

**PRELIMINARY GROUND INVESTIGATION
AT
FERRING COUNTRY CENTRE, RIFE WAY, FERRING
FOR
FERRING COUNTRY CENTRE**

G6306

14 February 2017



Ground Management Ltd
Civil and Geotechnical Engineering Services

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1.0 INTRODUCTION

- 1.1 Ground Management Ltd have undertaken a preliminary ground investigation at Ferring Country Centre, Rife Way, Ferring to collect information on ground conditions across two areas of the site where new buildings are proposed.
- 1.2 The work included machine excavation of trial pits to assess ground conditions and select samples for geotechnical laboratory testing, large scale insitu soakage testing and the installation of standpipes for future monitoring of groundwater levels.
- 1.3 This report provides a record of the investigation and its findings together with a brief discussion and recommendations to assist with foundation and drainage design.
- 1.4 Recommendations are based on the conditions revealed by the investigation. Should the proposed development change or ground conditions be found to vary from those previously revealed they should be reported to a geotechnical engineer to consider the significance.
- 1.5 A contamination assessment has not been requested or carried out.
- 1.6 The work was carried out on behalf of Ferring Country Centre under instruction from Archibald Shaw LLP and nothing in this report confers or purports to confer on any third party, any benefit or any right to enforce any term of this report pursuant to the Contract (Rights of Third Parties) Act 1999.

2.0 PROPOSED DEVELOPMENT

2.1 The proposed development comprises two phases:

- the removal of existing buildings and construction of two new steel framed agricultural buildings for the storage of feed and machinery and housing of animals
- relocation of an existing greenhouse and construction of a new steel frame visitors centre

2.2 The proposed layout is indicated on Philips Surveyors drawing CFE1 dated May 2016, an extract of which is presented on the attached Figure 3.

3.0 GENERAL DESCRIPTION OF SITE AND SURROUNDING AREA

- 3.1 Ferring Country Centre is located on land just west of Ferring Village and to the south of the railway line as indicated on Figure 1. The address is Rife Way, Ferring BN12 5JZ and the National Grid Reference for the site is TQ 08868 02901 approximately.
- 3.2 The centre is an active small farm that provides work experience and activity for people with learning disabilities and opens to the public. The existing site layout is indicated on an extract of Philips Surveyors drawing CFE1 that is included as Figure 2. More detailed plans will be available following preparation of a survey by Philips Surveyors.
- 3.3 The centre is bounded to the north by the railway and to the east by a caravan park and open fields with Ferring Village beyond. Open fields also lie to the south and west.
- 3.4 As indicated on the site plan there are various agricultural buildings, glasshouses, paddocks and a play areas on the site. One of the proposed agricultural barns will be in a field currently occupied by pigs. The other barn will be in an area where currently there is a small yard and three small buildings used for animal housing and the storage of food and equipment that sit amongst a small area of woodland. In places along the eastern edge of the site the ground appears to have been raised by the placement of a small bank of fill material approximately 0.5m high. Overhead electricity cables are carried across the area on pylons sited just off the site.
- 3.5 There is currently a large greenhouse at the location where the new visitors centre is proposed.
- 3.6 Ground level across the site is reasonably flat, appearing to be only a slight overall fall towards the south and the east. Ferring Rife is located within the open fields just to the east and a smaller watercourse and ponds are to the south. There is no topographic available for the site but the Ordnance Survey 1:25,000 shows the 5m contour running around the southern and eastern edges of the site.

4.0 GEOLOGY

- 4.1 The 1:50,000 British Geological Survey of England and Wales Sheet 317 / 332 "Chichester and Bognor" dated 1996 indicates the site to be underlain by Aeolian Deposits (Brickearth), a silty clay, over Middle Chalk.
- 4.2 By interpretation of the mapping it is anticipated that the above strata may be intervened by Head Deposits, typically a variable silty, sandy gravel mix derived from the underlying chalk geology, and possibly also Raised Beach Deposits comprising mainly sand with gravel.
- 4.3 Just off the site to the east the mapping indicates Alluvium as a narrow band along the alignment of the Ferring Rife.

5.0 SITE HISTORY

- 5.1 The history of the site has been studied by reference to some historical mapping available online. The earliest mapping viewed was the Ordnance Survey's 1:2,500 scale mapping dated 1876 and indicates the site to be open fields. The railway is shown north of the site and the field pattern either side of the line remains indicative of the boundaries established before the railway was built. A small triangular patch representing the corner of a larger field north of the railway, is located at the north east corner of the site and a double line along the east boundary indicates a possible track along which the occasional tree is marked.
- 5.2 Pylons and the overhead power lines are first indicated on mapping dated 1960. The caravan park to the east of the north end of the site first appears on the same map.
- 5.3 The latest historical map viewed was dated 1976-92 and still shows the site as open field with no buildings.

6.0 DETAILS OF THE GROUND INVESTIGATION

- 6.1 The ground investigation fieldwork was carried out on 13th and 14th January 2017 and comprised a series of machine excavated pits, referenced as TP1, TP2, TP3, TP4, and TP5 at the locations indicated on Figure 4. A small pit referenced as TP4A was excavated just west of TP4 for the purpose of shallow soakage testing. The trial pit locations were selected to give reasonable coverage around the proposed development areas whilst minimising disturbance of the site.
- 6.2 Prior to excavation of the trial pits the locations were scanned with a cable avoidance tool to check for underground services. The trial pits were excavated to depths of between 1.0m and 2.2m below ground level. On completion pits were backfilled with arisings.
- 6.3 Pits TP1 and TP2 were located around the proposed Visitors Centre to investigate founding conditions. TP1 was also used for soakage testing. TP3, TP4, TP4A and TP5 were located at the north end of the site around the area of the proposed barns to investigate founding conditions with TP4 and TP4A also used for soakage testing
- 6.4 The soakage testing was carried out in general accordance with BRE 365, abridged to allow works to be completed within the period of the investigation. The results of the percolation and soakage tests are summarised within the following section of this report.
- 6.5 Standpipes were installed within the backfill to trial pits TP1 and TP4 for the purpose of future monitoring of groundwater levels (by others).
- 6.6 The exploratory holes were logged in general accordance with BS5930:1999 Code of Practice for Site Investigation.
- 6.7 Hand vane tests were conducted within clay strata encountered at shallow depth and probe tests were conducted using the hand held Perth Penetrometer. The Perth Penetrometer records the number of blows of a 9kg weight falling 600mm, required to drive each 50mm penetration of a 16mm dia rod into the ground. The results of the insitu tests are presented on the trial pit logs.
- 6.8 Samples were taken from the exploratory holes and selected samples were despatched to a laboratory for Atterberg Limit tests to assess the soil plasticity / shrinkage potential.
- 6.9 Chemical testing of soil samples was included to assess the aggressive chemical content for concrete (ACEC) in accordance with the BRE Digest .1:2005 "Concrete in Aggressive Ground". The results of the laboratory testing are appended.

7.0 GROUND AND GROUNDWATER CONDITIONS

7.1 Descriptions of the soils encountered are presented on the attached trial pit logs. The findings can be summarised as follows:

Strata	Thickness (m)	Depth to base of strata (m bgl)
TOPSOIL / MADE GROUND / Surfacing /Relic Topsoil (possibly to depth of 1.0m in TP5)	0.25 – 0.4	0.25 – 0.4
Soft to firm and firm silty CLAY with occasional flint gravel. (firm to stiff in TP5)	0.75 – 1.1	1.1 – >1.6
Loose and medium dense silty sandy fine GRAVEL of chalk and occasional flint. (In TP3 and locally in TP4 comprised firm chalky silt/clay with a little chalk and flint gravel) (Not encountered in TP5 – terminated at 1.6m)	> 0.6 – 1.1	> 1.8 – 2.2

7.2 Within the pits TP1 and TP2 the Made Ground comprised a relatively thin gravel surfacing on a geotextile layer and underlain by relic topsoil. In TP4 at the edge of the yard area a 0.4m thickness of compact well graded gravel surfacing was encountered at the surface. In TP5 where there appeared to be a raised bank about 0.5m high, the Made Ground comprised 0.4m thick variable silt / topsoil layer over possibly 0.6m of reworked variable stiff silty clay with some gravel.

7.3 Soils at the base of TP5 were relatively stiff and combined with restricted working space amongst the trees this prevented excavation to greater depth by the machine.

7.4 Groundwater was encountered as moderate seepage to moderate inflow below depths of 0.5m, 1.2m, 1.5m and 1.8m in TP1, TP2, TP3 and TP4 respectively. Observations are recorded on the trial pit logs. Site levels are required to enable interpretation of the water levels.

7.5 Standpipes were installed within the backfill of TP1 and TP4 to allow future monitoring of groundwater levels.

- 7.6 Below the level of groundwater infiltration, the pit sides generally showed some instability, particularly within the chalky gravel. This instability combined with the presence of groundwater restricted the depth of excavations. Otherwise, through the overlying clay, the pit sides remained stable and vertical during excavation.
- 7.7 Large scale soakage tests were conducted within pits TP1, TP4 and TP4A in accordance with an abridged version of BRE 365. A summary of the soakage test results is presented in the table below:

Trial Pit	Pit Dimensions LxWxD (metres)	Water Level at start of test (mm below ground level)	Duration of test (mins)	Fall of water level during test (mm)
TP1	0.3 x 1.5 x 1.8	110	1440	360
TP4	0.3 x 1.5 x 2.1	320	1234	545
TP4A	0.3 x 0.9 x 0.8	180	1190	610

Based on these tests, infiltration coefficients of 5×10^{-7} , 1.0×10^{-6} and 5.0×10^{-6} m/s have been calculated for pits TP1, TP4 and TP4A respectively.

- 7.8 Laboratory testing of the near surface clay stratum recovered from trial pits TP1, TP3 and TP5 recorded plasticity index ranging from 23% to 25%. A sample of the slightly gravelly chalky silt/clay stratum from a depth of 1.8m in TP3, recorded a plasticity index of 11%. Taking account of only 82% of the particles being less than 0.425mm the modified plasticity index for the sample is determined to be 9%. The variability of that stratum across the trial pits was noted to be significant and the sample tested was visually assessed as having the highest fines content and shrinkage potential.
- 7.9 The chemical tests carried out on three soil samples from TP1 and TP2 recorded:
- pH range 8.0 to 8.1
 - Water Soluble (2:1 extract) Sulphate (as SO₄) 0.04 – 0.11g/l

8.0 DISCUSSION AND RECOMMENDATIONS

8.1 Ground and groundwater conditions

8.1.1 Ground conditions revealed by this investigation generally confirm the presence of topsoil and some Made Ground over soft to firm silty clay above variable combinations of chalky silt/clay and sandy fine gravel of chalk and some flint gravel. This appears consistent with the anticipated geology of Aeolian Deposits (Brickearth) over Head Deposits.

8.1.2 Groundwater was encountered as a moderate seepage / inflow within TP1 to TP4 below depths of 0.5m to 1.8m. Seasonal variation of the groundwater levels is expected and it should be assumed that groundwater levels may rise significantly.

8.1.3 Standpipes have been installed within pits TP1 and TP4 to allow ongoing monitoring of the groundwater fluctuations.

8.2 Foundations and floor slabs

8.2.1 Based on a preliminary assessment of the ground conditions revealed by this investigation it is considered the presence of high groundwater and some soft to firm and loose to medium dense soils site presents some challenges to the design and construction of foundations. Conditions appear a little better at the north of the site where the barns are proposed.

8.2.2 Subject to confirmation of foundation loads it may be suitable for the proposed development to adopt lightly loaded pad and strip foundations founding within the soft to firm silty clay or underlying loose to medium dense sandy fine gravel of chalk and soft to firm chalky silt/clay. It is however noted that the presence of high groundwater may soften the formation and could cause slumping of the silty sandy materials making construction problematic. (Groundwater appeared to be closer to ground level around the proposed Visitors Centre than the barns – confirmation is subject to monitoring)

8.2.3 Consideration could be given to carrying out construction at a time when the groundwater is seasonally low and also minimising the depth of the foundations provided they are extended as necessary to found below any made ground and beneath potentially shrinkable soils that are within the zone of influence of trees or other significant vegetation (proposed, existing or recently removed). The higher groundwater and softer soils around the Visitors Centre may lead to consideration of a raft foundation but if the load distribution does not suit this or if the structure will be particularly sensitive to differential settlement then ground improvement or piles may be required.

- 8.2.4 Foundation depths and detailing including heave protection should be designed in accordance with the current NHBC guidance for building on shrinkable soils. Based on the measured plasticity index of 23% to 25% recorded by laboratory testing, the near surface clay stratum should be assumed to have medium volume change potential. The underlying chalky silt/clay and chalk gravel encountered below depths of 1.1m to 1.5m may be considered to be non-shrinkable. A survey of trees in the vicinity of the buildings will be required to inform the foundation design.
- 8.2.5 Subject to assessment of settlement and confirmation of soil conditions during construction, an allowable bearing pressure of 50kPa is recommended for preliminary design of pad and strip foundations as described above. Higher bearing pressures of 75 to 100kPa may be allowable, particularly around the proposed barns at the north of the site and could be confirmed by plate load tests undertaken to assess the load settlement behaviour of the founding soils.
- 8.2.6 Where there is an abrupt change in ground conditions (ie from clay to gravel) consideration should be given to placing of reinforcement in the foundation across the transition to limit the potential for damage caused by differential settlement.
- 8.2.7 The foundations of the existing buildings that are to be demolished should be removed to avoid hard spots that could result in differential settlement of the new structure.
- 8.2.8 If there is significant desiccation of the near surface clay soils at the time of construction or where otherwise required to comply with the NHBC guidance, suspended floor slabs may need to be considered to avoid heave/settlement issues. Partial excavation of desiccated soil and replacement with compacted granular material or the delayed casting of floor slabs pending monitoring for heave over an extended period may provide mitigation against such potential.
- 8.3 **Excavations**
- 8.3.1 Excavations more than 1.2m deep expected to remain open for any length of time or to be entered by personnel will need temporary support. Shallower excavations in level ground have a reasonable prospect of the sides standing vertically in the short term provided groundwater is not encountered.
- 8.3.2 If required, excavation within or close to the chalky clay/silt or chalk gravel below the water table may dewater by pumping from sumps depending on the height of drawdown required, but could be problematic due to instability of pit sides and potential for softening of the

formation. As noted previously the groundwater levels should be assumed to vary from those encountered during investigation and could rise significantly.

8.4 Drainage

8.4.1 Surface water drainage design should give appropriate consideration to SUDS principles. Based on the results of the site testing the preliminary design of shallow infiltration features, such as soakaways and permeable pavements should anticipate a range of infiltration coefficient from 5×10^{-7} to 5.0×10^{-6} m/s. Where the design is found to be sensitive to the assumed value further testing could be undertaken at the specific soakaway locations.

8.4.2 Further groundwater monitoring is required to inform the design of infiltration drainage and it is noted that a seasonal rise in ground water level should be anticipated and any storage capacity located accordingly.

8.4.3 The flood risk potential for the site should be checked by reference to Environment Agency Flood Risk Mapping.

8.5 Underground Services – Health and Safety

8.5.1 Limited information was provided by the Client on the location of underground services in the areas of investigation. A water pipe was encountered within TP2 and an electrical cable exposed in TP1. The approximate location of these can be marked on a topographic survey drawing when made available. Prior to further excavation of the site the services layout needs to be further investigated and plans prepared to record the service routes.

8.5.2 Redundant drainage pipework and chambers should be removed or properly filled / grouted. Any soakaways serving the existing surface water and roof drains should be located to identify their zones of influence and establish if they will impact on the foundation design. There may be a need for existing soakaways to be relocated

8.6 Contamination

8.6.1 Contamination testing and assessment has not been carried out and may be required by the Regulatory Authorities in connection with assessment for this or future development (planning conditions should be checked and addressed).

8.6.2 Normal precautions should be taken to protect workers during construction. Testing may be required to assist with assessment for the disposal of waste that should be carried out in accordance with the Duty of Care for Waste and will need to comply with the requirements of

the waste disposal company. Soils may need to be assessed with regard to Waste Acceptance Criteria for the various classes of landfill and specific to the disposal site.

- 8.6.3 Should any suspect materials be exposed during construction, further assessment would be required and any suspect materials should be sampled and analysed.

Other matters

- 8.6.4 By reference to the Building Research Establishment (BRE) guidance on radon risk contained in the report BR211 (2007) and UK Radon Map online it is noted that the northern edge of the site is just within an area where further assessment or basic radon protective measures would be required for a residential development. Consideration should be given to the risk that radon poses to the proposed development.
- 8.6.5 For specification of concrete an assessment of the chemical test results in accordance with BRE Special Digest 1 : 2005 has indicated the Aggressive Chemical Environment for Concrete (ACEC) Class for the location is AC-1

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CHICHESTER West Sussex PO18 8AB

PROJECT NO: G6306

FIGURE REF: Figure 1

PROJECT: Ferring Country Centre

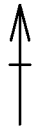
PREPARED: AJHT

SECTION: Preliminary Ground Investigation

CHECKED: AJHT

TITLE: Site Location Plan

DATE: Jan 2017



North

(Not to scale)

Site Location



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PROJECT NO: G6306

FIGURE REF: Figure 2

PROJECT: Ferring Country Centre

PREPARED: AJHT

SECTION: Preliminary Ground Investigation

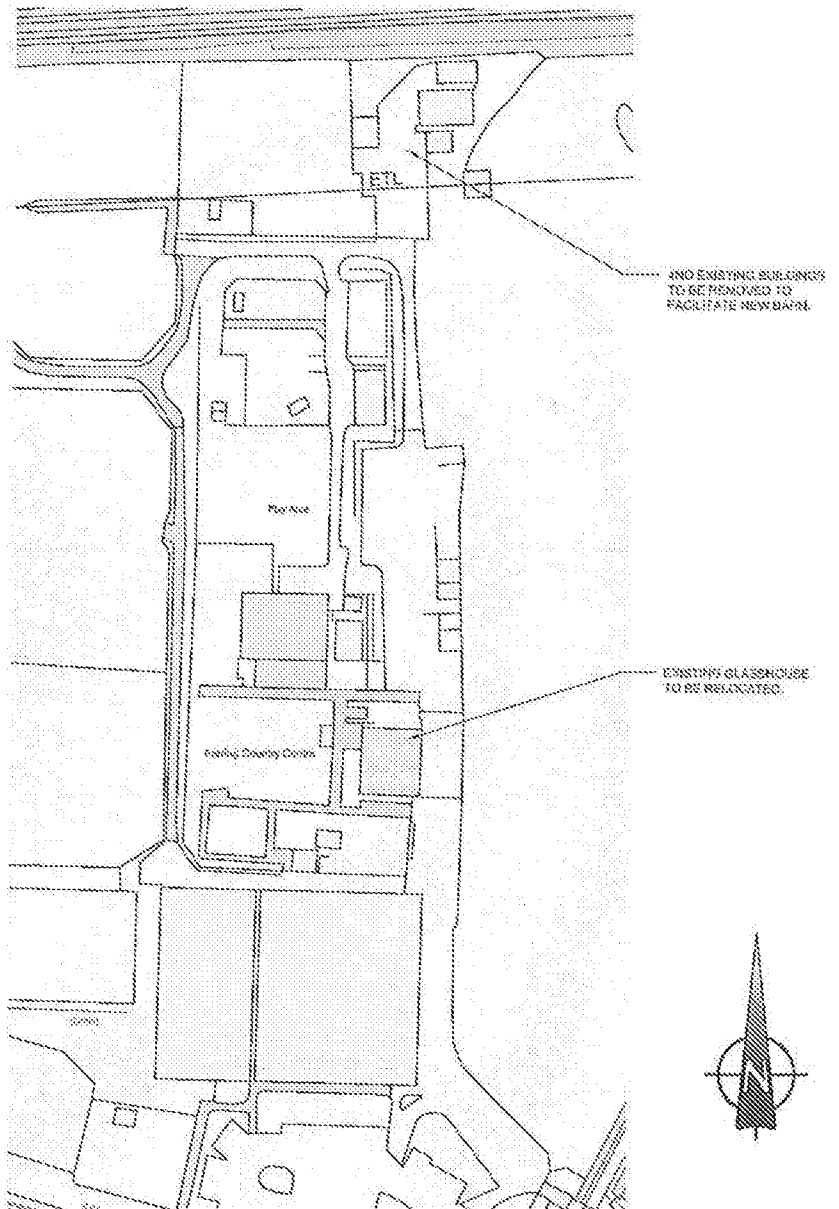
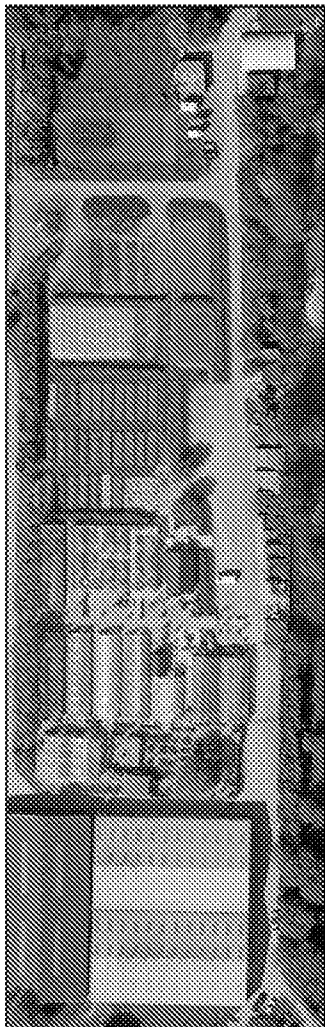
CHECKED: AJHT

TITLE: Existing Site Layout

DATE: Jan 2017



(Approx. North)
(Not to Scale)



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FIGURE REF: Figure3

PROJECT: Ferring Country Centre

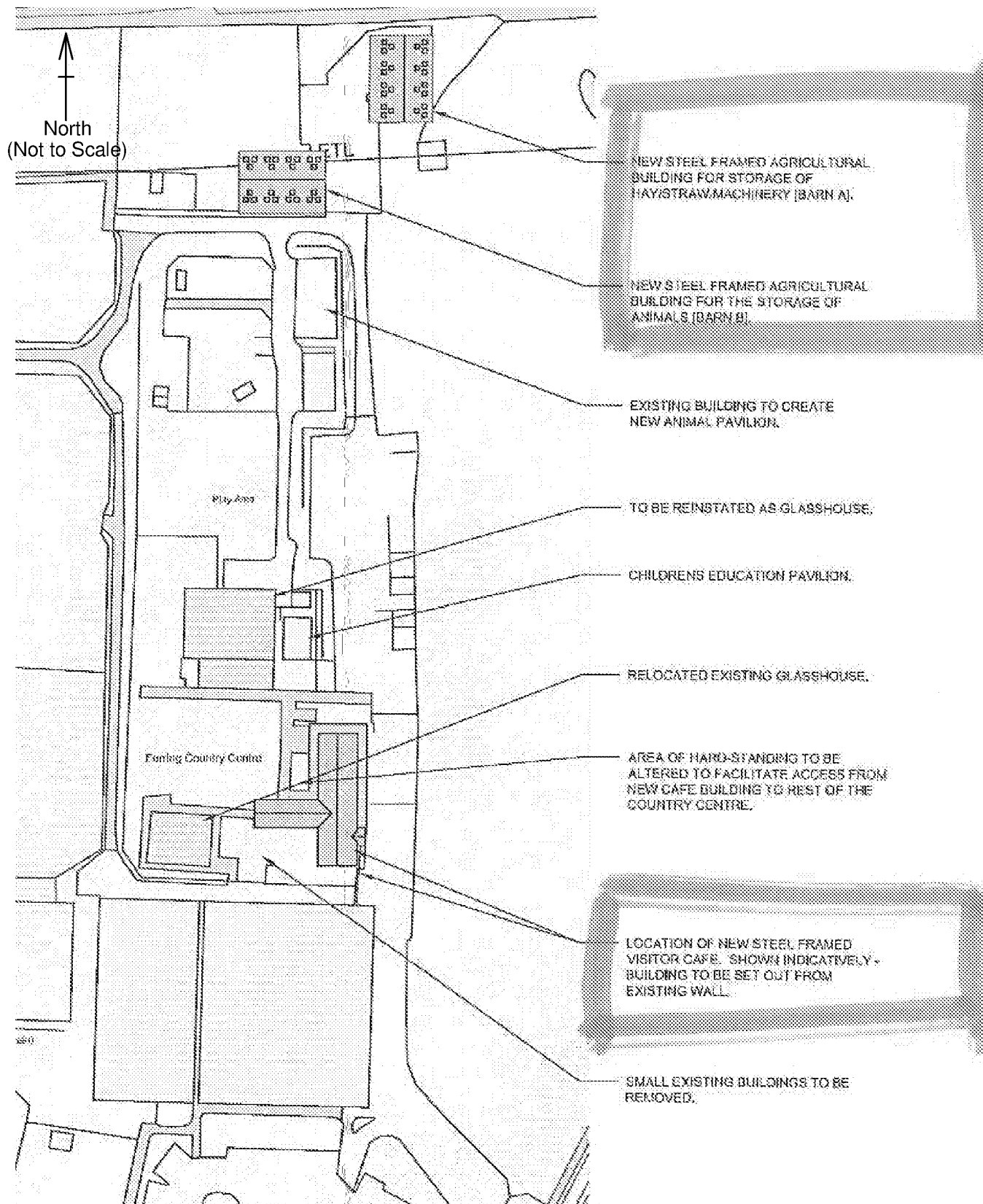
PREPARED: AJHT

SECTION: Preliminary Ground Investigation

CHECKED: AJHT

TITLE: Proposed Site Layout

DATE: Jan 2017



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PROJECT NO: G6306

FIGURE REF: Figure 4

PROJECT: Ferring Country Centre

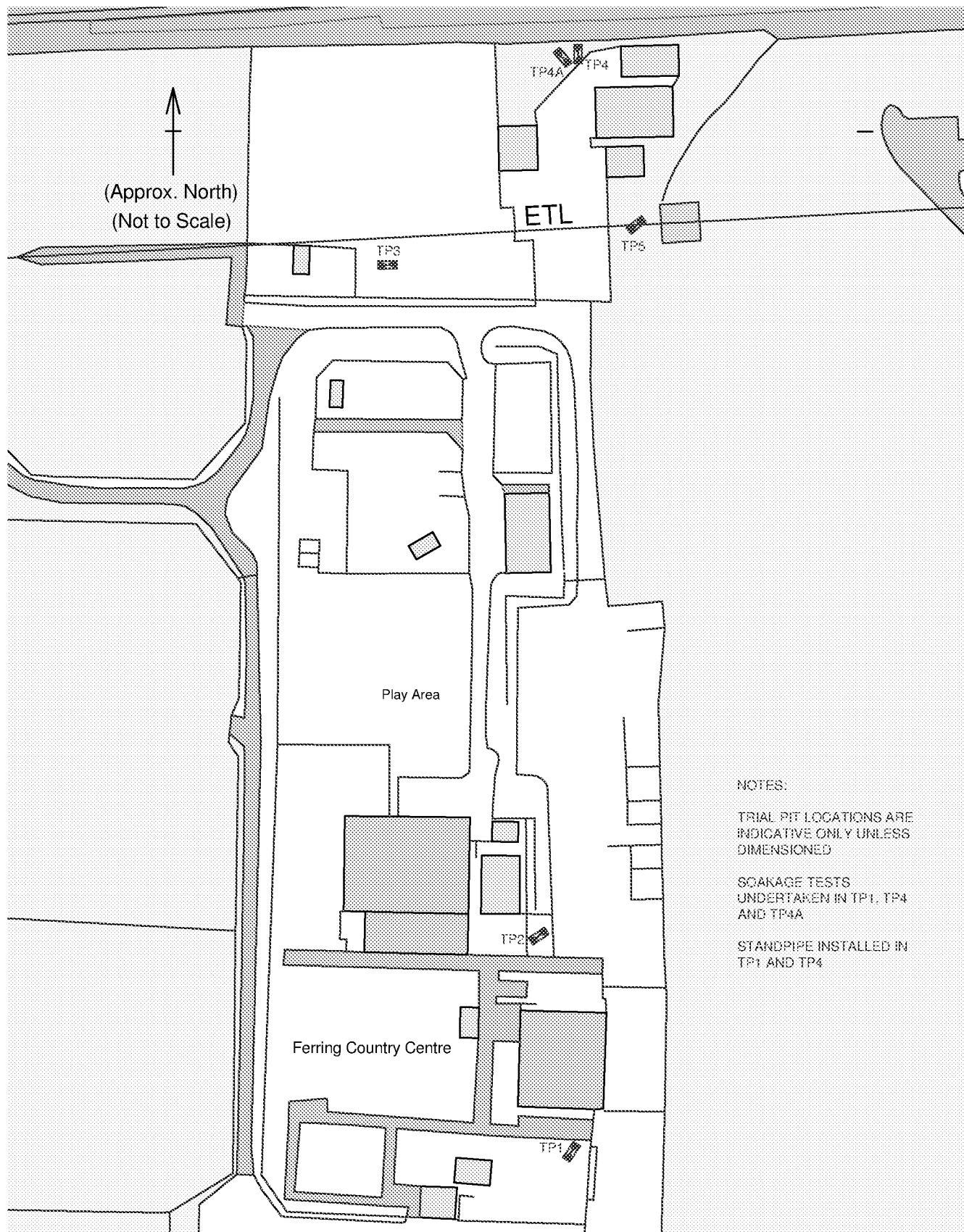
PREPARED: AJHT

SECTION: Preliminary Ground Investigation

CHECKED: AJHT

TITLE: Exploratory Hole Location Plan

DATE: Jan 2017



Civil and Geotechnical Engineering Services

Site

Ferring Country Centre, Rife Way, Ferring

**Trial Pit
Number**
TP1

Plan 	Remarks Locally perched standing water 0.1m below ground level at base of gravel layer. Moderate seepage below 0.5m. Water in base of of pit during excavation and rose to 1.5m bgl 10 minutes after excavation and 1.225m after 20 minutes. Some instability of pit sides below 0.5m bgl. A probe test was carried out from 1.1m using the Perth Penetrometer. The blow count for each 50mm penetration was recorded as 1,1,1,0,1,2,1,2,2,3,3,3.		
	Scale (approx) 1:20	Logged By AT	Figure No. G6306.TP1

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Civil and Geotechnical Engineering Services

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Site

Ferring Country Centre, Rife Way, Ferring

**Trial Pit
Number
TP2**

Excavation Method Machine excavated using Takeuchi TB228	Dimensions 0.3m x 1.8m	Ground Level (mOD)	Client Ferring Country Centre	Job Number G6306
	Location See Location Plan	Dates 13/01/2017	Engineer Archibald Shaw LLP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
1.00	HV 70kPa		75, 75, 60/Av. 70.00		(0.10) 0.10 (0.20)	MADE GROUND of compact well graded orange brown well graded (mainly coarse) sub-angular sandy sandstone gravel on non woven geotextile.		
					0.30	Firm grey brown clayey SILT with occasional flint gravel. (Relic Topsoil)		
						Firm orange brown silty CLAY with a little fine to medium flint gravel.		
1.20	D1				(1.10)			
					1.40	Wet loose pale yellow brown / buff silty sandy fine to medium GRAVEL of chalk with occasional flint gravel.		
1.80	D2				(0.80)			
					2.20	Complete at 2.20m		

Plan 	Remarks		
	Moderate groundwater inflow below 1.2m Some instability of pit sides below 1.4m bgl. A probe test was carried out from 1.2m using the Perth Penetrometer. The blow count for each 50mm penetration was recorded as 1,1,1,1,1,1,1,1,1,1. A 25mm dia. water pipe was encountered (damaged and repaired) at 0.25m bgl.		
	Scale (approx)	Logged By	Figure No.
	1:20	AT	G6306.TP2

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Site

Ferring Country Centre, Rife Way, Ferring

**Trial Pit
Number
TP3**

Excavation Method Machine excavated using Takeuchi TB228	Dimensions 0.3m x 1.8m	Ground Level (mOD)	Client Ferring Country Centre	Job Number G6306
	Location See Location Plan	Dates 13/01/2017	Engineer Archibald Shaw LLP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.80	D1				(0.35)	Very soft wet "mud" and standing water over dark brown silty TOPSOIL with occasional flint gravel. Some fine roots.		
					0.35	Firm orange brown silty CLAY with occasional flint gravel.		
1.80	D2				(0.75)			
					1.10	Wet soft to firm pale grey / buff clayey chalky SILT with much fine gravel size chalk and occasional coarse flint gravel.		
					(1.10)			
					2.20	Complete at 2.20m		

Plan 	Remarks		
	Moderate groundwater inflow below 1.5m Some instability of pit sides with undermining by 200 - 300mm below 1.5m bgl. A probe test was carried out from 1.5m using the Perth Penetrometer. The blow count for each 50mm penetration was recorded as 2,2,2,3,3,2.		
	Scale (approx)	Logged By	Figure No.
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Civil and Geotechnical Engineering Services

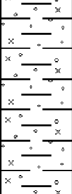
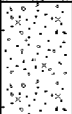
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CHICHESTER West Sussex PO18 8AB

Site

Ferring Country Centre, Rife Way, Ferring

**Trial Pit
Number
TP4**

Excavation Method Machine excavated using Takeuchi TB228	Dimensions 0.3m x 1.5m	Ground Level (mOD)	Client Ferring Country Centre	Job Number G6306
	Location See Location Plan	Dates 13/01/2017	Engineer Archibald Shaw LLP	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60	HV 106.67kPa		100, 110, 110/Av. 106.67		(0.20) 0.20 (0.20) 0.40	Rough vegetation and grass over MADE GROUND of moderately compact orange brown well graded sub rounded sandstone gravel with much medium and coarse sand. MADE GROUND of compact pinkish brown well graded coarse medium and fine sub angular limestone gravel with some slightly sandy silt. Firm brown silty CLAY with a little fine gravel of flint and chalk. Many roots.	  	
1.00	HV 61.67kPa		60,60,65/Av. 61.67		(1.10)			
1.20	D1				1.50 (0.30) 1.80 (0.30) 2.10	Firm pale yellow / buff brown chalky SILT with some sand and fine gravel size chalk and occasional coarse angular and nodular flint gravel. Some fine roots. Very moist medium dense pale grey / buff angular chalk GRAVEL, mainly coarse, with much slightly sandy chalky silt and occasional coarse flint gravel.	 	
						Complete at 2.10m		

Plan 	Remarks		
	Moderate groundwater seepage below 1.8m. Water level rose 100mm in 20 minutes. Pit sides stable during excavation A probe test was carried out from 1.2m using the Perth Penetrometer. The blow count for each 50mm penetration was recorded as 1,1,1,2,2,2,2,3,2,2,4.		
	Scale (approx)	Logged By	Figure No.
	1:20	AT	G6306.TP4

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Civil and Geotechnical Engineering Services

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www.groundmanagement.co.uk

Site

Ferring Country Centre, Rife Way, Ferring

**Trial Pit
Number
TP5**

Excavation Method

Machine excavated using
Takeuchi TB228

Dimensions

0.3m x 1.8m

Ground Level (mOD)

Client

Ferring Country Centre

**Job
Number
G6306**

Location

See Location Plan

Dates

13/01/2017

Engineer

Archibald Shaw LLP

Sheet

1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.80	HV		>140/Av. 0.00		(0.40)	MADE GROUND of moist dark brown silty topsoil with occasional flint gravel. Locally pockets of fibrous organic matter. Many roots up to 10mm dia.		
					0.40	Stiff brown silty CLAY with a little fine to medium gravel of flint and chalk. Many roots up to 20mm dia. (Possibly re-worked/made ground)		
					(0.60)			
					1.00	Firm to stiff orange brown silty CLAY with occasional flint gravel. Some roots up to 5mm dia.		
1.30	D1				(0.60)			
1.60	D2				1.60	Complete at 1.60m		

Plan

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Remarks

Groundwater was not encountered
Pit sides stable and vertical during excavation
A probe test was carried out from 1.3m using the Perth Penetrometer. The blow count for each 50mm penetration was recorded as 1,1,2,2,2,2,3,4,5,4.

Scale (approx)

1:20

Logged By

AT

Figure No.

G6306.TP5

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression			Chemical Tests			Other tests and comments
Borehole / Trial Pit	Sample Ref	Depth (m)	Type	Description	WC	LL	PL	PI	<425 µm	Bulk	Dry	Cell Pressure	Deviator Stress	Shear Stress	pH	2:1 W/S SO4	W/S Mg	
					(%)	(%)	(%)	(%)	(%)	Mg/m³	Mg/m³	kPa	kPa	kPa		(g/L)	(mg/L)	
TP1		1.00	D	Yellow brown with rare black staining CLAY with rare fine gravel	27.4	44	19	25	99									
TP2		1.20	D	Yellow brown with rare black staining CLAY with rare fine gravel	22.7													
TP3		0.80	D	Yellow brown CLAY with rare gravel	24.8	48	22	26	95						8.0	0.04		
TP3		1.80	B	Light brown and grey CLAY with rare fine gravel	22.1	29	18	11	82									
TP4		1.20	D	Brown CLAY with rare gravel	22.7										8.1	0.11		
TP5		1.30	D	Yellow brown CLAY with rare rootlets	20.0													
TP5		1.60	D	Yellow brown with rare black staining CLAY with rare fine gravel	20.4	42	19	23	99									

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by:

Project Number:

GEO / 25346

Project Name:

FERRING COUNTRY CENTRE, RIFE WAY, FERRING
G6306

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