



LOXWOOD CLAY PITS

INTERPRETATIVE REPORT ON GROUND INVESTIGATION

Prepared for LOXWOOD CLAY PITS LTD

Report Ref: 33137

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Report Ref: 33137

PROJECT: Clay extraction feasibility

CONSULTANT: ProTreat Ltd

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The report has been prepared for the sole use and reliance by Loxwood Clay Pits Ltd. GEL accepts no liability as a result of the use or reliance of this report by any other parties.



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1. INTRODUCTION

It is proposed to extract clay at Loxwood, West Sussex, for use in brick manufacturing. Geotechnical Engineering Limited (GEL) was instructed by ProTreat Ltd acting on behalf of Loxwood Clay Pits Ltd to carry out an investigation to determine the ground conditions.

The scope of work and terms and conditions of appointment were defined in correspondence by GEL, reference T25069/03 dated 23rd March 2017.

This report describes the investigation, presents the findings and comments accordingly. The comments given in this report and the opinions expressed assume that ground conditions do not vary beyond the range revealed by this investigation. There may however, be conditions at or adjacent to the site, which have not been disclosed by the investigation and which, therefore, have not been considered in this report. Accordingly, a careful watch should be maintained during any future groundworks and the recommendations of this report reviewed as necessary.

The recommendations given in this report should not be used for any other schemes on or adjacent to this site without further reference to GEL.

This report should be read in conjunction with GEL report reference 32637 dated February 2017.

2. SITE LOCATION AND GEOLOGY

The site is situated on land immediately north of Loxwood Road, Loxwood, Billingshurst, West Sussex, RH14 0RW and may be located by its National Grid co-ordinates TQ 0550 3200.



The site comprised two areas of woodland located adjacent to each other, connected by a bridleway, understood to have Right of Way access between the woodlands for “forestry activities”. Due to the large size of the whole site and the fact there are two distinct plots of woodland, these are distinguished as the “western” plot and “eastern” plot henceforth.

The western plot was the larger of the two at 87.5Ha, while the eastern plot was smaller at 34.5Ha. Both plots contained a mix of woodland types: mature broadleaf woodland or “ancient” woodland; mixed “ancient and semi-natural” woodland that included conifer growth from historical forestry work; and areas that had been cleared as part of forestry activities and frequently replanted with saplings.

The soil surface was generally observed to be “clayey” in nature. The Client reported that the forestry tracks were often difficult to traverse during winter or after heavy rainfall.

On the western plot, surface watercourses were observed that had cut wide channels up to 4m deep into the ground with culverts present to maintain access. On the eastern plot, water was observed flowing across the ground surface in shallow drains.

The southwest corner of the eastern plot was notable by a number of large, shallow (approximately 1m deep) depressions surrounding a clearing that contained some evidence of hardstanding. Some depressions were water-filled. These features were in an area recorded to have been used for clay extraction and brick making in the past.

Low earth bunds, possibly related to excavated soils, were occasionally noted on both plots.

A mound of earth, embedded with various wastes including unlabelled metallic drums, was noted in the southwest corner of the eastern plot.



Loxwood Road provided the main local access to the site. The road was undesignated but sufficiently wide to accommodate two-way traffic.

British Geological Survey (BGS) England and Wales (Sheet No. 301 - Haslemere, 1:50,000 dated 1981) and the BGS online geology (1:50,000) indicate the site is underlain by the Weald Clay Formation comprising mudstone with discrete sandstone beds. Superficial deposits are only recorded on the western plot, comprising a tract of Alluvium associated with a watercourse along its western boundary.

Made Ground is anticipated across the site associated with past brick making and forestry activities, however such occurrences are anticipated to be localised.

3. PROPOSED WORKS

It is proposed to excavate clay resources on site for use in brick manufacturing.



4. GROUND INVESTIGATION

4.1 Fieldwork

The fieldwork was carried out in general accordance with BS5930:2015 during the period 5th to 8th June 2017 and 22nd to 23rd June 2017 and comprised ten boreholes.

The exploratory hole locations were selected and set out by this Company and are shown on Figure 1.

The boreholes, referenced BH03, BH04, BH05, BH07, BH08, BH09, BH10 and BH11 (Appendix A), were formed using a P45 slope rig. Initially, an inspection pit was hand excavated at most borehole locations to a depth of 1.20m to check for buried services; BH09 was only excavated to 0.80m and no inspection pit was dug at BH08 due to water ingress. Disturbed samples were taken and retained in plastic bags. Dynamic sampling techniques were then employed to produce a continuous disturbed sample of 97mm diameter reducing to 60mm or 50mm as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.

The samples were extracted horizontally from the sampler, labelled and caps placed each end to retain moisture.

The boreholes, referenced BH12 and BH13 (Appendix A), were formed using a track-mounted Geotechnical Pioneer Rig. Initially, an inspection pit was hand excavated at each borehole location to a depth of 1.20m to check for buried services. Disturbed samples were taken and retained in a combination of plastic bags. Heavy duty dynamic sampling techniques were then employed to produce a continuous disturbed sample of 112mm nominal diameter, reducing to 97mm in BH12 as the borehole was advanced. The samples were recovered in semi-rigid plastic liner.



On refusal to dynamic sampling borehole BH12 and BH13 were continued by rotary core drilling techniques utilising a water flush. A double-tube swivel core barrel with semi-rigid plastic liner was utilised to recover a continuous sample of 90mm diameter.

The dynamic samples and rotary core were extracted horizontally from the sampler and core barrel respectively, the semi-rigid liner was cut to length and caps placed at each end to retain moisture content. All samples and core were retained in sequence in labelled, wooden coreboxes.

Boreholes were monitored for groundwater ingress as dynamic sampling proceeded: no groundwater strikes were observed. Water levels were also recorded at the start and end of each shift and on completion of the borehole and are presented on the relevant log.

On completion, the boreholes were backfilled with arisings and bentonite pellets and the surface reinstated.

On completion of fieldwork all samples were brought to this Company's laboratory for logging and storage.

4.2 Logging

The logging of soils and rocks was carried out by an Engineering Geologist in general accordance with BS5930:2015. A key to the exploratory hole logs is presented in Appendix A.

Detailed descriptions of the core and samples are given in the borehole logs, Appendix A, along with details of sampling, groundwater ingress and relevant comments on drilling techniques.

Prior to logging, photographs of the core were taken and are presented separately.



4.3 Laboratory Testing

No laboratory testing was undertaken by GEL.



5. DISCUSSION AND CONCLUSIONS

5.1 Ground Conditions

The ground conditions revealed by the investigation generally confirm the strata indicated by the geological records.

Weald Clay Formation

Strata attributed to the Weald Clay Formation was encountered in all boreholes.

The material was typically encountered as a firm to stiff clay, being locally gravelly and often silty. The gravel generally represented drilling disturbed thin bands of siltstone that were recovered in a non-intact state. The clay was often extremely closely fissured.

Below 3-4m depth, the clay tended to become stiff and very stiff. The clay tended towards mudstone or contained stiff/very stiff clay and extremely weak mudstone lithorelicts.

Distinct siltstone bands and rare sandstone bands up to 400mm thick were observed throughout. These appeared to be discrete, subordinate features but presented an increased resistance to dynamic sample drilling methods. They were frequently recovered in a non-intact state.

In boreholes BH12 and BH13 below depths of 5.00m and 4.65m below ground level (bgl) respectively, the clay layers alternated with thick beds of stiff clayey silt with very closely to medium spaced thin beds of extremely weak siltstone throughout the silt.

Colouration of the clay was variable in the upper 2-3m in most boreholes, with orangish brown and bluish grey clays being mottled greenish grey and purple. In borehole BH11 at 3.25 to 4.40 bgl, BH12 at 3.30 to 5.00m bgl and BH13 at 7.90 to 9.25m bgl, the clay was



reddish brown; it is understood that reddish clays are a desirable characteristic in the Weald Clay Formation for brick making purposes, however this appeared to be a relatively localised characteristic, with the darker bluish grey clays and silts becoming dominant with depth.

Groundwater

Groundwater was not encountered during the formation of the boreholes. Surface water issues were however apparent at boreholes BH08 and BH09.

The water levels recorded may not necessarily reflect standing groundwater level due to the addition of water during the formation of boreholes BH12 and BH13. Similarly, groundwater strikes may have been masked by the addition of water as boreholes BH12 and BH13 were advanced. Groundwater ingress during dynamic sampling would have occurred too slowly to be observed during the drilling process.

5.2 Excavations

Excavations should be within the scope of conventional backhoe excavators. Recourse to hydraulic breakers may be required to break out existing obstructions and foundation bases.

Excavations should remain stable in the short term, although minor spalling of the excavation sides may occur. In the vicinity of former excavations, the stability any new excavation is likely to be significantly reduced.

If potentially unstable excavations or any excavations deeper than 1.00m are to be entered then the sides should be battered back and/or shoring methods and equipment should be utilised in accordance with the relevant Health and Safety legislation.



Prior to development any existing foundation structures and/or obstructions should be broken out and replaced with materials compatible with the surrounding ground.

5.3 Discussion of Brick Clay Resource Potential

On the basis of the boreholes, it has not been possible to fully determine whether or not the site represents a suitable brick clay resource for the West Sussex area.

The main concern relates to the prevalence of thin siltstone bands which would in theory “contaminate” the clay during excavation, leaving coarser inclusions.

Additionally, the thicker clayey silt layers occurring at depth may not have the right properties to for a suitable brick. The proportion of clay present within those layers is likely to be critical to its suitability.

The redder clays, cited by a local brick manufacturer as being characteristic of the Weald Clay Formation, appear to be limited in extent and would be unlikely to provide a sufficient resource on their own. Therefore, resource potential would likely have to consider the suitability of the, orangish brown or bluish grey clays and clayey silts in order to be commercially viable

A range of specialist testing was previously identified in the GEL desk study (report reference 32637 dated February 2017). It was originally intended that twelve selected samples would be put forward for testing in order to assess the suitability of the clay at different points around the site. However, the high cost involved in this testing means undertaking the full quantity of testing based on current information would not be advisable. It is therefore suggested that testing is undertaken on a reduced number of samples covering the reddish brown clay, the bluish grey silty clay and the bluish grey clayey



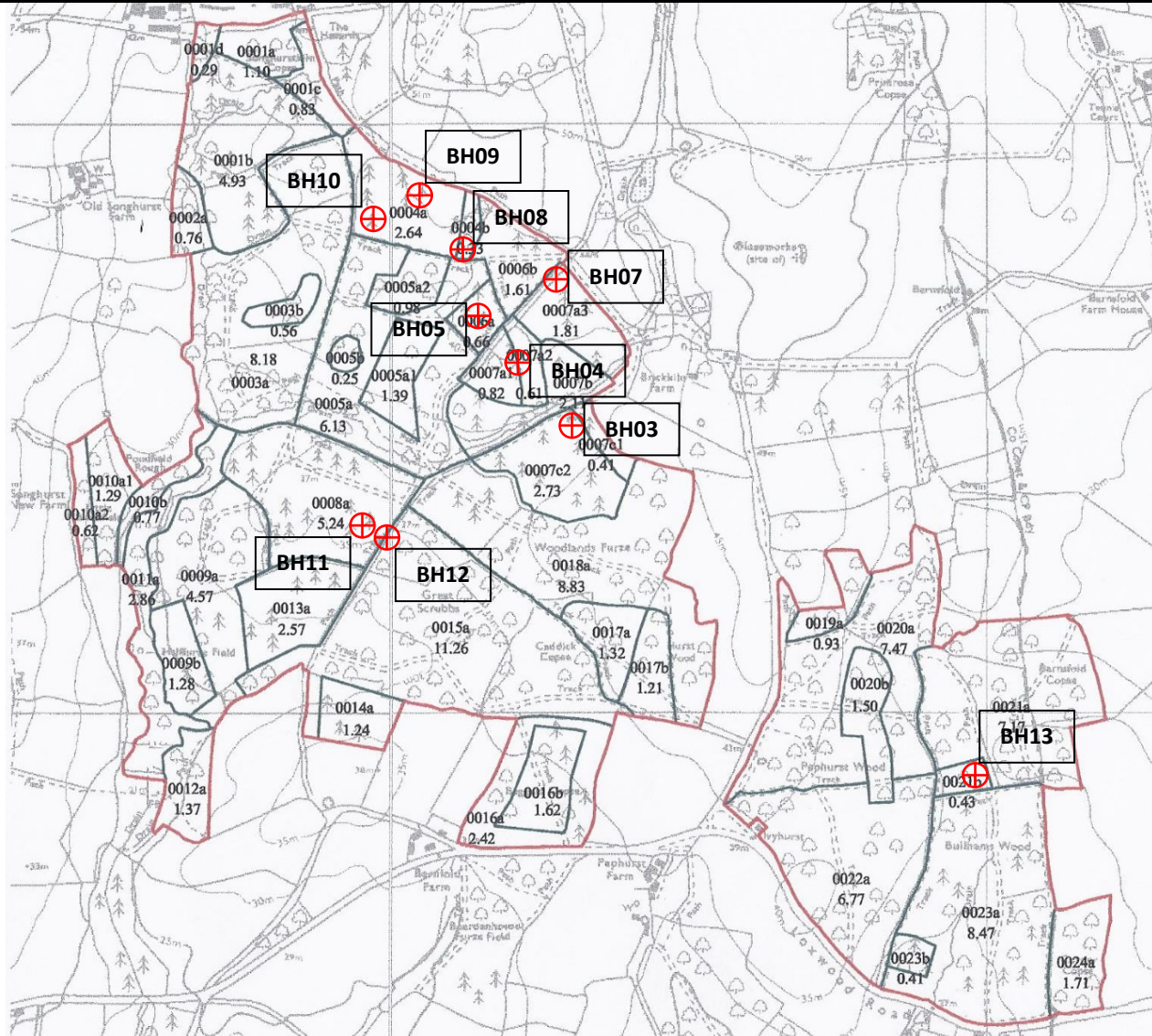
silt with siltstone bands. A single test sample from each material type should be sufficient to inform whether or not further testing is worth undertaking.

GEOTECHNICAL ENGINEERING LIMITED



6. REFERENCES

British Standards Institution (2015): Code of practice for ground investigations. BS 5930:2015.



Key

⊕ Borehole

Geotechnical Engineering Limited
EXPLORATORY HOLE LOCATION PLAN

CLIENT LOXWOOD CLAY PITS LTD
 SITE LOXWOOD CLAY PITS
 SCALE UNKNOWN

CONTRACT	FIGURE
33137	1

Reproduced from a Plan Supplied by the Tiltill



APPENDIX A

FIELDWORK DATA



Sample type

D Small disturbed	U Undisturbed	X/L Dynamic	D*/ES Environmental - soil	Cs Core subsample (prepared)
B Bulk disturbed	UT Undisturbed thin wall	C Core	EW Environmental - water	Xs/Ls Dynamic subsample (prepared)
LB Large bulk disturbed	P Piston	W Water		

Test type

- S SPT - Split spoon sampler followed by uncorrected SPT 'N' Value
- C SPT - Solid cone followed by uncorrected SPT 'N' Value
- (*250 - Where full test drive not completed, linearly extrapolated 'N' value reported, ** - Denotes no effective penetration)
- H Hand vane - direct reading in kPa - not corrected for BS1377 (1990). Re* denotes refusal
- M Mackintosh probe - number of blows to achieve 100mm penetration
- PP Pocket penetrometer - direct reading in kg/sq.cm
- Vo Headspace vapour reading, uncorrected peak values in ppm, using a PID (calibrated with Isobutylene, using a 10.6eV bulb)

Sample/core range/l_f

| Dynamic sample

█ Undisturbed sample - open drive including thin wall. Symbol length reflects recovery

x x = Total Core Recovery (TCR) as percentage of core run

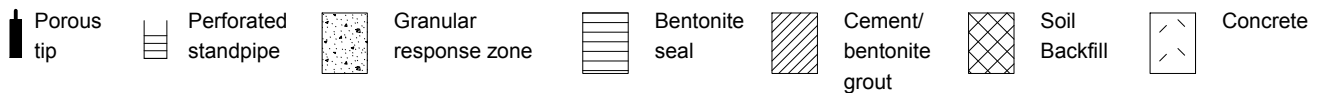
y y = Solid Core Recovery (SCR) as percentage of core run. Assessment of core is based on full diameter.

z z = Rock Quality Designation (RQD). The amount of solid core greater than 100mm expressed as percentage of core run.

Where SPT has been carried out at beginning of core run, disturbed section of core excluded from SCR and RQD assessment.

l_f - fracture spacing - the modal fracture spacing (mm) over the indicated length of core. Where spacing varies significantly, the minimum, mode and maximum values are given. NI = non-intact core NA = not applicable

Instrumentation



Stratum boundaries



Logging

The logging of soils and rocks has been carried out in general accordance with BS 5930:2015.

Chalk is logged in general accordance with Lord et al (2002) CIRIA C574. Where possible, dynamic samples in chalk have been logged in accordance with CIRIA C574; descriptions and gradings (if presented) should be treated with caution given the potential for sample disturbance.

For rocks the term fracture has been used to identify a mechanical break within the core. Where possible incipient and drilling induced fractures have been excluded from the assessment of fracture state. Where doubt exists, a note has been made in the descriptions. All fractures are considered to be continuous unless otherwise reported.

Made Ground is readily identifiable when, within the material make up, man made constituents are evident. Where Made Ground appears to be reworked natural material the differentiation between in situ natural deposits and Made Ground is much more difficult to ascertain. The interpretation of Made Ground within the logs should therefore be treated with caution.

The descriptors "topsoil" and "tarmacadam" are used as generic terms and do not imply conformation to any particular standard or composition.

Rootlets are defined as being less than 2mm in diameter, roots are defined as in excess of 2mm diameter.

General Comments

The process of drilling and sampling will inevitably lead to disturbance, mixing or loss of material in some soil and rocks.

Indicated water levels are those recorded during the process of drilling or excavating exploratory holes and may not represent standing water levels.

All depths are measured along the axis of the borehole and are related to ground level at the point of entry. All inclinations are measured normal to the axis of the core.

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH03

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 8 June 2017

Scale 1 : 50

End Date 8 June 2017

Depth 5.70 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
08/06/17 1000hrs	1LB	0.50 - 1.00					Vegetation over soft brown silty CLAY. Firm orangish brown mottled bluish grey locally stained dark purple CLAY. Frequent relict rootlets.	0.10		
	2L	1.20 - 2.20	Nil					1.80		
	3L	2.20 - 3.20	Nil				Firm orangish brown mottled bluish grey slightly gravelly CLAY. Gravel is angular fine and medium siltstone gravel stained dark purple. Stiff bluish grey mottled greenish brown and light yellow slightly gravelly silty CLAY. Gravel is angular fine to coarse lithorelicts of siltstone.	2.00		
	4L	3.20 - 4.20	Nil				Very stiff fissured greenish brown and orange CLAY. Fissures are randomly orientated extremely closely spaced stained dark orange and dark purple.	2.55		
	5L	4.20 - 5.20	Nil				Stiff becoming very stiff fissured grey silty CLAY with rare silt partings (up to 2mm).	4.15		
	6L	5.20 - 5.70	Nil					5.70		
08/06/17 1115hrs Dry							Borehole completed at 5.70m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-2.20m, (98mm) 2.20-3.20m, (74mm) 3.20-5.20m and (64mm) 5.20-5.70m.
 CASING: None.
 BACKFILL: On completion, hole backfilled with bentonite pellets 5.70-0.50m and soil arisings 0.50-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH04

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 7 June 2017

Scale 1 : 50

End Date 8 June 2017

Depth 5.60 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
07/06/17 1535hrs	1LB	0.50 - 1.00					Very soft brown slightly sandy silty CLAY. Frequent rootlets.	0.10		x
	2L	1.20 - 2.10	Nil				Firm bluish grey mottled orange locally red CLAY. Rare relict rootlets.	1.35		
	3L	2.10 - 3.10	Nil				Stiff bluish grey mottled orangish brown CLAY. Frequent relict rootlets.	1.60		
							Stiff orangish brown mottled greenish grey and bluish grey CLAY.	1.95		
07/06/17 1700hrs Dry	5L	4.10 - 5.10	Nil				Very stiff dark orangish brown slightly gravelly CLAY. Gravel is angular fine lithorelicts of siltstone.	2.20		x x x
							Light yellowish grey mottled greenish grey, orangish brown, red and dark purple gravelly clayey SILT. Gravel is angular and subangular fine to coarse siltstone lithorelicts.	2.50		x x x
							Stiff fissured greenish grey mottled dark orange gravelly CLAY. Gravel is angular fine and medium lithorelicts of very stiff clay and extremely weak siltstone. Fissures are randomly orientated extremely closely spaced dark orange and dark purple.	4.95		x
08/06/17 0800hrs Dry	6L	5.10 - 5.60	Nil				Stiff fissured dark grey silty CLAY. Fissures are randomly orientated extremely closely spaced locally stained dark orange.	5.60		x
08/06/17 0900hrs Dry.							Borehole completed at 5.60m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-2.10m, (98mm) 2.10-3.10m, (84mm) 3.10-4.10m, (74mm) 4.10-5.10m and (64mm) 5.10-5.60m.
 CASING: None.
 BACKFILL: On completion, hole backfilled with bentonite pellets 5.60-0.50m and soil arisings 0.50-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH05

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 7 June 2017

Scale 1 : 50

End Date 7 June 2017

Depth 6.80 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru-ment	description	depth (m)	reduced level (m)	legend
07/06/17 1315hrs	1LB	0.50 - 1.00					Vegetation over soft brown slightly sandy CLAY. Frequent rootlets.	0.15		
	2L	1.20 - 2.20	1.20				Firm bluish grey mottled orangish brown slightly sandy CLAY. Rare relict rootlets.	1.10		
	3L	2.20 - 3.20	2.00				Firm fissured orangish brown locally bluish grey slightly gravelly CLAY. Gravel is angular to subrounded fine and medium lithorelicts of very stiff clay to extremely weak mudstone. Fissures are randomly orientated extremely closely spaced stained orange locally dark purple.	2.35		
	4L	3.20 - 4.20	2.00				Stiff fissured light greenish yellow slightly gravelly CLAY. Gravel is angular fine and medium lithorelicts of extremely weak siltstone. Fissures are randomly orientated extremely closely spaced stained orange locally dark purple.	2.95		
	5L	4.20 - 5.20	2.00				Very stiff fissured orangish brown mottled greenish grey locally reddish brown CLAY. Fissures are randomly orientated extremely closely spaced stained dark orange.	3.80		
	6L	5.20 - 6.20	2.00				Very weak greenish grey SILTSTONE recovered non intact as angular and subangular fine and medium siltstone gravel.	3.85		
	7L	6.20 - 6.80	2.00				Very stiff fissured greenish grey slightly gravelly CLAY. Gravel is angular fine to coarse lithorelicts of extremely weak siltstone. Fissures are randomly orientated extremely closely spaced stained dark orange.	5.55		
07/06/17 1515hrs Dry							Stiff dark grey fissured silty CLAY with rare light grey silt partings (up to 2mm). Fissures are randomly orientated extremely closely spaced.	6.30		
							Very stiff dark grey silty CLAY locally tending to subangular fine to coarse gravel sized mudstone lithorelicts.	6.80		
							Borehole completed at 6.80m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-2.20m, (98mm) 2.20-3.20m, (74mm) 3.20-5.20m and (64mm) 5.20-6.80m.
 CASING: 128mm diam to 2.00m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 6.80-0.50m and soil arisings 0.50-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH07

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 7 June 2017

Scale 1 : 50

End Date 7 June 2017

Depth 6.70 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
07/06/17 0915hrs	1LB	0.50 - 1.00					Vegetation over firm brown slightly sandy CLAY. Frequent rootlets.	0.25		
	2L	1.20 - 2.20	Nil				Firm becoming stiff bluish grey mottled orangish brown locally reddish brown CLAY. Frequent relict rootlets.			
	3L	2.20 - 3.20	Nil				Stiff fissured orangish brown mottled reddish brown CLAY. Fissures are randomly orientated extremely closely spaced.	2.10 2.20		
	4L	3.20 - 4.20	Nil				Stiff greenish grey locally orangish brown locally stained dark purple slightly gravelly CLAY. Gravel is angular to subrounded fine to coarse lithorelicts of very stiff clay and extremely weak siltstone.	3.35		
	5L	4.20 - 5.20	Nil				Very stiff fissured dark greenish grey CLAY. Fissures are randomly orientated extremely closely spaced stained orange locally dark purple.	4.50		
	6L	5.20 - 6.20	Nil				Very stiff fissured dark grey CLAY. Fissures are randomly orientated extremely closely spaced.	4.95		
07/06/17 1225hrs Dry	7L	6.20 - 6.70	Nil				Stiff dark grey silty CLAY with rare light grey silt partings (up to 2mm).	6.70		
							Borehole completed at 6.70m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-2.20m, (98mm) 2.20-3.20m, (84mm) 3.20-4.20m, (74mm) 4.20-5.20m and (64mm) 5.20-6.70m.
 CASING: None.
 BACKFILL: On completion, hole backfilled with bentonite pellets 6.70-0.50m and soil arisings 0.50-0.00m.
 REMARKS: Liner failure 2.20-3.20m, sample retained as bulk bag.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH08

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 6 June 2017

Scale 1 : 50

End Date 6 June 2017

Depth 4.60 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
06/06/17 0900hrs	1L	0.00 - 1.00	Nil				Vegetation over soft brown slightly sandy CLAY. Abundant rootlets.	0.15		
							Firm orangish brown mottled bluish grey locally dark purple slightly sandy CLAY.	0.70		
	2L	1.00 - 2.00	1.00				Stiff bluish grey mottled orange slightly gravelly CLAY. Gravel is subangular and subrounded fine siltstone lithorelicts. 1.35m: Light grey silt parting (2mm). 1.50m: Light grey silt parting (2mm). 1.60 - 1.80m: Stained dark purple.	1.95		
	3L	2.00 - 3.00	2.00				Greyish yellow slightly clayey gravelly fine SAND. Gravel is subangular and subrounded fine to coarse lithorelicts of sandstone.	2.15		
	4L	3.00 - 4.00	2.00				Stiff bluish grey mottled orangish brown CLAY with rare pockets (up to 5mm) of light grey silt. Frequent relict rootlets. 2.55 - 2.60m: Dark purple subangular fine siltstone gravel.	2.70		
							Very stiff fissured greenish brown becoming orangish brown CLAY. Fissures are randomly orientated extremely closely spaced stained dark orange locally dark purple. 2.90 - 3.00m: Dark purple subangular fine siltstone gravel. 3.30 - 3.35m: Very weak orangish brown siltstone recovered as subangular fine and medium siltstone gravel.	4.40		
06/06/17 1150hrs Dry	6L	4.40 - 4.60	2.00				Extremely weak locally very weak light greenish grey SILTSTONE recovered non intact as silty angular to subrounded fine to coarse siltstone gravel. Borehole completed at 4.60m.	4.60		x x x x x x
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Dynamic sampled (113mm) 0.00-4.00m, (98mm) 4.00-4.40m and (74mm) 4.40-4.60m.
 CASING: 128mm diam to 2.00m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 4.60-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
0.00	Nil	NA	20	Standing water on ground surface prior to drilling.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH09

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 6 June 2017

Scale 1 : 50

End Date 6 June 2017

Depth 4.60 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
06/06/17 1200hrs	1LB	0.50 - 0.80					Vegetation over soft brown silty CLAY. Abundant rootlets and frequent roots (up to 10mm diam).	0.20		
	2L	0.80 - 1.80	0.80				Firm bluish grey mottled orange CLAY. Frequent relict rootlets.	1.30		
	3L	1.80 - 2.80	1.80				Stiff orangish brown slightly sandy slightly gravelly CLAY. Gravel is subangular and subrounded fine and medium lithorelicts of very stiff clay to extremely weak mudstone.	1.45		
							Stiff bluish grey mottled orange CLAY. Frequent relict rootlets.	1.60		
	4L	2.80 - 3.80	1.80				Stiff light yellowish grey mottled greenish grey silty CLAY. 1.75 - 1.80m: Weak dark purple locally dark orange siltstone recovered non intact as angular fine to coarse siltstone gravel.	1.90		
Stiff fissured greenish brown CLAY. Fissures are randomly orientated extremely closely spaced stained orange.							2.60			
5L	3.80 - 4.60	1.80				Stiff fissured greenish brown gravelly CLAY. Gravel is angular to subrounded fine to coarse lithorelicts of extremely weak siltstone. Fissures are randomly orientated extremely closely spaced stained orange. 3.00 - 3.10m: Silty.	4.60			
06/06/17 1430hrs Dry							Borehole completed at 4.60m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-0.80m. Dynamic sampled (113mm) 0.80-1.80m, (98mm) 1.80-2.80m, (74mm) 2.80-3.80m and (64mm) 3.80-4.60m.
 CASING: 128mm diam to 1.80m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 4.60-0.80 and soil arisings 0.80-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
0.80	Nil	NR	20	Encountered at 0.80m in inspection pit.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH10

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 6 June 2017

Scale 1 : 50

End Date 6 June 2017

Depth 3.40 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend	
06/06/17 1440hrs	1LB	0.50 - 1.20	1.20				Vegetation over soft brown slightly sandy CLAY. Abundant rootlets.	0.20			
							Firm bluish grey mottled orange slightly sandy CLAY.	0.80			
	2L	1.20 - 2.20					2.00	Firm bluish grey mottled orange locally stained dark purple sandy CLAY.			1.60
	3L	2.20 - 2.90					2.00	Stiff bluish grey mottled orange locally stained dark purple slightly sandy CLAY. Frequent relict rootlets.			2.15
06/06/17 1600hrs Dry	4L	2.90 - 3.40	2.00				Stiff fissured greenish grey mottled orangish brown CLAY. Fissures are randomly orientated extremely closely spaced stained dark purple and dark orange.	2.45			
							Very stiff fissured greenish grey gravelly CLAY. Gravel is angular to subrounded fine to coarse lithorelicts of extremely weak siltstone. Fissures are randomly orientated extremely closely spaced stained orange.	3.40			
							Borehole completed at 3.40m.				
								{8.00}			

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (113mm) 1.20-2.20m, (98mm) 2.20-2.90m and (64mm) 2.90-3.40m.
 CASING: 128mm diam to 2.00m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 3.40-0.50m and soil arisings 0.50-0.00m.

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH11

SITE LOXWOOD CLAY PITS

Sheet 1 of 1

Start Date 8 June 2017

Scale 1 : 50

End Date 8 June 2017

Depth 4.40 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	instru -ment	description	depth (m)	reduced level (m)	legend
08/06/17 1300hrs	1LB	0.50 - 1.00					Vegetation over soft brown silty CLAY. Frequent rootlets.	0.30		x
							Firm bluish grey mottled orange CLAY. Rare relict rootlets.			
	2L	1.20 - 2.00	1.20					1.45		
	3L	2.00 - 2.70	2.00				Firm fissured light greenish grey mottled bluish grey and orangish brown CLAY. Fissures are randomly orientated extremely closely spaced stained bluish grey.	1.95		
	4L	2.70 - 3.20	2.00				Very weak dark purple and orange SILTSTONE recovered non intact as angular fine to coarse siltstone gravel.	2.05		x x x
							Stiff bluish grey mottled greenish brown locally orange CLAY.	2.45		x
5L	3.20 - 3.70	2.00				Very stiff light greyish brown slightly gravelly silty CLAY. Gravel is angular fine to coarse siltstone lithorelicts.	3.10		x	
6L	3.70 - 4.40	2.00				Very weak dark purple and dark greenish brown SILTSTONE recovered non intact as angular fine to coarse siltstone gravel.	3.25		x x x	
						Very stiff fissured dark reddish brown mottled orangish brown locally greenish grey CLAY. Fissures are randomly orientated extremely closely spaced stained dark orange.	4.40			
08/06/17 1435hrs Dry.							Borehole completed at 4.40m.			
								{8.00}		

EQUIPMENT: Geotechnical P45 Slope Climbing rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (98mm) 1.20-2.00m, (113mm) 2.00-2.70m, (98mm) 2.70-3.20, (74mm) 3.20-3.70m and (64mm) 3.70-4.40m.
 CASING: 128mm to 2.00m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 4.40-0.50m and soil arisings 0.50-0.00m

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m) casing (m) rose to (m) time to rise (min) remarks
 Groundwater not encountered.



CONTRACT
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BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH12

SITE LOXWOOD CLAY PITS

Sheet 1 of 2

Start Date 22 June 2017

Scale 1 : 50

End Date 22 June 2017

Depth 9.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	lf	instru -ment	description	depth (m)	reduced level (m)	legend	
22/06/17 1010hrs	1B	0.10 - 0.30	Nil					Firm light brown mottled light grey and orange slightly sandy slightly gravelly silty CLAY. Gravel is angular medium lithorelicts of stiff clay. Rare rootlets.	0.60			
	2B	0.50 - 0.70						Stiff light grey mottled orangish brown slightly gravelly CLAY. Gravel is angular medium lithorelicts of stiff clay. Rare rootlets.				
	3B	1.00 - 1.20						Nil	1.00 - 1.25m: Friable.	1.25		
	4L	1.20 - 2.35							Stiff light grey mottled light orangish brown locally orangish brown CLAY. Rare rootlets.			
	5L	2.35 - 3.50	Nil					Stiff Light grey mottled light orangish brown locally orangish brown gravelly silty CLAY. Gravel is subrounded fine lithorelicts of stiff clay.	2.30			
								Extremely weak to very weak grey mottled light brown SILTSTONE. Fractures are subhorizontal to 20° and subvertical extremely closely spaced frequently stained orangish brown. Drilling disturbed.				
	6C	3.50 - 5.00	3.50	3.50		100	NA		Stiff grey slightly gravelly locally gravelly clayey SILT. Gravel is angular and subangular fine and medium lithorelicts of siltstone.	3.30		
									Stiff reddish brown rarely mottled greenish grey gravelly CLAY locally tending to extremely weak mudstone. Gravel is angular and subangular fine lithorelicts of mudstone and rare siltstone.			
7C	5.00 - 6.50	3.50	3.50		100	NA		Stiff extremely closely fissured grey locally mottled orangish brown clayey SILT with closely spaced very thin beds of extremely weak grey siltstone.	5.00			
								Stiff extremely closely fissured dark brownish grey mottled reddish brown silty CLAY.				
8C	6.50 - 8.00	3.50	3.50		100	NA		Stiff extremely closely fissured grey clayey SILT with very closely and closely spaced thin beds of extremely weak siltstone.	6.15			
								Stiff extremely closely fissured grey clayey SILT with very closely and closely spaced thin beds of extremely weak siltstone.				
Continued Next Page									{8.00}			

EQUIPMENT: Geotechnical Pioneer rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (128mm) 1.20-2.35m and (113mm) 2.35-3.50m. Waterflush rotary core drilled (116mm) 3.50-9.50m.
 CASING: 140mm diam to 3.50m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 9.50-0.20m and soil arisings 0.20-0.00m

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered prior to use of water flush.			

BOREHOLE LOG



BH12

CLIENT LOXWOOD CLAY PITS LTD

SITE LOXWOOD CLAY PITS

Sheet 2 of 2

Start Date 22 June 2017

Scale 1 : 50

End Date 22 June 2017

Depth 9.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	lf	instru -ment	description	depth (m)	reduced level (m)	legend
22/06/17 1610hrs 2.24m	9C	8.00 - 9.50	3.50		93			8.00m: Becoming dark grey	9.50		
								Borehole completed at 9.50m.			

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water strike (m)	casing (m)	rose to (m)	time to rise (m)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered prior to use of water flush.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH13

SITE LOXWOOD CLAY PITS

Sheet 1 of 2

Start Date 23 June 2017

Scale 1 : 50

End Date 23 June 2017

Depth 11.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	lf	instru -ment	description	depth (m)	reduced level (m)	legend
23/06/17 0835hrs	1B	0.10 - 0.30	Nil					Orangish brown slightly sandy clayey GRAVEL. Gravel is angular to rounded fine and medium rarely coarse flint and rare brick. Sand is medium and coarse. (MADE GROUND)	0.20		
	2B	0.50 - 0.70						0.80			
	3B	1.00 - 1.20						1.20			
	4L	1.20 - 2.70						1.70			
								Firm dark greenish grey mottled orangish brown silty CLAY. Rare rootlets.	1.70		
								Grey mottled orangish brown slightly clayey fine SAND with rare pockets of sandy clay (up to 10mm). Rare rootlets.	2.55		
	5C	2.70 - 4.00	2.70	100	NA			Firm and stiff grey mottled orangish brown slightly gravelly CLAY. Gravel is angular fine lithorelicts of stiff clay. Rare coarse gravel sized pockets of orangish brown very sandy clay.	4.00		
								Stiff light brown locally mottled light grey slightly sandy slightly gravelly locally gravelly CLAY. Gravel is angular to subrounded fine lithorelicts of mudstone.	4.00		
							3.90 - 4.00m: Light yellowish brown.	4.00			
							Stiff bluish grey mottled brown slightly gravelly silty CLAY. Gravel is angular to subrounded fine lithorelicts of mudstone.	4.65			
							Stiff light grey locally clayey SILT with closely to medium spaced thin beds of extremely weak brownish grey siltstone.	6.80			
							Very stiff extremely closely fissured bluish grey mottled light brown gravelly CLAY. Gravel is angular fine lithorelicts of very stiff clay and mudstone.	7.90			
							Continued Next Page	{8.00}			

EQUIPMENT: Geotechnical Pioneer rig.
 METHOD: Hand dug inspection pit 0.00-1.20m. Dynamic sampled (128mm) 1.20-2.70m. Waterflush rotary core drilled (116mm) 2.70-11.50m.
 CASING: 140mm diam to 2.70m.
 BACKFILL: On completion, hole backfilled with bentonite pellets 11.50-0.10m and soil arisings 0.10-0.00m

EXPLORATORY HOLE LOGS SHOULD BE READ IN CONJUNCTION WITH KEY SHEETS

water strike (m)	casing (m)	rose to (m)	time to rise (min)	remarks		CONTRACT 33137	CHECKED CT
				Groundwater not encountered prior to use of water flush.			

BOREHOLE LOG



CLIENT LOXWOOD CLAY PITS LTD

BH13

SITE LOXWOOD CLAY PITS

Sheet 2 of 2

Start Date 23 June 2017

Scale 1 : 50

End Date 23 June 2017

Depth 11.50 m

progress date/time water depth	sample no & type	depth (m) from to	casing depth (m)	test type & value	samp. /core range	lf	instru -ment	description	depth (m)	reduced level (m)	legend
23/06/17 1410hrs 2.39m	9C	8.50 - 10.00	2.70		100	NA		Stiff extremely closely fissured reddish brown mottled grey silty CLAY locally tending to extremely weak mudstone.	9.25		
	10C	10.00 - 11.50	2.70		90	NA	9.10 - 9.25m: Very weak grey siltstone. Fractures are subhorizontal to 10° very closely spaced planar smooth. Stiff extremely closely fissured dark grey gravelly clayey SILT locally tending to gravelly silty clay and extremely weak mudstone and siltstone. Gravel is angular fine lithorelicts of mudstone and siltstone.				
								Borehole completed at 11.50m.	11.50		
									{18.00}		
water strike (m) casing (m) rose to (m) time to rise (m) remarks Groundwater not encountered prior to use of water flush.									CONTRACT 33137	CHECKED CT	

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