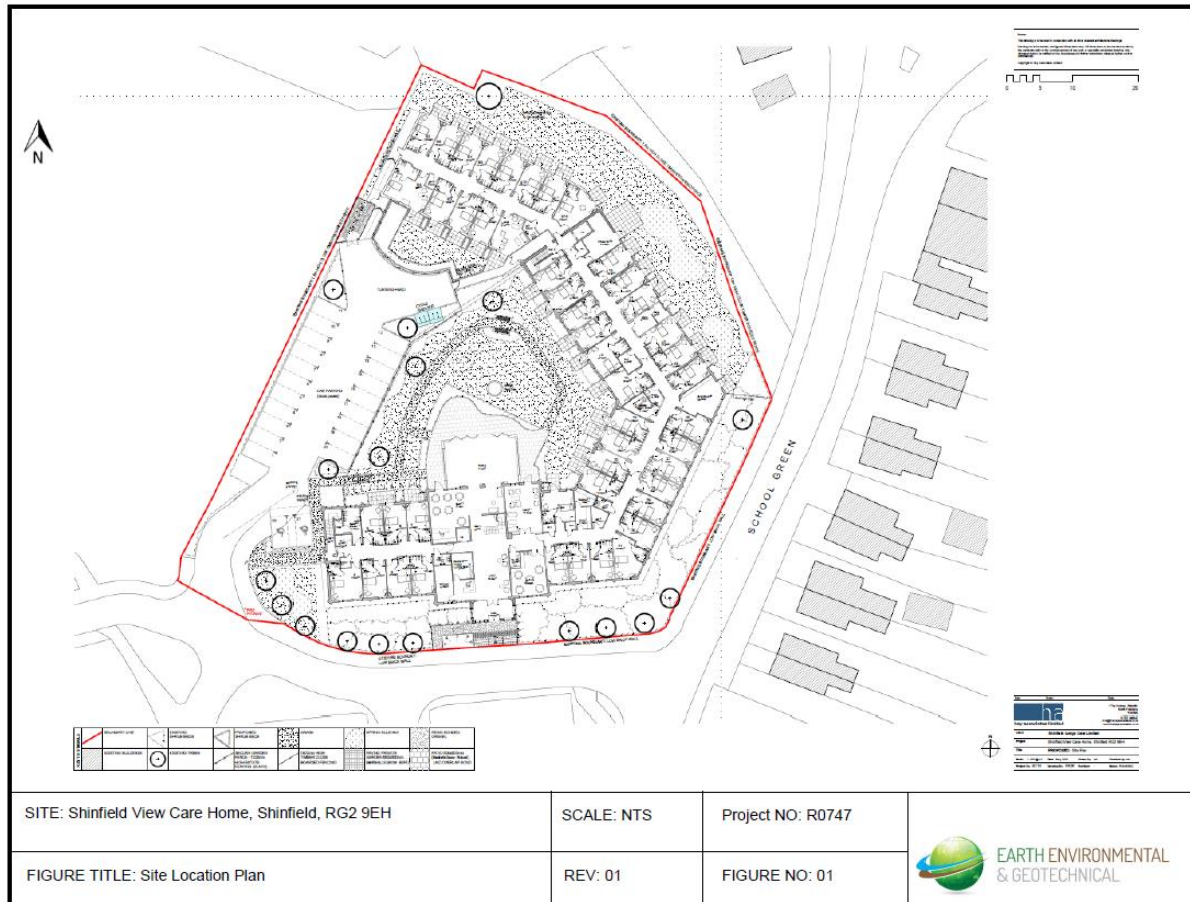


2.2 Proposed Development

The client proposes to construction a 2-storey extension within the north-western corner of the assessment site.

The proposed development plan is presented in Figure 2.

Figure 2: Proposed Development Layout Plan



2.3 Published Geology

The BGS states that the assessment site is underlain by superficial River Terrace Deposits (Sand and Gravel) which formed during the Quaternary Period. River

Underlying the superficial deposits is bedrock geology comprising of the London Clay Formation (Clay, Silt and Sand) which formed during the Palaeogene Period. The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occur.

3.0 SITE INVESTIGATION

3.1 Exploratory Fieldwork

An initial phase of fieldwork was carried out by EEGSL on the 5th April 2022 and comprised:

- 5No. trials pits (designated TP01-TP05) were undertaken at the assessment site and excavated to a maximum depth of 1.20m to gain information on ground condition and current foundations present.
- 4 No. Macintosh Probe was carried out to a maximum depth of 1.0mbgl (adjacent to TP02-TP05). The tests were carried out using a Mackintosh Probe, which is a lightweight and portable penetrometer. The test is carried out by dropping a 4.5kg weight over a distance of 300mm. The 27.94mm cone is advanced into the soil by standard blows from the drop weight and the number of blows for 100mm penetration is counted (M). Testing is carried out continuously from ground level to the final penetration depth. The number of blows to achieve a penetration of 100mm can be related to a Standard Penetration Test as carried out during the advancement of boreholes. The results of these tests are shown Appendix 2.

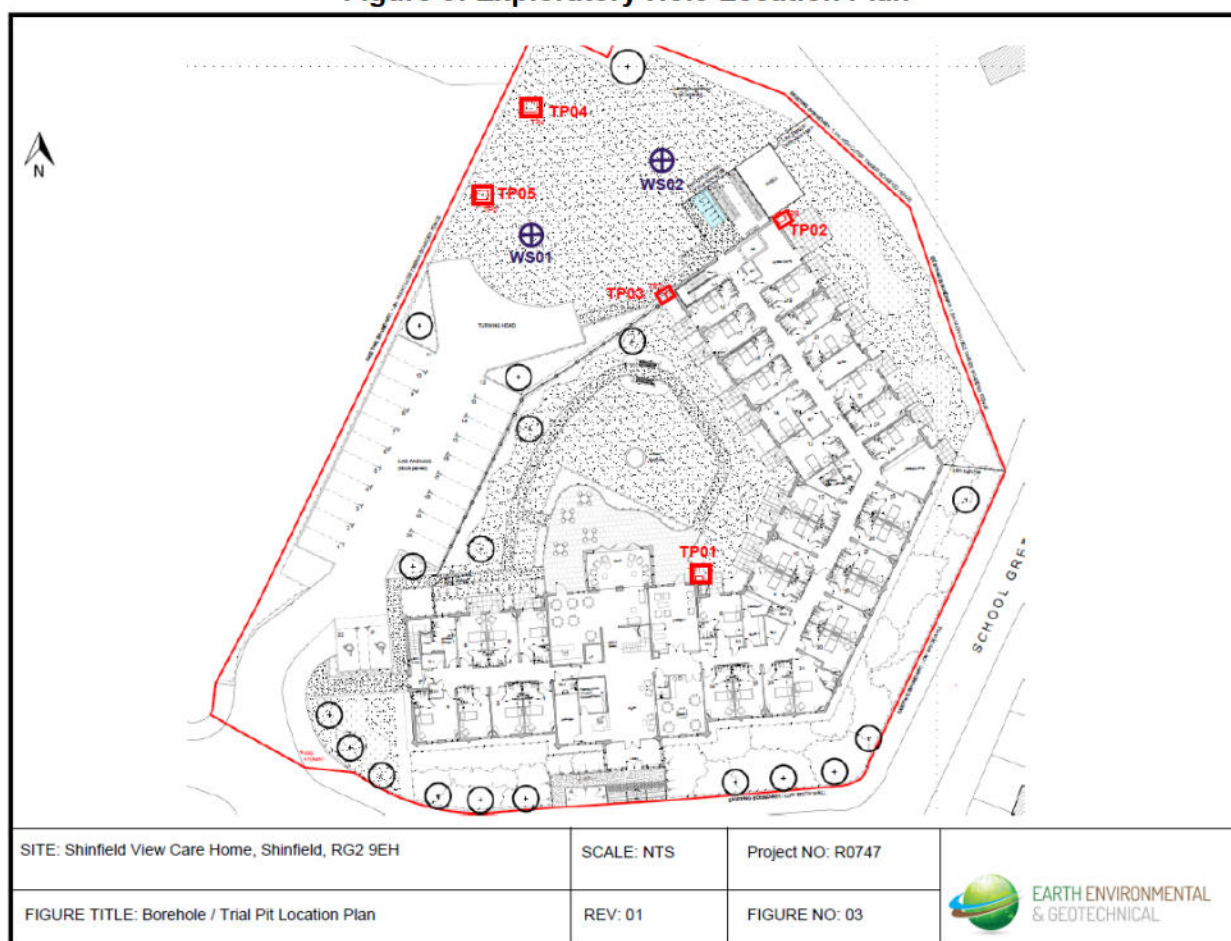
Unfortunately, the ground investigation works undertaken on the 5th April uncovered unexpected ground conditions within the area of the proposed extension and due to obstructions at shallow depth, failed to provide sufficient information on the current foundations present.

Given the above information, EEGSL recommended that the client instruct a return visit enable the drilling of two shallow boreholes. These works were to be undertaken within the area of the proposed extension and were designed to penetrate the obstructions (former buried carpark) and to identify the shallow ground conditions present beneath.

A second phase of fieldwork was therefore carried out by EEGSL on 21st April 2022 and comprised:

- 2No. window sample borehole (designated WS01 and WS02) were sunk to a maximum depth of 5.0m below existing ground level. Window sample boring is carried out with a small, track-mounted rig, which uses a chain-driven trip hammer to drive sampling tubes or penetrometers into the ground. These tools are coupled to the anvil of the hammer by solid drill rods. Sampling tubes comprise “windowless samplers”, which are plain sampler tubes in which a continuous disturbed sample is recovered within a semi-rigid plastic liner. To reduce friction within the borehole, sampling tubes of progressively smaller diameter are used as the borehole depth increases. Sampler diameters generally range from between approximately 90mm to 50mm. Exploratory Hole logs are included in Appendix 1.

The fieldwork was carried out generally in accordance with BS 5930:2015+A1:2020 Code of Practice for Site Investigations unless otherwise stated. The exploratory hole locations were determined on site by EEGSL and considered site restrictions present at the time. The investigation locations completed are shown approximately on the Exploratory Hole Location Plan below (Figure 3).

Figure 3: Exploratory Hole Location Plan

Each exploratory location was scanned using a Cable Avoidance Tool (CAT) to locate unrecorded underground services, and the exploratory locations were repositioned if necessary. On completion, all samples recovered from the site were taken to specialist laboratories for testing.

All site investigation work was supervised full time by a representative of EEGSL. The logging of soils and rocks has been carried out in accordance with BS5930⁽²⁰¹⁵⁾ except where superseded by the soil and rock description methodology in BS EN14688-1⁽²⁰⁰²⁾, BS EN 14688-2⁽²⁰⁰⁴⁾ and BS EN 14689-1⁽²⁰⁰³⁾.

A summary of exploratory holes undertaken during the investigation is presented in Table 1.

Table 1: Summary of Exploratory Holes Undertaken

Hole	Type*	Depth (m)	Date Started	Date Finished	Backfill Details**
TP01	TP	0.60	05/04/2022	05/04/2022	A
TP02	TP	1.00	05/04/2022	05/04/2022	A
TP03	TP	0.75	05/04/2022	05/04/2022	A
TP04	TP	1.00	05/04/2022	05/04/2022	A
TP05	TP	0.40	05/04/2022	05/04/2022	A
WS01	WS	5.00	21/04/2022	21/04/2022	A
WS02	WS	5.00	21/04/2022	21/04/2022	A
*WS = Window Sample Borehole TP = Trail Pit, **Arisings					

3.2 Laboratory Testing Programme

3.2.1 Geotechnical Testing

A programme of laboratory testing was carried out on samples taken from the various strata to assist in classification and determine the engineering properties of the materials underlying the site. The testing was scheduled by EEGSL and carried out by Geo Site & Testing Services Ltd. The test procedures used were generally in accordance with the methods described in BS1377:1990 and BS EN ISO 17892-1:2014. Details of the specific tests used in each case are given in Table 2 below:

Table 2: Summary of Geotechnical Testing

TEST	STANDARD	No.
Moisture Content	BS1377:1990 Part 2 : 3.2	3
Atterburg Limit (four point method)	BS1377:1990 Part 2, Clause 4.4	3
PSD Sieve	BS1377:1990 Part 2, clause 9.2	-
pH	BS1377:1990 Part 3, Clause 9	5
Water Soluble Sulphate (SO ₄)	BS1377:1990 Part 3, Clause 5	5

The results of geotechnical laboratory testing are included in Appendix 2.

4.0 GROUND CONDITIONS ENCOUNTERED & ENGINEERING PROPERTIES

The following sections describe the ground conditions identified during the investigation and discusses the engineering properties of the soils based on insitu testing results and laboratory analysis.

4.1 Soil Profile Encountered

During the initial site works, T04 and TP05 were both located within the current garden area and within the proposed area of the new extension. During excavation both locations found Topsoil overlying Made Ground materials present to a depth of 0.4-1.0mbgl. At the base of each of the excavations, a concrete paved hard standing was noted. The presence of the hardstanding at depth prevented further investigation at each location.

During the return visit on the 21st April, the sequence of strata encountered during the drilling of the boreholes was as follows:

- Grass over Topsoil (maximum depth of 0.50mbgl).
- Concrete and Red Brick (former car par surface) present in WS01 between 0.5-0.6mbgl.
- Variable Made Ground of gravelly Sand, sandy gravelly Clay, gravelly clayey Sand and sandy silty Clay (with red brick, concrete, metal rubber, glass and clinker present) proven to a maximum depth of 3.60mbgl.
- London Clay Formation proven to a maximum depth of 5.0mbgl

The depths at which each stratum was encountered in each exploratory hole is provided within the borehole logs presented within Appendix 1.

4.2 Observable Indications of Contamination

Made Ground was observed across the assessment site proven to a maximum depth of 3.60mbgl. Inert materials including brick, concrete, metal and glass were noted within the Made Ground, however there were no obvious indications of significant contamination present. A full contamination assessment is beyond the scope of this work.

4.3 Obstructions

During site investigation works excavation of TP01 was terminated due to encountering a brick base, excavation of TP02 was terminated due to the presence of a service pipe at the base of the pit, excavation of TP03, TP04 and TP05 was terminated due to the presence of a concrete base.

No other obstructions were encountered.

4.4 Groundwater

During site investigation works no groundwater was encountered within any of the exploratory holes.

4.5 Current Foundations

During the site investigation works, 3 No. foundation inspection pits were undertaken to assess the current foundations and ground conditions present at the assessment site.

The foundation pits (designated TP01-TP03) were excavated to a maximum depth of 1.0mbgl with the aim to expose the full depth of foundations present. During excavation of TP01-TP03 obstructions were encountered that meant continued excavation was not feasible.

The construction of the foundations identified at the assessment site are presented within Figure 4-6.

Figure 4: TP01 Foundation Inspection Pit Sketch

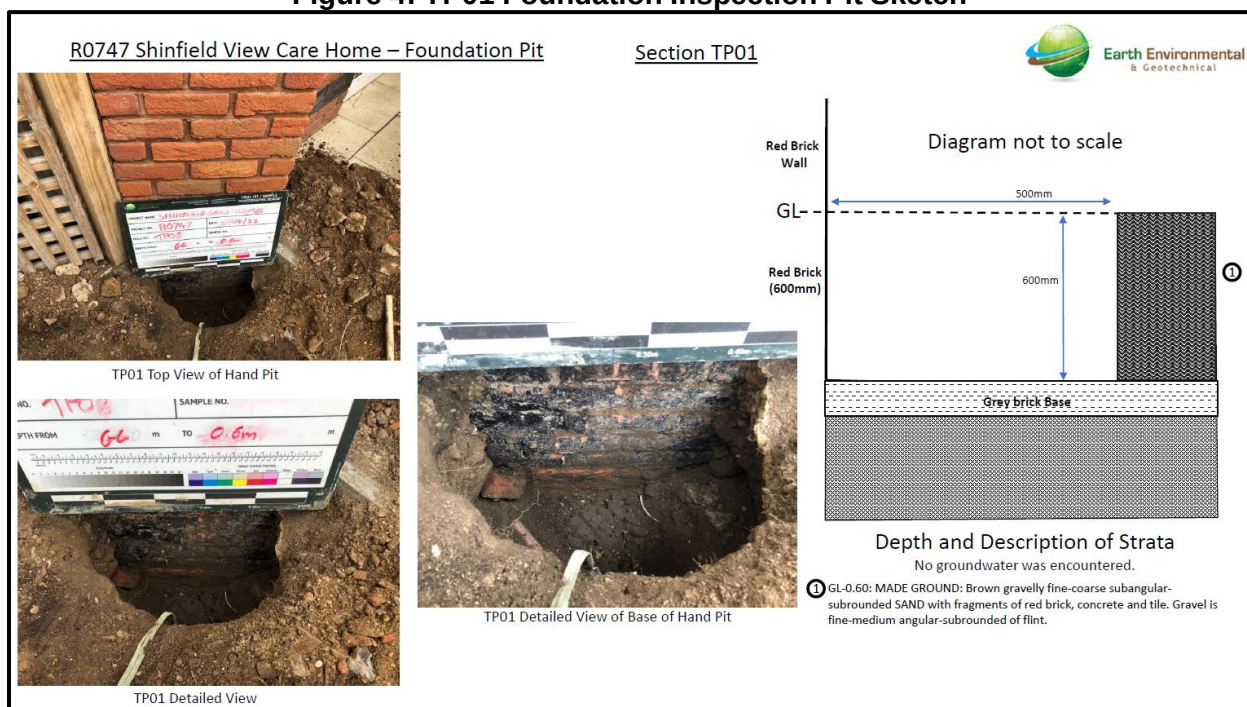


Figure 5: TP02 Foundation Inspection Pit Sketch

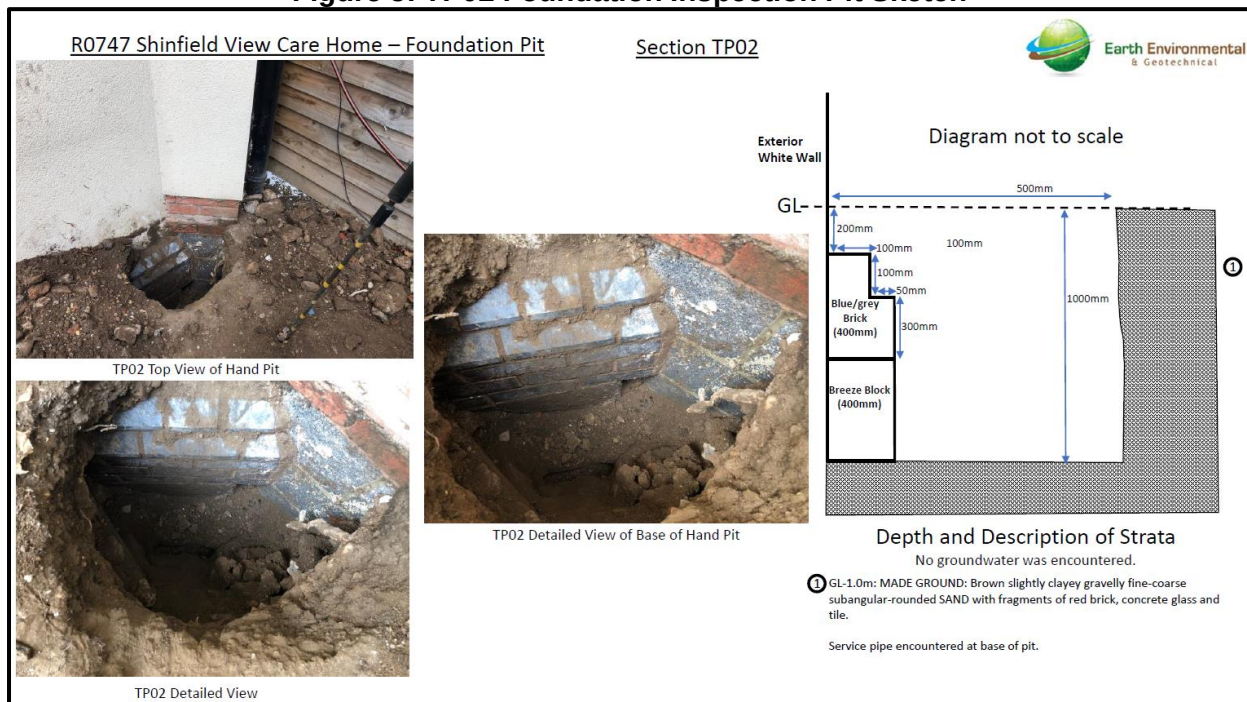
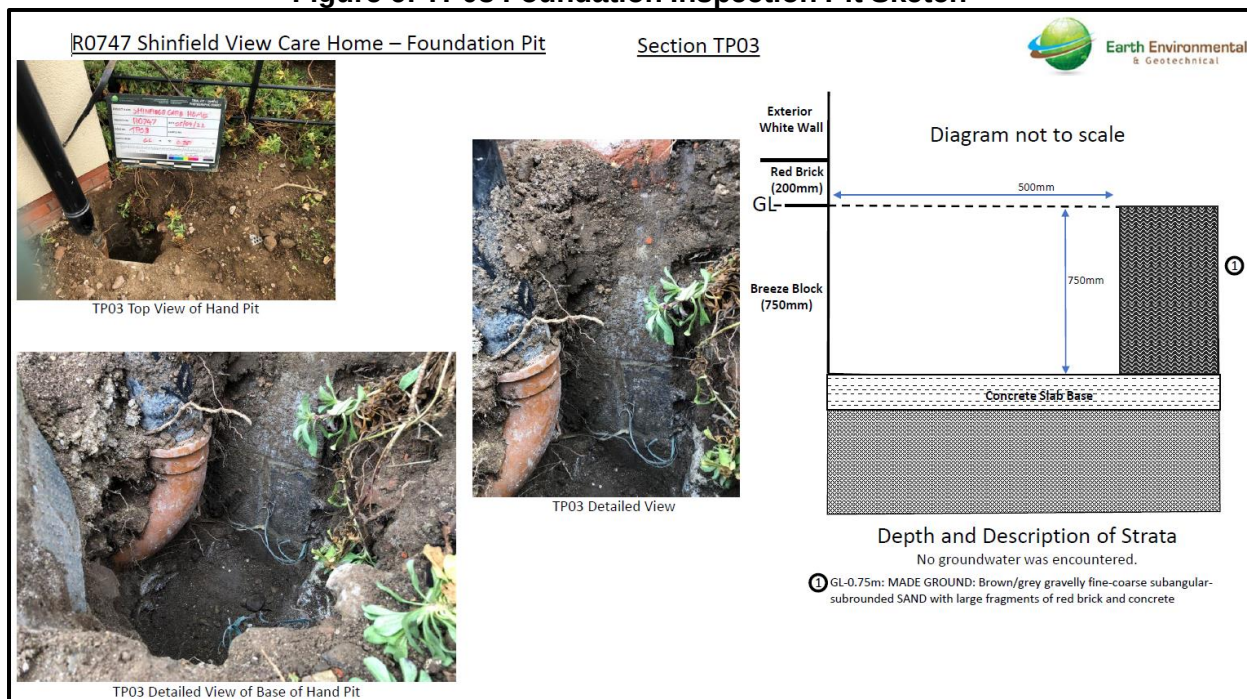


Figure 6: TP03 Foundation Inspection Pit Sketch



4.6 Engineering Properties

The following sections discusses the engineering properties of the strata encountered, based on results of in situ and laboratory testing of samples collected from WS01 and WS02.

Table 3: Summary of Laboratory Geotechnical Test Results

Location	Depth (m)	Stratum	Classification				Chemical	
			Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index	pH Value	Water Soluble Sulphate (mg/l)
WS01	1.00-1.50	Made Ground					7.9	126
WS01	3.60-3.70	London Clay	36	56	28	28	7.5	301
WS02	1.55-2.00	Made Ground					7.4	2491
WS02	3.40-3.50	London Clay	28	48	21	27	7.4	2346
WS02	4.90-5.00	London Clay	30	49	22	27	8.2	2282

4.6.1 Made Ground of Sand & Clay Material (0.50- 3.60mbgl)

During the ground investigation Made Ground materials were identified to a maximum thickness of 3.60mbgl. 6 **SPT N values** were obtained within the made ground materials, ranging from 2-13 which would suggest the materials are very soft to soft or very loose to loose, as can be seen from the SPT Vs Depth Plot included as Figure 7.

Laboratory tests have given values of **water-soluble sulphate** (SO₄) ranging from 126-2491mg/l and a **pH Value** ranging from 7.4-7.9.

4.6.2 Clay Material of the London Clay Formation (3.30-5.00mbgl)

The London Clay formation was found present at depths beyond 3.60mbgl in WS01 and 3.30mbgl in WS02. 4 **SPT N values** were obtained within the clay materials, ranging from 7-17 which would suggest the materials are soft to firm, as can be seen from the SPT Vs Depth Plot included as Figure 7.

Atterberg Limit tests were undertaken on samples of the underlying London Clay Formation. Test results have given values for **liquid limit** ranging from 48-56%, **plastic limit** ranging from 21-28%, resulting in values of **plasticity index** ranging from 27-28%. These results suggest the samples tested are clay of Intermediate to High plasticity. For design purposes, a value of plasticity index = 28% is recommended.

Design values for the London Clay Formation have been derived from SPT N values and correlations by Stroud and Butler. A summary of the values are presented in Table 4.

Table 4: Summary of Derived Design Values (London Clay Formation)

Depth (m)	Stratum	N Value Results		Design Parameters*	
		Range	Design N Value**	Shear Strength (kN/m ²)	Coefficient of Volume Compressibility (m ² /MN)
4.0	Clay	8-15	11	52.8	0.193
5.0	Clay	7-17	12	57.6	0.177
*Based correlations by Stroud and Butler ⁽¹⁹⁷⁵⁾ .					
**Design N values are based on average N values					

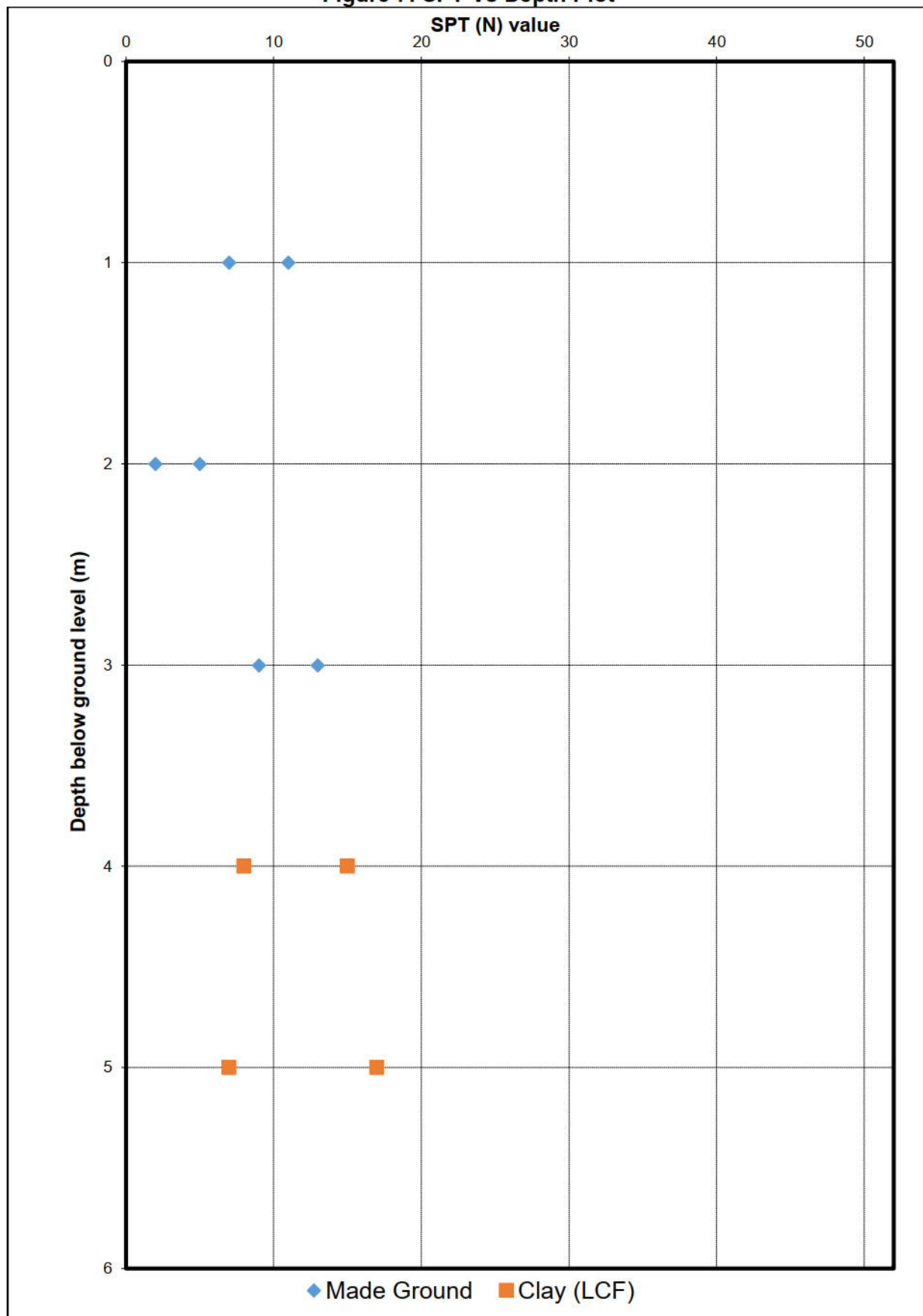
Effective stress strength parameters may also be obtained from correlations with plasticity index. For a plasticity index of 28%:

- BS8002(1994), Table 2 gives $\phi'_{crit} \approx 20.9^\circ$;
- Gibson(1953), gives $\phi_d = 26.9^\circ$.

Based on all the above, design values of $\phi'_{crit} = 20.9^\circ$ and $c' = 0\text{kN/m}^2$ are recommended for the London Clay Formation.

Laboratory tests have given values of **water-soluble sulphate** (SO₄) as 310-2346mg/l and **pH Values** of 7.4-8.2.

Figure 7: SPT Vs Depth Plot



5.0 GEOTECHNICAL ASSESSMENT

This section discusses foundation design information and considers the ground conditions identified within Section 4, alongside the design values generated from insitu and laboratory analysis.

Conventional strip and pad foundations are unlikely to be suitable for the proposed new development given the depth of Made Ground present. In this instance it is suggested that alternative foundations solutions may be required, such as piled foundations.

5.1 Ground Conditions Encountered

From the investigation undertaken across the assessment site, in general the ground conditions encountered can be summarised as Topsoil proven to a maximum depth of 0.50mbgl, overlying variable Made Ground of Sand and Clay proven to a maximum depth of 3.60mbgl, overlying the London Clay Formation proven to a maximum depth of 5.0mbgl.

5.2 Proposed Development

It is proposed to develop the site for residential purpose, with the construction of a 2-storey extension within the north-western corner of the assessment site.

5.3 Strip & Pad Foundations

If strip and pad foundations were to be used, they should be placed within the London Clay Formation at a minimum depth of between 3.30-4.00mbgl or below. If any Made Ground, particularly loose or soft materials are encountered at foundation level, this should be either excavated and replaced with suitable granular fill, or the foundation extended to suitable strata.

Given the above, anticipated bearing capacities and settlement have been calculated for strip and pad foundations at depths between 4-5mbgl. This is to give some indication of the strength of the shallow London Clay formation. However, it is suggested that piled foundations would be more suitable if taken down into the deeper London Clay Formation.

The presence of shallow groundwater was not observed during the recent site investigation works. The presence of shallow groundwater is therefore considered unlikely to a depth of 5m below existing ground level. Should groundwater be encountered during shallow excavations, it is expected that a suitable sump and intermittent pumping should be sufficient to keep the materials dry during excavation.

For the purposes of this report, strip and pad foundations within the London Clay will be discussed at depths between 4mbgl and 5mbgl. Table 5 summarises anticipated allowable bearing pressures for strip and pad foundations across these depths. The bearing capacities are calculated based on Hansens⁽¹⁹⁷⁸⁾ method and assuming a factor of safety against bearing capacity failure of 3. Groundwater is assumed to be at 5mbgl.

Table 5: Summary of Allowable Bearing Pressures (London Clay Formation)

Foundation Depth	Foundation Stratum	Design Value	Foundation Type	Foundation Width / Size	Allowable Bearing Pressure
4.00m	CLAY	$c_u = 52.8\text{kN/m}^2$	Strip	0.6m	153kN/m ²
				1.0m	150kN/m ²
			Pad	0.75m x 0.75m	179kN/m ²
				1.5m x 1.5m	171kN/m ²
5.00m	CLAY	$c_u = 57.6\text{kN/m}^2$	Strip	0.6m	170kN/m ²
				1.0m	167kN/m ²
			Pad	0.75m x 0.75m	189kN/m ²
				1.5m x 1.5m	192kN/m ²

Table 6 gives estimates of anticipated settlements for the above foundations, based on correlations by Burland & Burbidge⁽¹⁹⁸⁵⁾ and assuming a foundation load equal to the allowable bearing pressures identified in Table 5 above.

Table 6: Summary of Anticipated Foundation Settlements (London Clay Formation)

Foundation Depth	Foundation Stratum	Foundation Type	Foundation Size	Foundation Loading	Settlement (mm)		
					At centre	At corner	Average
4.00m	CLAY	Strip	0.6m	153kN/m ²			20-25
			1.0m	150kN/m ²			25-30
		Pad	0.75m x 0.75m	179kN/m ²	30-35	5-10	25-30
			1.5m x 1.5m	171kN/m ²	50-55	10-15	35-40
5.00m	CLAY	Strip	0.6m	170kN/m ²			20-25
			1.0m	167kN/m ²			30-35
		Pad	0.75m x 0.75m	189kN/m ²	35-40	5-10	25-30
			1.5m x 1.5m	192kN/m ²	55-60	15-20	40-45

Settlements for other bearing pressures may be estimated on a pro-rata basis but bearing pressures should not exceed the allowable net bearing pressure based on ultimate bearing capacity.

All foundation excavations should be inspected by a suitable qualified engineer to prove that the founding strata is suitable and uniform along the length of the foundation, and capable of taking the anticipated structural loadings.

Should the anticipated structural loadings exceed the allowable bearing pressures above, or anticipated settlements are too large for the proposed structure, alternative foundation options such as piling should be considered.

5.4 Piled Foundations

Given the ground conditions encountered, it is recommended that the proposed development be founded on a system of ground beams spanning onto piles taken down into the underlying London Clay.

A variety of pile types may be used, including bored and continuous flight auger (CFA) piles. Driven piles may be suitable, subject to environmental and noise/vibration constraints.

Because of the various advantages and limitations of each pile type, and the cost implications, advice should be sought from specialist piling contractors to determine the most suitable and cost-effective type. They should also be able to give recommended pile diameters and depths and likely pile capacities, with guaranteed performance. It is recommended a pile test be carried out to confirm pile capacities. In assessing the pile capacities, contractors should make an allowance for the effects of negative skin friction, particularly in the near surface Made Ground and Kempton Park Sand and Gravel.

It is essential the advice of a specialist piling contractor is sought and that positive assurances are provided by the piling contractor that their proprietary system is capable of providing the required working loads in the ground conditions encountered.

Additional ground investigation works, to determine the strength of the underlying London Clay is likely to be required prior to the above pile calculations can be produced for the assessment site.

5.5 Chemical Attack on Buried Concrete

5.5.1 Made Ground

Chemical tests (see Appendix 2) show moderate levels of water-soluble sulphates with values ranging from 126-2491mg/l and near neutral to slightly alkaline conditions. Based on this information, it is recommended that for foundations the Design Sulphate Class for the Made Ground, as defined in BRE Special Digest 1(2005), be taken as DS-3, and the Aggressive Chemical Environment for Concrete (ACEC) site classification be taken as AC-2s.

5.5.2 London Clay Formation

Chemical tests (see Appendix 2) show low levels of water-soluble sulphates with a range between 310-2346mg/kg and near neutral to slightly alkaline conditions. Based on this information, the Design Sulphate Class for the London Clay, as defined in BRE Special Digest 1(2005), would be taken as DS-3, and the Aggressive Chemical Environment for Concrete (ACEC) site classification be taken as AC-2s.

5.6 Suitability of Excavated Materials

Acceptability criteria and testing, and methods of compaction/placement will depend on the type of contract and specification used for the construction of the proposed development and it is recommended that earthworks specifications are reviewed by a suitably qualified engineer, once these have been prepared by the relevant parties.

Any Made Ground or London Clay deposits are unlikely to be suitable as structural fill and should be used for landscaping purposes only (providing it is not contaminated).

5.7 Temporary Works

Formations will be susceptible to damage both by weather and trafficking, and should be protected immediately on exposure, particularly in areas where construction plant will access the site.

Excavations in Made Ground have the potential to be unstable and should be battered back to an angle of 1 in 2, or a system of close sheeting and shoring adopted to ensure stability, and in particular where personnel are required to enter excavations.

All excavations should be adequately supported where personnel are required to enter.

All natural materials on site should be capable of being excavated using conventional excavating machinery.

6.0 CONCLUSIONS AND RECOMMENDATIONS

EEGSL were commissioned by the client to undertake ground investigation works at the assessment site to help inform on parameters used in foundation design for a proposed new extension. The following section provides a summary of the conclusions and recommendations based on the findings of the investigation works undertaken, and laboratory testing results received.

8.1 Ground conditions

From the investigation undertaken across the assessment site, in general the ground conditions encountered can be summarised as: Topsoil proven to a maximum depth of 0.50mbgl, overlying variable Made Ground of Sand and Clay proven to a maximum depth of 3.60mbgl, overlying the London Clay Formation proven to a maximum depth of 5.0mbgl.

A former car parks surface has been identified at depths between 0.5m and 1.0mbgl within the area of the proposed extension. The surface appears to be made of concrete paving slabs with a crushed brick subbase beneath.

8.2 Proposed Foundations

Given the thickness of Made Ground materials found present within the proposed extension area, it is recommended that shallow foundations are unlikely to be suitable / cost effective in this instance (due to the amounts of Made Ground materials that would be required to be removed from site).

Given the above, it is recommended that alternative foundation solutions are investigated. In this instance it is recommended that a piled foundation solution would likely be suitable, if taken down into the underlying London Clay Formation. Additional ground investigation works and consultation with a specialist piling contractor will however be required before this can be confirmed.

In the meantime, EEGSL have provided some allowable bearing capacities and predicted settlements for shallow foundations placed in the top of the London Clay, should the client wish to consider this as a viable option.

8.3 Groundwater

The presence of shallow groundwater was not observed during the recent site investigation works. The presence of shallow groundwater is therefore considered unlikely to a depth of 5m below existing ground level. Should groundwater be encountered during shallow excavations, it is expected that a suitable sump and intermittent pumping should be sufficient to keep the materials dry.

APPENDIX 1

EXPLORATORY BOREHOLE LOGS

Trial Pit Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 05/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Equipment:	
Location Number TP01	Location Type TP	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.60			MADE GROUND: Brown gravelly fine-coarse subangular-subrounded SAND with fragments of red brick, concrete, tile, metal and glass. Gravel is fine-medium angular-subrounded of flint,	
								End of Borehole at 0.600m	1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater was encountered.	 EARTH ENVIRONMENTAL & GEOTECHNICAL
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Trial Pit Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 05/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Equipment:	
Location Number TP02	Location Type TP	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 1.00	B		1.00			MADE GROUND: Brown slightly clayey gravelly fine-coarse subangular-rounded SAND with fragments of red brick, concrete, glass and tile. Gravel is fine-coarse angular-subrounded of flint.	1
								End of Borehole at 1.000m	2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater was encountered.							 EARTH ENVIRONMENTAL & GEOTECHNICAL
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Trial Pit Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 05/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Equipment:	
Location Number TP03	Location Type TP	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

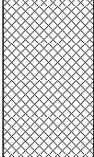
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.75	B					MADE GROUND: Brown/grey gravelly fine-coarse subangular-subrounded SAND with large fragments of red brick and concrete.	
					0.75			End of Borehole at 0.750m	1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater was encountered.						 EARTH ENVIRONMENTAL & GEOTECHNICAL
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Trial Pit Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 05/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Equipment:	
Location Number TP04	Location Type TP	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15 - 0.45	B		0.15			Grass over TOPSOIL of dark brown slightly gravelly fine-coarse subangular-subrounded SAND. Gravel is fine subangular-subrounded of flint.	1
		0.45 - 1.00	B		0.45			MADE GROUND: Dark brown gravelly fine-coarse subangular-subrounded SAND with large fragments of red brick, concrete, glass and plastic. Gravel is fine-coarse angular-subrounded of flint.	
					1.00			MADE GROUND: Brown slightly clayey very gravelly fine-coarse subangular-subrounded SAND with fragments of tile, glass, red brick and concrete. Gravel is fine-coarse angular-subrounded of flint.	
								End of Borehole at 1.000m	5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater was encountered.							 EARTH ENVIRONMENTAL & GEOTECHNICAL
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Trial Pit Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 05/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Equipment:	
Location Number TP05	Location Type TP	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

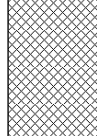
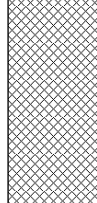
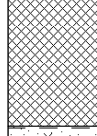
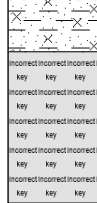
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.00 - 0.25	B					Grass over TOPSOIL of dark brown slightly gravelly fine-coarse angular-subrounded SAND. Gravel is subangular-rounded of flint.	
		0.25 - 0.40	B		0.25 0.40			MADE GROUND: Light brown slightly clayey very gravelly fine-coarse angular-subrounded SAND with fragments of metal and concrete. Gravel is fine-coarse subangular-rounded of flint. End of Borehole at 0.400m	
									1
									2
									3
									4
									5

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks

Remarks No groundwater was encountered.						 EARTH ENVIRONMENTAL & GEOTECHNICAL
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Window Sample Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 21/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Drilling Equipment:	
Borehole Number WS01	Hole Type WLS	Level	Logged By	Scale 1:50	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.60 - 1.00	D		0.50 0.60			Grass over TOPSOIL of dark brown slightly gravelly fine-coarse angular-subrounded SAND with large fragments of red brick, plastic and concrete. Gravel is fine subangular-rounded of flint.	
		1.00 - 1.50 1.00	B SPT	N=11 (7,7/4,3,2,2)	1.50			MADE GROUND Concrete and Red Brick MADE GROUND: Brown slightly gravelly medium-coarse subangular-subrounded SAND with large fragments of red brick and concrete. Gravel is fine-coarse angular-rounded of flint.	1
		2.00 - 2.75 2.00	B SPT	N=2 (1,1/0,1,0,1)	2.75			MADE GROUND: Black slightly gravelly medium-coarse subangular-subrounded SAND with fragments of rubber, glass, clinker, red brick and tile. Gravel is fine-coarse angular-rounded of flint.	2
		2.75 - 3.00 3.00	D SPT	N=9 (2,1/2,2,2,3)	3.60			MADE GROUND: Black/brown sandy gravelly CLAY with fragments of glass, metal, concrete and red brick. Gravel is fine-coarse subangular-subrounded of flint and chert. Sand is medium-coarse subangular-subrounded.	3
		3.60 - 3.70 3.90 - 4.00 4.00	D SPT	N=8 (1,1/2,1,2,3)	4.00			Light brown mottled light grey slightly silty sandy CLAY. Sand is fine-medium subangular-subrounded. LONDON CLAY FORMATION.	4
		5.00	SPT	N=7 (1,1/2,1,2,2)	5.00			NO RECOVERY (Assumed LONDON CLAY FORMATION).	5
								End of Borehole at 5.000m	6
									7
									8
									9
									10

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	77										
2.00	67										
5.00	57										

Remarks

Hand dug pit to 0.6mbgl. Groundwater was encountered at 2.5mbgl.

Window Sample Log

Project Name: Shinfield View Care Home		Client: Berkley Care Group		Date: 21/04/2022	
Location: Shinfield View Care Home, School Green, Shinfield, Reading, RG2 9EH		Contractor: BHS			
Project No. : R0747		Crew Name:		Drilling Equipment:	
Borehole Number WS02	Hole Type WLS	Level	Logged By	Scale 1:25	Page Number Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50			Grass over TOPSOIL of brown slightly gravelly medium-coarse subangular-subrounded SAND with fragments of red brick and concrete. Gravel is fine angular-subrounded of flint.	
		1.00	SPT	N=7 (3,3/2,2,1,2)	1.00			MADE GROUND: Brown very gravelly medium-coarse subangular-subrounded SAND with fragments of red brick and concrete. Gravel is medium-coarse angular-subrounded of flint.	1
		1.55 - 2.00	B		1.55			MADE GROUND: Yellow gravelly medium-coarse subangular-rounded SAND with occasional fragments of asphalt. Gravel is fine subangular-subrounded of flint.	
		2.00	SPT	N=5 (2,1/1,2,1,1)				MADE GROUND: Yellow/brown gravelly clayey medium-coarse subangular-subrounded SAND with fragments of red brick. Gravel is fine-coarse angular-subrounded of flint.	2
		2.20 - 2.30	D		2.15			MADE GROUND: Brown/grey slightly sandy slightly silty CLAY with fragments of metal. Sand is fine	
		2.50 - 2.60	D						
		2.90 - 3.00	D						
		3.00	SPT	N=13 (2,2/2,3,3,5)					3
		3.40 - 3.50	D		3.30			Brown/grey slightly sandy slightly silty CLAY. Sand is fine. LONDON CLAY FORMATION.	
		3.90 - 4.00	D						
		4.00	SPT	N=15 (2,2/3,4,4,4)					4
		4.10 - 4.20	D						
		4.50 - 4.60	D						
		4.60 - 4.70	D						
		4.90 - 5.00	D						
		5.00	SPT	N=17 (3,3/4,4,4,5)	5.00			End of Borehole at 5.000m	5

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
1.00	77										
2.00	67										
5.00	57										

Remarks Hand dug pit to 0.6mbgl. No groundwater was encountered.										 EARTH ENVIRONMENTAL & GEOTECHNICAL
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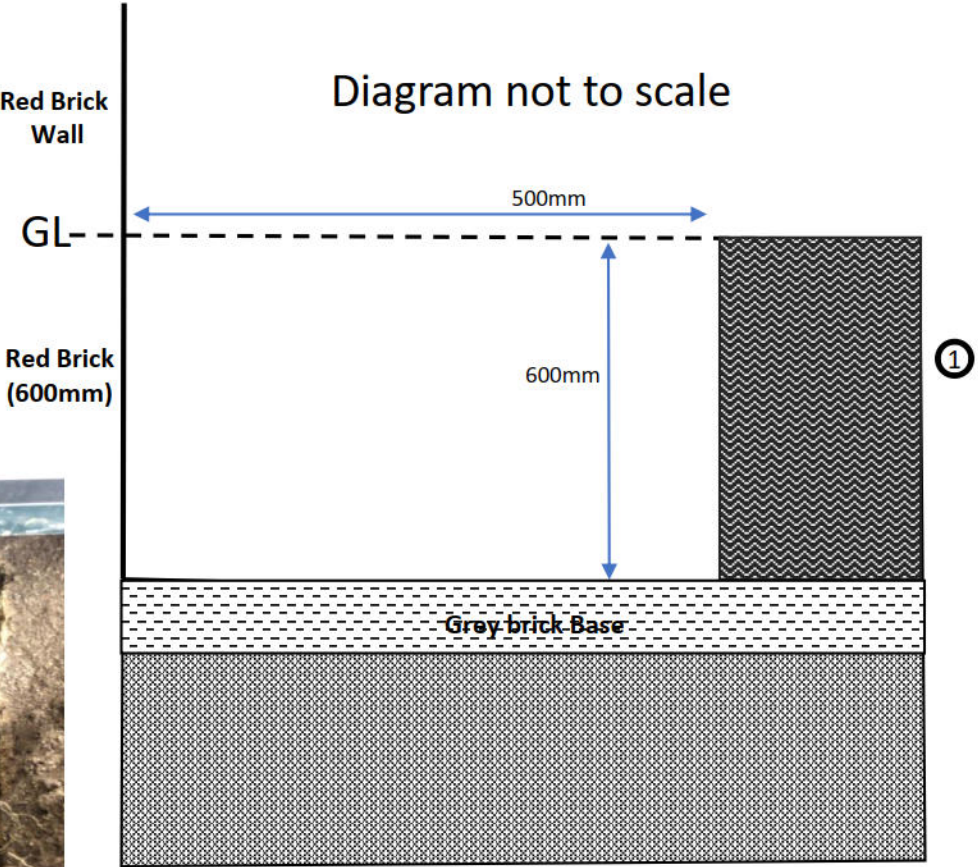
TP01 Top View of Hand Pit



TP01 Detailed View



TP01 Detailed View of Base of Hand Pit



Depth and Description of Strata

No groundwater was encountered.

- ① GL-0.60: MADE GROUND: Brown gravelly fine-coarse subangular-subrounded SAND with fragments of red brick, concrete and tile. Gravel is fine-medium angular-subrounded of flint.



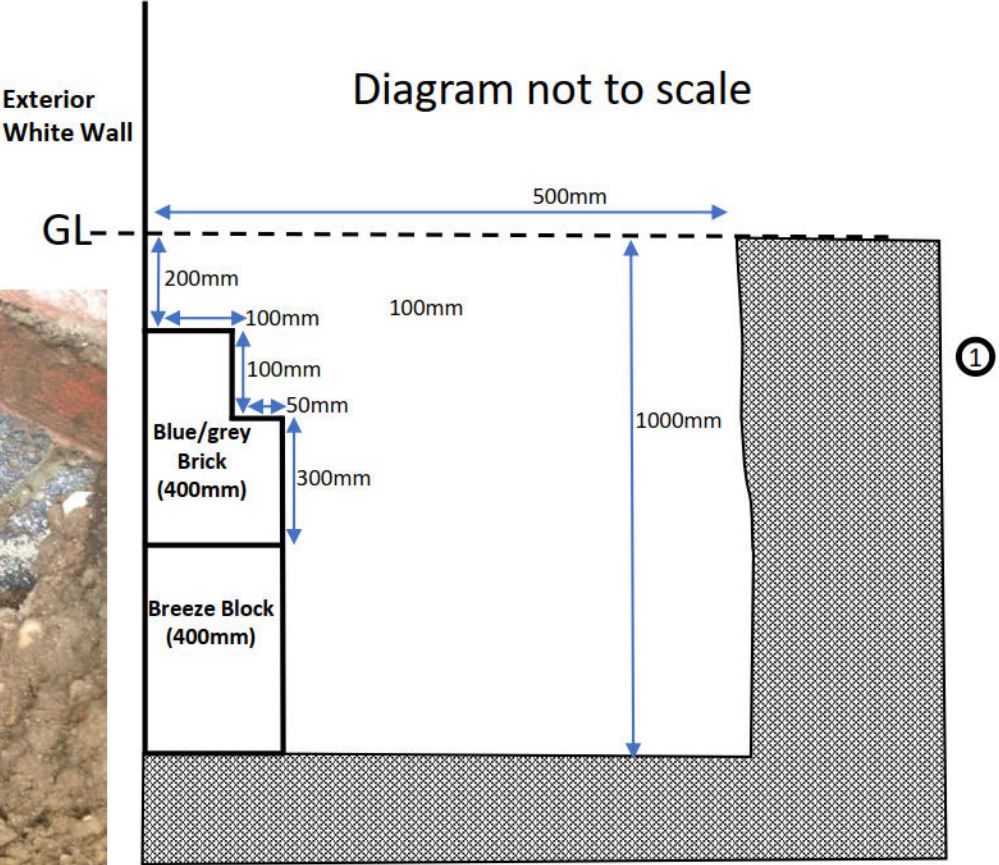
TP02 Top View of Hand Pit



TP02 Detailed View



TP02 Detailed View of Base of Hand Pit



Depth and Description of Strata

No groundwater was encountered.

- ① GL-1.0m: MADE GROUND: Brown slightly clayey gravelly fine-coarse subangular-rounded SAND with fragments of red brick, concrete glass and tile.

Service pipe encountered at base of pit.

R0747 Shinfield View Care Home – Foundation Pit

Section TP03



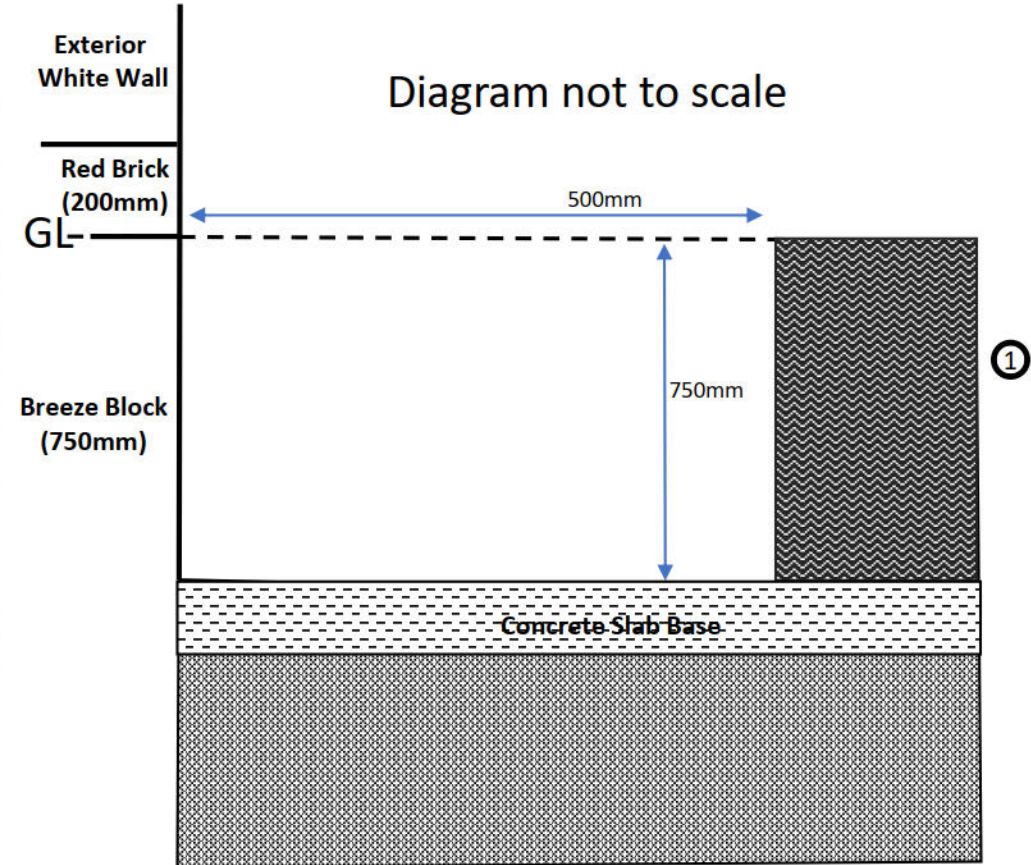
TP03 Top View of Hand Pit



TP03 Detailed View of Base of Hand Pit



TP03 Detailed View



Depth and Description of Strata

No groundwater was encountered.

- ① GL-0.75m: MADE GROUND: Brown/grey gravelly fine-coarse subangular-subrounded SAND with large fragments of red brick and concrete

APPENDIX 2

LABORATORY TESTING RESULTS (GEOTECHNICAL)



Laboratory Report



Contract Number: 59254

Client Ref: **R0747**

Report Date: **13-05-2022**

Client PO:

Client **Earth Environmental & Geotechnical**
Studio 3, Tollbridge Studios, Toll Bridge Road, Bath
BA1 7DE

Contract Title: **Shinfield Care Home**
For the attention of: **John**

Date Received: **28-04-2022**
Date Completed: **13-05-2022**

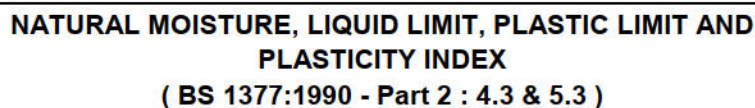
Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	3
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	3
Water Soluble Sulphate 2:1 extract Sub-contracted Test - @ Non Accredited Test	5
pH value of soil Sub-contracted Test - @ Non Accredited Test	5
Samples Received - @ Non Accredited Test	23
Disposal of samples for job	1

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 certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Emma Sharp (Business Support Manager) - Paul Evans (Director) - Richard John (Quality/Technical Manager)
Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) - Wayne Honey (Quality Assistant / Administrator / Health and Safety Coordinator)





ANALYTICAL TEST REPORT

Contract no: 108842

Contract name: Shinfield Care Home

Client reference: R0747

Clients name: Geo Site & Testing Services

Clients address: Unit 3 and 4 Heol Aur
Dafen Industrial Estate, Dafen
Llanelli, Carmarthenshire
SA14 8QN

Samples received: 03 May 2022

Analysis started: 03 May 2022

Analysis completed: 10 May 2022

Report issued: 10 May 2022

Key

U	UKAS accredited test
M	MCERTS & UKAS accredited test
\$	Test carried out by an approved subcontractor
I/S	Insufficient sample to carry out test
N/S	Sample not suitable for testing

Approved by:



Megan Harris

Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			108842-1	108842-2	108842-3	108842-4	108842-5
Sample id			WS01	WS01	WS02	WS02	WS02
Depth (m)			1.00-1.50	3.60-3.70	1.55-2.00	3.40-3.50	4.90-5.00
Sample Type			B	D	B	D	D
Date sampled			-	-	-	-	-
Test	Method	Units					
pH	CE004 ^U	units	7.9	7.5	7.4	7.4	8.2
Sulphate (2:1 water soluble)	CE061 ^U	mg/l SO ₄	126	301	2491	2346	2282

Chemtech Environmental Limited

METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO ₄

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
108842-1	WS01	1.00-1.50	Y	All (NSD)
108842-2	WS01	3.60-3.70	Y	All (NSD)
108842-3	WS02	1.55-2.00	Y	All (NSD)
108842-4	WS02	3.40-3.50	Y	All (NSD)
108842-5	WS02	4.90-5.00	Y	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

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

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.

APPENDIX 3

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that, expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important factor in determining the scope and level of the services. Should the purpose for which the report is used, or the proposed use of the site change, this report will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2021 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth

Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.