

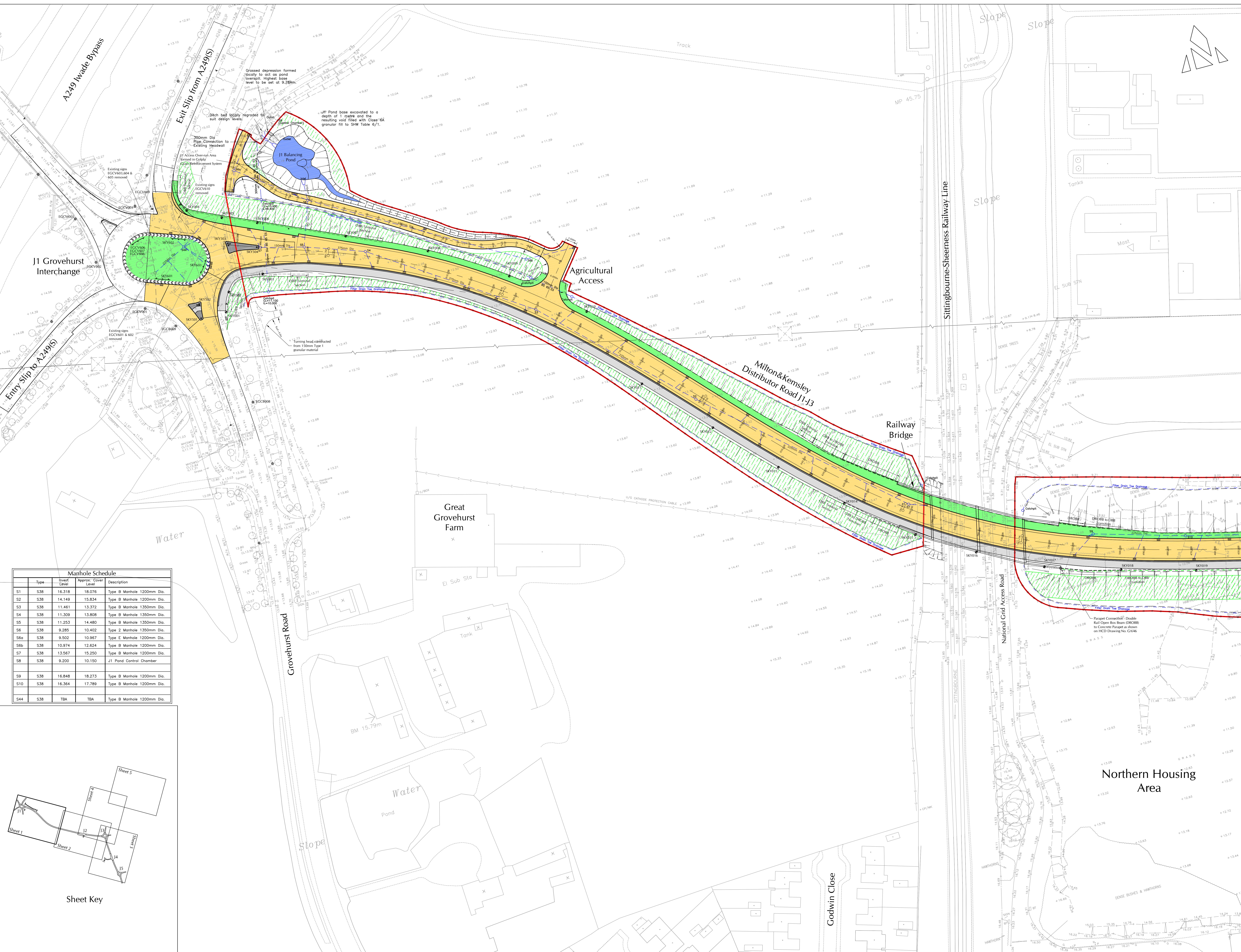




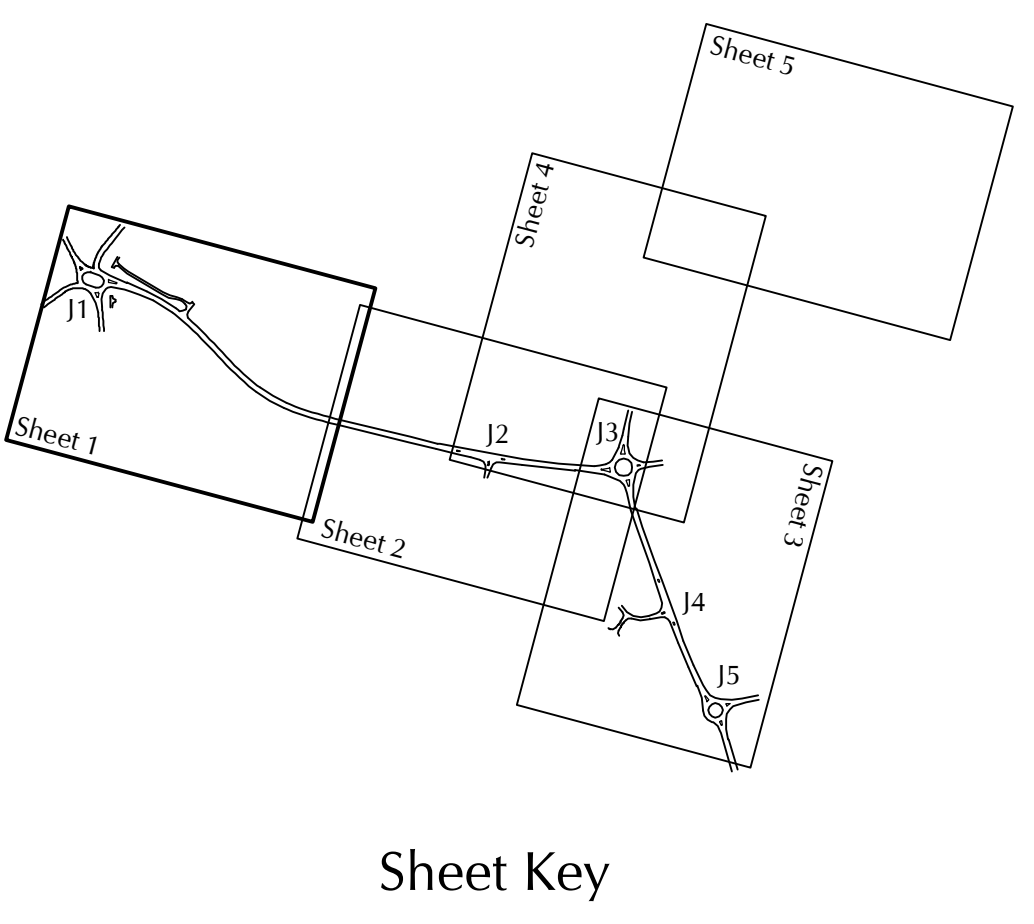


TO BE READ IN CONJUNCTION  
WITH ALL WORKING DRAWINGS  
CONTRACT DRAWING

- KEY**
- F10 Proposed Foul Water Drainage
  - 150mm dia. HDPE Rising Main
  - 300mm dia. HDPE Rising Main
  - S10 Proposed Surface Water Drainage
  - S20 Proposed Highway Drain
  - Filter Drain
  - Proposed Gully and Connection
  - Wooden Post and 4 Rail Permanent Fencing to SHW HCD Drg. No. H3
  - Acoustic Fence
  - Open Box Beam (OBB) Safety Fence to SHW Highway Construction Details Series CA & SF Drawing. See Drawing Number K.34159.
  - DK Proposed Dropped Kerbs
  - DK 400 x 400mm tactile paving coloured buff to align with kerbway crossing. Adjacent dropped kerbs to have ferns upland.
  - Highway Landscaping
  - Street Lighting**
  - 10m galvanneal steel street lighting column. Phillips SC5 234 lantern with SQN-T + 150W lamp. Flat glass Position 1. Cable routes and ducting for street lighting not shown.
  - 8m galvanneal steel raise and lower street lighting column. Phillips SC5 233 lantern with SQN-T + 100W lamp. Flat glass Position 1. Cable routes and ducting for street lighting not shown.
  - 6m galvanneal steel street lighting column. Phillips SC5 233 lantern with SQN-T + 90W lamp. Flat glass Position 1. Cable routes and ducting for street lighting not shown.
  - 5m galvanneal steel raise and lower street lighting column. Phillips SC5 233 lantern with SQN-T + 70W lamp. Flat glass Position 1. Cable routes and ducting for street lighting not shown.
  - Existing Lighting Column



Manhole Schedule				
Type	Invert Level	Approx. Cover Level	Description	
S1	S38	16.318	18.076	Type B Manhole 1200mm Dia.
S2	S38	14.149	15.834	Type B Manhole 1200mm Dia.
S3	S38	11.461	13.372	Type B Manhole 1350mm Dia.
S4	S38	11.309	13.808	Type B Manhole 1350mm Dia.
S5	S38	11.253	14.480	Type B Manhole 1350mm Dia.
S6	S38	9.285	10.402	Type 2 Manhole 1350mm Dia.
S6a	S38	9.502	10.967	Type E Manhole 1200mm Dia.
S6b	S38	10.974	12.624	Type B Manhole 1200mm Dia.
S7	S38	13.567	15.250	Type B Manhole 1200mm Dia.
S8	S38	9.200	10.150	J1 Pond Control Chamber
S9	S38	16.848	18.273	Type B Manhole 1200mm Dia.
S10	S38	16.364	17.789	Type B Manhole 1200mm Dia.
S44	S38	TBA	TBA	Type B Manhole 1200mm Dia.



Rev	Date	Description	Initials
M	09/06/2006	As-Constructed drawing.	CS
L	19/10/2006	Street lighting columns amended to as built positions.	CS
K	05/01/2008	Manhole schedule amended.	SAM
J	07/11/2008	Contract Drawing.	SAM
I	07/10/2008	Safety barrier details amended. Note added re excavation below base of J1 Balancing Pond.	SAM
H	15/09/2008	Final lower speed hump notes removed. Piped road crossing Ch. 889 amended to 225mm Dia.	SAM
G	21/08/2008	J1 Balancing Pond outlet, manhole S8, and ditch headwall repositioned.	SAM
F	15/04/2008	Cover levels amended S5 and S7.	MIP
E	15/04/2008	Additional gullies added ch 580-600.	MIP
D	08/04/2008	Amended to KCC Requirements.	MIP
C	24/02/2008	Manhole S44 added. Coloured background added.	SAM
B	14/02/2008	Tree drainage outfall pipe details amended at J1.	SAM
A	12/02/2008	Tender Drawing.	SAM

**Client**  
Kemsley Fields Ltd

**Project**  
Milton and Kemsley Distributor Road

**Drawing Title**  
Road and Drainage Layout  
Sheet 1 of 5  
As-Constructed Drawing

**Drawing No.** K 34/101 **Rev.** M

Date	May 2002
Scale	1:500
Drawn By	SAM
Checked By	MP
E-Mail	smillard@pfaqc.com
File Ref.	K14 Main

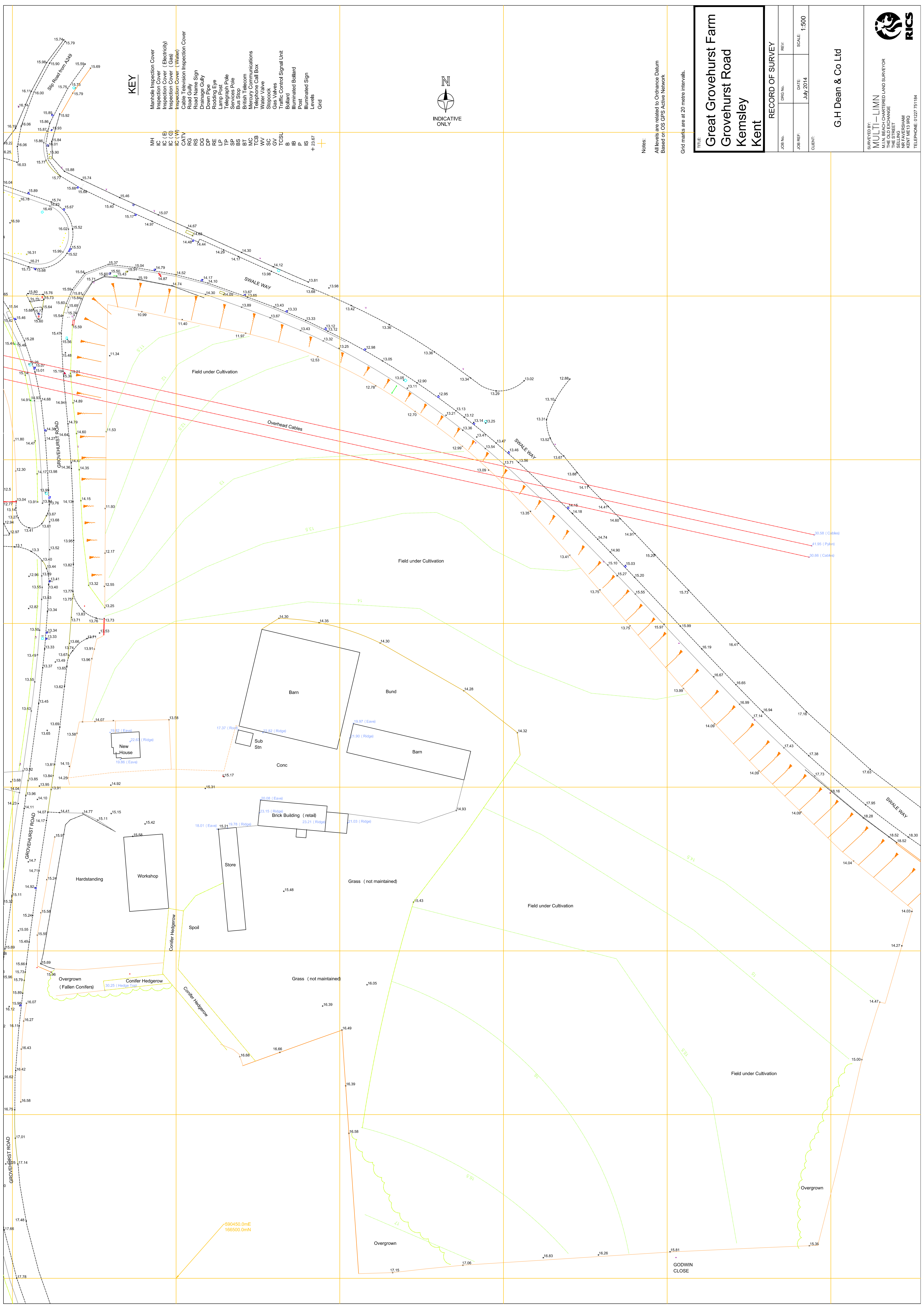






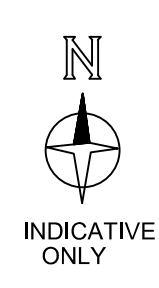






**KEY**

- MH Manhole Inspection Cover
- IC (E) Inspection Cover (Electricity)
- IC (G) Inspection Cover (Gas)
- IC (W) Inspection Cover (Water)
- CTV Cable Television Inspection Cover
- RS Road Name Sign
- DR Drainage Gully
- DP Down Pipe
- RE Rodding Eye
- LP Lamp Post
- SP Services Pole
- BS Bus Stop
- BT British Telecom
- MC Mercury Communications
- WB Water Call Box
- WV Water Valve
- SC Stopcock
- CV Gas Valves
- TCSU Traffic Control Signal Unit
- B Bollard
- IL Illuminated Bollard
- P Illuminated Sign
- IS Levels
- Grid



Notes:  
All levels are related to Ordnance Datum  
Based on OS GPS Active Network

Grid marks are at 20 metre intervals.

<b>Great Grovehurst Farm Grovehurst Road Kemsley Kent</b>	
<p><b>RECORD OF SURVEY</b></p> <p>JOB No. _____ REV. _____</p> <p>JOB REF. _____ DATE: July 2014 SCALE: 1:500</p> <p>CLIENT: _____</p>	<p style="text-align: center;"><b>G.H Dean &amp; Co Ltd</b></p> <hr/> <p><small>SURVEYED BY: <b>MULTI-LIMN</b> REGISTERED LAND SURVEYOR THE OLD EXCHANGE THE STREET NEW FARMHAM KENT ME3 9JQ TELEPHONE: 01227 751184</small></p>



GROVEHURST ROAD

GODWIN CLOSE

990450.0mE  
166500.0mN





# Ground Investigation

**soils**  
L I M I T E D

**Geotechnical & Environmental Consultants**

**Phase II Scoping Ground Investigation Report**

**At**

**Great Grovehurst Farm, Sittingbourne, Kent ME9 8RB**

**For**

**PFA Consulting Ltd**

**Soils Limited  
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Tadworth  
Surrey KT20 5SR  
☎ 01737 814221  
📠 01737 812557**

**REPORT 13838/SGIR**

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# Scoping Ground Investigation Report

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**Job Title: Great Grovehurst Farm, Sittingbourne, Kent ME9 8RB**

**Client: PFA Consulting Ltd**

## CONTROL DOCUMENT

SOILS LIMITED DOCUMENT REFERENCE NUMBER:  
13838/SGIR

DOCUMENT TYPE:  
Scoping Ground Investigation Report

DOCUMENT STATUS: Final REVISION: 1.00

DATE: November 2013

Note: This is not a valid document for use in the design of the project unless it is titled **Final** in the Document Status box.

	Name	Signature
Prepared by:	R Galinski	
Checked by:	R Biney	
	R B Higginson	

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



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## **Scoping Ground Investigation Report**

**At**

**Great Grovehurst Farm, Sittingbourne, Kent ME9 8RB**

**For**

**PFA Consulting Ltd**

### **Commission**

Soils Limited were commissioned by PFA Consulting Ltd to undertake a Phase II Scoping Ground Investigation on land at Great Grovehurst Farm, Sittingbourne, Kent ME9 8RB and the scope of the investigation was outlined in Soils Limited subsequent quotation reference Q14724 dated 18<sup>th</sup> September 2013.

This document comprises the Phase II Scoping Intrusive Report and incorporates the results, discussion and conclusions to the Intrusive Investigation. The works undertaken to prepare this report comprised a Phase I Desk Study, intrusive investigation, and laboratory contamination and geotechnical testing.

This report must be read in conjunction with the Phase I Desk Study for the site, undertaken by Soils Limited, Ref: 13838/DS dated October 2013.

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### Appendices

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- Appendix B: Geotechnical Laboratory Tests Results
- Appendix B: Chemical Laboratory Analyses
- Appendix C: Human Health Assessment Criteria

### Standards

The site works were performed in accordance with the methods given in BS 5930+A2:2010 and BS EN ISO 22476-2:2005.

The geotechnical laboratory testing was performed by K4 Soils Laboratories in accordance with the methods given in BS 1377:1990 Parts 1 to 8 and their UKAS accredited test methods.

For the preparation of this report, the relevant BS code of practice was adopted for the geotechnical laboratory testing technical specifications, in the absence of the relevant Eurocode specifications (ref: ISO TS 17892).

The chemical analyses were undertaken by QTS Environmental Limited in accordance with their UKAS and MCERTS accredited test methods or their documented in-house testing procedures.

This investigation did not comprise an environmental audit of the site or its environs.

Trial-hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sample borehole implies the specific technique used to produce a trial-hole.

---



## Section 1 Introduction

### 1.1 Objective of Investigation

The overall objective was understood to be to supply the client and their designers with scoping information regarding ground conditions, to assist them in preparing an overall foundation scheme for redevelopment that was appropriate to the conditions present on the site.

The investigation was to be undertaken to provide parameters for the design of foundations by means of in-situ testing and geotechnical laboratory testing undertaken on soil samples taken from the trial holes.

Soil samples were to be taken and tested for a range of potential contaminants based on the Conceptual Site Model (CSM) in the Phase I Desk Study prepared by Soils Limited and the updated CSM (revision 1.1) found in this report.

### 1.2 Location

The site was located to the north of Sittingbourne, bordering with Grovehurst Road to the west, Swale Way to the north and a railway to the east. The site had an O.S. National Grid Reference of TQ 904 667 and the area approximately of 4.5ha.

The general site location map and plan are given in Figures 1 and 2 respectively. The trial-hole locations are given in Figure 3, all attached to the end of this report.

### 1.3 Proposed Redevelopment

The proposed development was to comprise the construction of a residential estate.

### 1.4 Limitations and Disclaimers

This Phase II Ground Investigation Report relates to the site located on land at Great Grovehurst Farm, Sittingbourne, Kent ME9 8RB and was prepared for the sole benefit of PFA Consulting Ltd (The "Client") to the brief described in Section 1.1 of this report.

Soils Limited disclaim any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report has been prepared by Soils Limited, with all reasonable skill, care and diligence within the terms of the Contract with the Client, incorporation of our General Conditions of Contact of Business and taking into account the resources devoted to us by agreement with the Client.

The report is personal and confidential to the Client and Soils Limited accept no responsibility of whatever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report wholly at its own risk.

The Client may not assign the benefit of the report or any part to any third party without the written consent of Soils Limited.

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

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

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot by plot basis prior to the construction of foundations. Supplied site surveys may not include substantial shrubs or bushes and is also unlikely to have data on any trees, bushes or shrubs removed prior to or following the site survey.

Where trees are mentioned in the text this means existing trees, substantial bushes or shrubs, recently removed trees (approximately 20 years to full recovery on cohesive soils) and those planned as part of the site landscaping).

Ownership of land brings with it onerous legal liabilities in respect of harm to the environment. "Contaminated Land" is defined in Section 57 of the Environment Act 1995 as:

*"Land which is in such a condition by reason of substances in, on or under the land that significant harm is being caused or that there is a significant possibility of such harm being caused or that pollution of controlled waters is being, or is likely to be caused".*

The investigation, analysis or recommendations in respect of contamination are made solely in respect of the prevention of harm to vulnerable receptors, using where possible best practice at the date of preparation of the report. The investigation and report do not address, define or make recommendations in respect of environmental liabilities. A separate environmental audit and liaison with statutory authorities is required to address these issues.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets remains with Soils Limited. License is for the sole use of the client and may not be assigned, transferred or given to a third party.



## Section 2 Site Work

### 2.1 Proposed Work

The proposed site work to be undertaken comprised the following items:

- The excavation of a number of trial pits at locations selected by Soils Limited;
- Soakage tests to provide an indication of the underlying soils soakage potential;
- Logging, sampling and in-situ testing as appropriate to the ground conditions encountered in the boreholes.

#### 2.1.1 Work Undertaken

- The machine excavation of 21No trial pits (TP1-TP24) to a depth of between 2.00m and 3.50m below ground level (bgl), at locations across the site where access was gained and cleared of services;
- carrying out 6No soakage tests within trial pits (TP19-TP24)
- Logging, sampling and in-situ testing as appropriate to the ground conditions encountered in the boreholes.

### 2.2 Anticipated Geology

The 1:50,000 BGS Map showed the site to be located on bedrock of the London Clay Formation overlain by superficial deposits of Head with exception of northern area with no superficial deposit indicated.

#### 2.2.1 Head

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

#### 2.2.2 London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The lowest parts of the formation are sandy beds with black rounded gravel and occasional layers of sandstone and are known as the Basement Beds.

### 2.3 Ground Conditions

The intrusive investigation was carried out between the 1<sup>st</sup> and 2<sup>nd</sup> October 2013 as itemised in Section 2.1.1 of this report.

Table 2.1 outlines the investigatory depths of the trial-holes and probes.

Table 2.1 Investigatory Depths Of Trial-hole			
Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP1	3.20	TP13	3.0
TP2	3.10	TP14	2.50
TP3	3.10	TP15	3.0
TP4	2.60	TP16	3.0
TP5	3.30	TP17	2.50
TP6	3.00	TP18	2.40
TP7	3.20	TP19	2.20
TP8	3.20	TP20	2.20
TP9	3.50	TP21	2.0
TP10	3.0	TP22	2.10
TP11	3.10	TP23	2.10
TP12	3.10	TP24	2.40

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

The soils encountered from immediately below ground surface have been described in the following manner. Where the soil incorporated an organic content such as either decomposing leaf litter or roots, or has been identified as part of the *in-situ* weathering profile, it has been described as Topsoil both on the logs and within this report. Where the soil has, in general, been found to have the same composition as the 'Topsoil' but also incorporated a minor constituent, e.g. less than an estimated 5%, of possibly non-naturally occurring material, or is of uncertain origin, the soil has been described as Topsoil/Made Ground both on the log and within this report. Where man has clearly either placed the soil, or the composition altered with say greater than an estimated 5% of a non-natural constituent, it has been referred to as Made Ground both on the logs and within this report.

For more complete information about the soils encountered within the general area of the site reference should be made to the detailed records given within Appendix A, but for the purposes of discussion the succession of conditions encountered in the trial-holes, in descending order are:

**Made Ground (MG)**  
**Topsoil (TPS)**  
**Head (HD)**  
**London Clay Formation (LCF)**

Table 2.2 summaries the ground conditions.



**Table 2.2**  
**Ground Conditions**

Strata	Age	Depth Encountered (m bgl)		Typical Thickness (m)	Description
		Top	Bottom		
MG	Recent	GL	0.30-1.30	0.60	Dark brown fine sandy silt with occasional gravel, fine brick, ash and gravel.
TPS	Recent	GL	0.20-0.60	0.40	Brown to dark brown clayey fine sandy silt with roots, occasional fine to medium sub-rounded gravel.
HD	Quaternary	0.20-1.30	1.90-3.30	2.70	Friable soft to firm orangish brown fine sandy silty CLAY.
LCF	Eocene	1.90-3.30	2.40*-3.50*	0.40+	Stiff grey brown, greenish grey and orange brown mottled silty CLAY.

**Note - \*Full investigatory depth**

### 2.3.1 Made Ground

Made Ground was encountered from ground level in each trial-hole where it was present and comprised dark brown fine sandy silt with occasional gravel, fine brick, ash and gravel. The Made Ground was found sporadically across the site with highest concentration at the centre of the site.

The depths of the Made Ground as encountered in the trial-holes are given in Table 2.3, and appeared to be reasonably uniform across the site.

**Table 2.3**  
**Depth of Made Ground**

Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP3	0.30	TP15	0.30
TP8	1.30	TP16	0.35
TP11	0.70	TP17	1.00
TP12	0.30	TP19	0.40
TP13	1.30	TP23	0.60

### 2.3.2 Topsoil

Topsoil was encountered from ground level in each trial-hole where it was present and comprised brown to dark brown clayey fine sandy silt with roots, occasional fine to medium sub-rounded gravel.

The depths of the Topsoil as encountered in the trial-holes are given in Table 2.4.

**Table 2.4**  
**Depth of Topsoil**

Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP1	0.60	TP12	0.30
TP2	0.20	TP14	0.30
TP4	0.30	TP18	0.35
TP5	0.30	TP20	0.30
TP6	0.30	TP21	0.25
TP7	0.30	TP22	0.30

Table 2.4 Depth of Topsoil			
Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP10	0.30	TP24	0.30

### 2.3.3 Head

The Head was encountered directly beneath the Made Ground or Topsoil in each of the trial-holes and comprised friable soft to firm orangish brown fine sandy silty CLAY. The Head was encountered across the site.

The soils of the Head was present from a minimum depth of 0.20m bgl (TP2) to the maximum depth of 3.30m bgl (TP5 (base of borehole) and TP9).

### 2.3.4 London Clay Formation

The London Clay Formation was encountered only in some of the trial-holes randomly across the site directly beneath the Head and comprised stiff grey brown, greenish grey and orange brown mottled silty CLAY.

The depths of the London Clay Formation as encountered in the trial-holes are given in Table 2.4.

Table 2.4 Depth of London Clay Formation			
Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP4	2.60	TP14	2.50
TP9	3.50	TP15	3.00
TP13	3.00	TP18	2.40

### 2.3.5 Roots

Roots were observed to a maximum depth of 1.70m bgl.

Table 2.6 shows the observed depths of roots within each trial-hole.

Table 2.6 Depth Of Roots Encountered			
Trial-hole	Final Depth (m bgl)	Trial-hole	Final Depth (m bgl)
TP1	0.60	TP18	0.35
TP2	0.20	TP21	1.70
TP4	0.30	TP22	1.70
TP7	0.30	TP24	1.30
TP14	0.30	-	-

It must be emphasised that the probability of determining the maximum depth of roots from the narrow diameter boreholes is low. Direct observation from trial pits would be necessary to gain a better indication of the maximum root depth.



Roots may be found to greater depth at other locations on the site particularly close to trees and/or trees that have been removed both within the site and its close environs. There was grass, mixed shrubs and woodland areas located across the site.

## **2.4 Groundwater**

Groundwater was encountered during the intrusive investigation as a seepage in TP20 at 2.00m bgl and in TP16 the soils were recorded as being damp at 2.70m bgl.

Changes in groundwater level occur for a number of reasons including seasonal effects and variations in drainage. The investigation was conducted in October (2013), when groundwater levels should typically be around their annual minimum (i.e. lowest) elevation.

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

Isolated pockets of groundwater may be perched within any Made Ground found at other locations around the site.

---

## Section 3 Discussion of Geotechnical Insitu Testing

### 3.1 Atterberg Limit Tests

Atterberg Limits Tests were undertaken on five samples of the Head and a single sample from the London Clay Formation. Table 3.1 gives a précis of the results.

Table 3.1 Atterberg Limit Test Results						
Location/ Depth (m bgl)	Moisture Content (%)	Passing 425µm Sieve (%)	Modified PI (%)	Soil Class	Volume Change Potential	
					BRE	NHBC
TP4/1.00	20	100	23	CI	Medium	
TP8/2.90	23	100	12	CL	Low	
TP11/1.60	23	100	9	CL	Low	None
TP12/3.00	29	96	54	CV	High	
TP14/2.20	31	100	49	CV	High	
TP16/1.20	23	100	16	CI	Low	

NB: BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results)  
 NHBC Volume Change Potential refers to NHBC Standards Chapter 4.2 (based on Atterberg results)  
 Soil Classification based on British Soil Classification System

*The most common use of the term clay is to describe a soil that contains enough clay-sized material or clay minerals to exhibit cohesive properties. The fraction of clay-sized material required varies, but can be as low as 15%. Unless stated otherwise, this is the sense used in Digest 240.*

*The term can be used to denote the clay minerals. These are specific, naturally occurring chemical compounds, predominately silicates.*

*The term is often used as a particle size descriptor. Soil particles that have a nominal diameter of less than 2 µm are normally considered to be of clay size, but they are not necessarily clay minerals. Some clay minerals are larger than 2 µm and some particles, 'rock flour' for example, can be finer than 2 µm but are not clay minerals.*

The test results are given in Appendix B.

*(The Atterberg Limit Test was undertaken in accordance with BS 1377:Part 2:1990 Clauses 3.2, 4.3 and 5).*

### 3.2 Soakage Test

The BRE 365 states that for an accurate infiltration rate to be obtained a soakage pit needs to be filled three times in quick succession. It was not possible to carry out the soakage tests in accordance with BRE 365 due to the limited volume of water available and therefore only a single test with no refills was performed in each location.

The results of the infiltration tests are presented in Table 3.2

Table 3.2 Infiltration Test Results		
Test Hole	Stratum	Infiltration Rate (m/sec)
T19	Firm friable and dry orange brown fine sandy silty CLAY / clayey silt becoming softer from 1.40m bgl	Insufficient head loss
T20	Friable soft to firm orange brown fine sandy silty CLAY / clayey silt	Insufficient head loss
T21	Stiff friable and dry orange brown fine sandy silty CLAY / clayey silt with occasional light brown mottling, silt pockets and fine rootlets	Insufficient head loss
T22	Stiff friable orange brown fine sandy silty CLAY with occasional roots	Insufficient head loss
T23	Firm friable fine sandy silty CLAY becoming softer with depth	Insufficient head loss
TP24	Dry and friable orange brown fine sandy silty CLAY with occasional rootlets	Insufficient head loss

Infiltration tests were conducted in accordance with BRE365 however these test were not repeated three times. Therefore the tests do not conform strictly to BRE 365.

Consultation with the Environment Agency **must** be sought prior to the construction of the soakaways.

### 3.3 California Bearing Ratio (CBR) Tests

Single near surface sample from Head and single from the Made Ground were tested in the laboratory in order to provide an indication of likely California Bearing Ratio (CBR).

The results are summarised in Table 3.3.

Table 3.3 Summary of CBR Test Results					
Sample	Stratum	Laboratory Description	Moisture Content	CBR Value (Top)	CBR Value (Base)
TP17 (0.50 – 0.70m)	Made Ground	Dry and friable brown fine sandy silty clay / clayey silt with occasional fine to medium sub-rounded to sub-angular gravel, occasional fine to coarse brick, concrete fragments up to 0.4m deep	14	22	26
TP21 (0.50 – 0.70m)	Head	Stiff friable and dry orange brown fine sandy silty CLAY / clayey silt with occasional light brown mottling, silt pockets and fine rootlets	17	18	18

(Laboratory CBR Tests were performed in accordance with BS1377: Part 4: 1990: Clause 7.4)

The laboratory tests indicated **CBR values of 22-26%** for the Made Ground tested and a **CBR value of 18%** for the underlying natural soil of the Head at the moisture contents presented. In-situ CBR testing along the line of the proposed pavement must be undertaken just prior to construction to confirm the design CBR.



given, the "static" case was adopted, as the bedrock aquifer was classified as Unproductive Strata. The pH of the soil was ranging between 7.5 and 7.6.

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1, 2005, '*Concrete in Aggressive Ground*' taking into account the pH of the soils.

#### 4.5 Soakaway Design

Taking account of the geology encountered of the Head and the London Clay Formation it was anticipated that soakaways would not meet the required standard according to BRE 365 Soakaway Design.


The soils classification was supported by soakage tests results which showed the infiltration rate as low as  $3.0 \times 10^{-6}$  m/sec, which was calculated for a minimal head loss, which proves adoption of **soakaway drainage system to be unsuitable** for proposed development.

Consultation with the Environment Agency must be sought regarding any use which may have an impact on groundwater resources.

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The following figures and appendices complete this report:

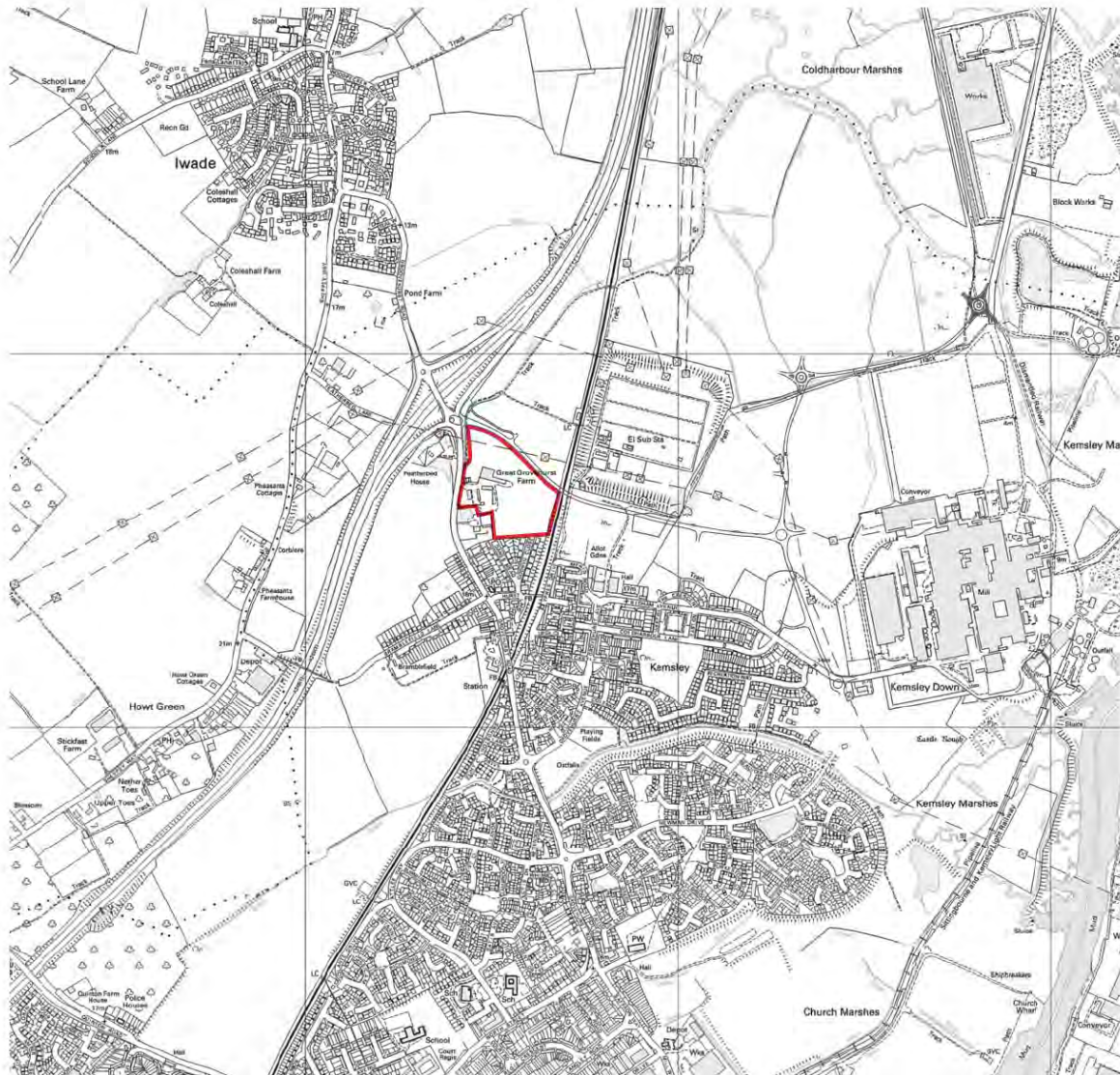
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Trial-hole Location Plan
Appendix A	Field Work
Appendix B	Geotechnical Laboratory Analysis
Appendix C	Chemical Laboratory Analysis
Appendix D	Human Health Assessment Criteria
Appendix E	Soakage Test Data



Roland Galinski BEng.  
*Geo-Environmental Engineer*



Eur Ing. R. B. Higginson B.Sc., PG. Dip., C.Eng., MICE., FGS.  
*Geotechnical Advisor*



Project:

**Great Grovehurst Farm, Grovehurst Road, SITTINGBOURNE, Kent, ME9 8RB**

Client:

**PFA Consulting Ltd**

Date:

**November 2013**

Title:

**Site Location Map**

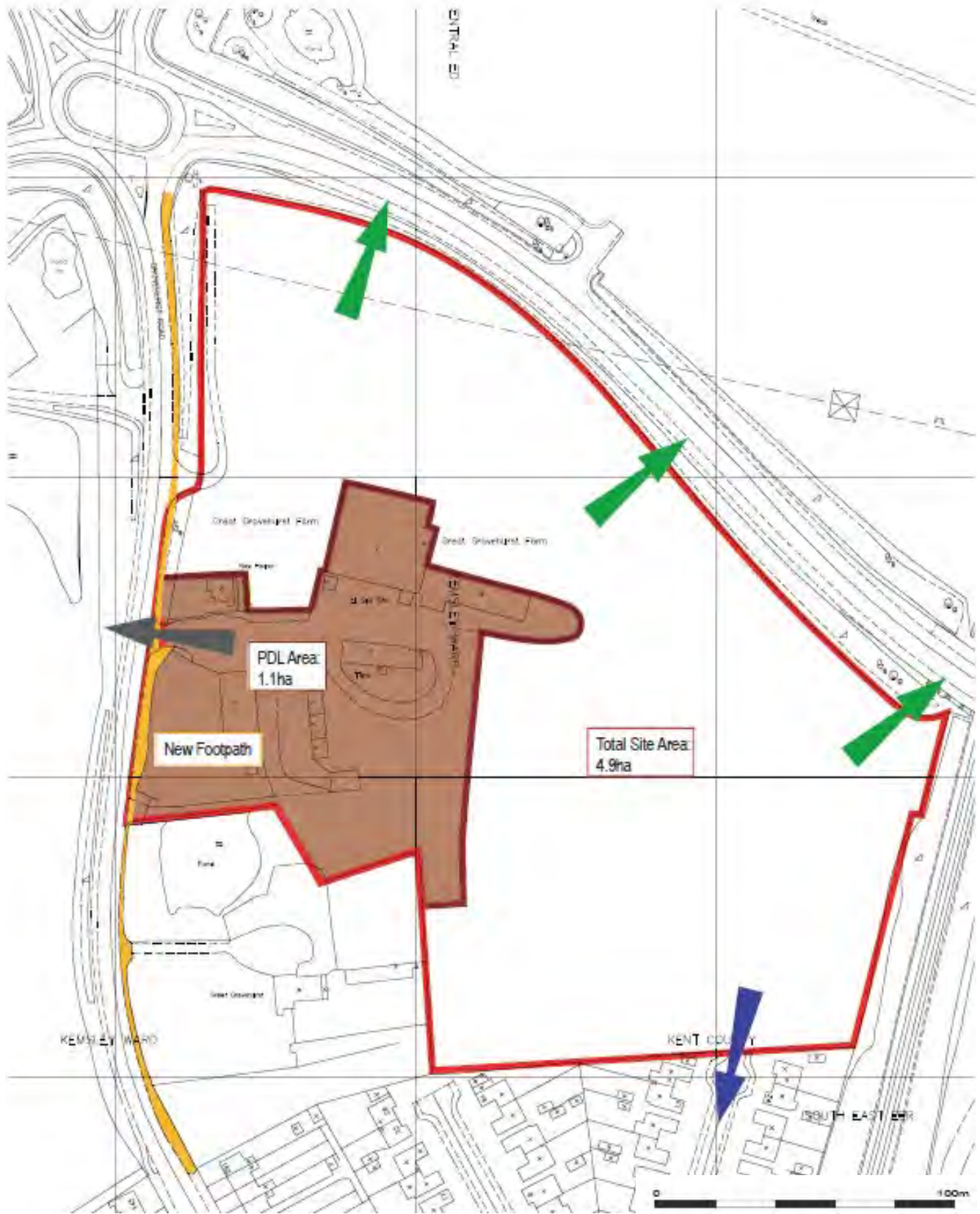
Ref:

**13838**

**Fig No. 1**

**soils**  
LIMITED  
Geotechnical & Environmental  
Consultants





Project:

**Great Grovehurst Farm, Grovehurst Road, SITTINGBOURNE, Kent  
ME9 8RB**

Client:

**PFA Consulting Ltd**

Date:

**November 2013**

Title:

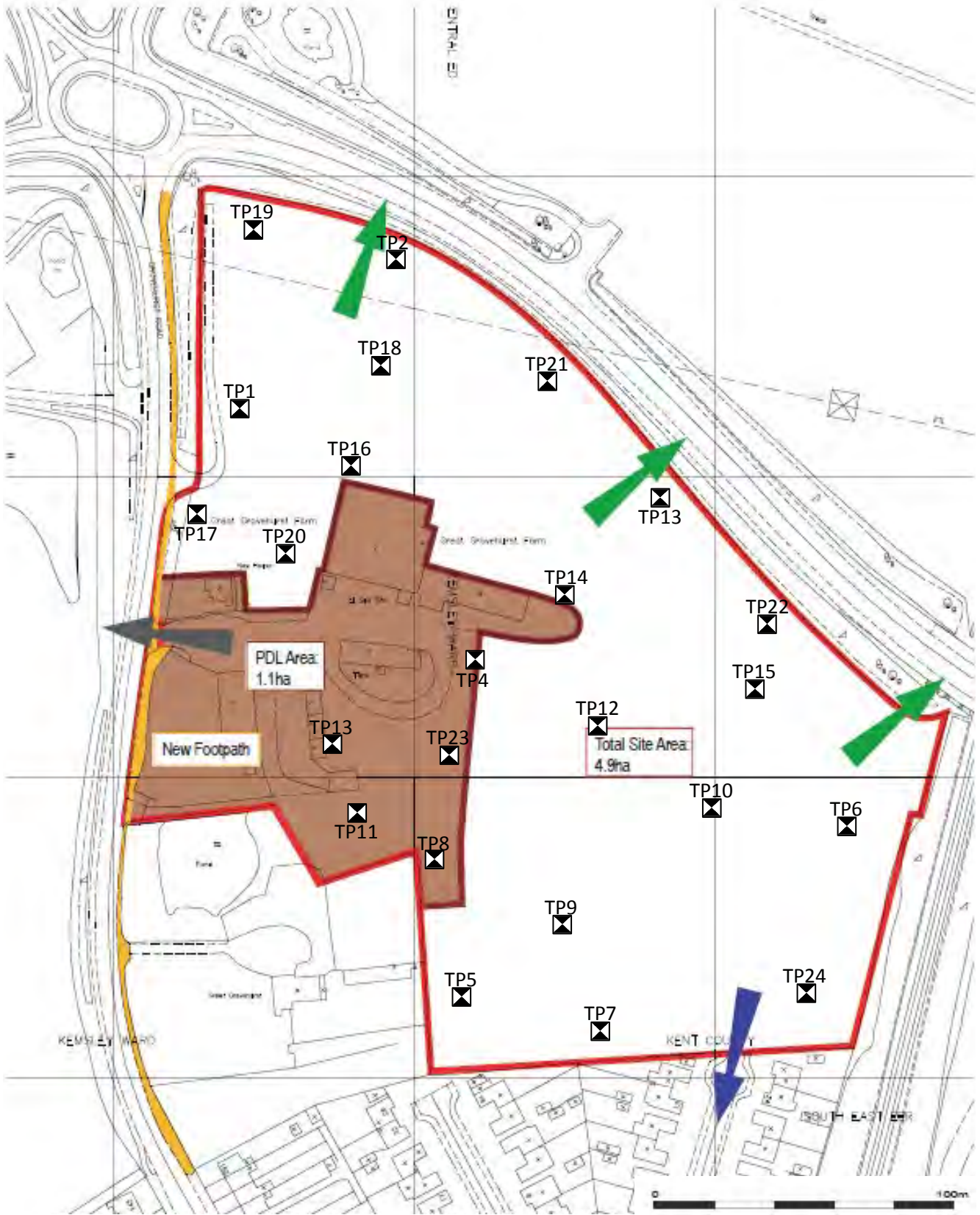
**Site Location Plan**

Ref:

**13838**

**Fig No. 2**

**soils**  
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Consultants



Project:

**Great Grovehurst Farm, Grovehurst Road, SITTINGBOURNE, Kent  
ME9 8RB**

Client:

**PFA Consulting Ltd**

Date:

**November 2013**

Title:

**Trial-hole Location Plan**

Ref:

**13838**

**Fig No. 3**

**soils**  
LIMITED

**Geotechnical & Environmental  
Consultants**

## **Appendix A Field Work**





# Trial Pit: TP 1

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.30 -	D					0.60	TOPSOIL Brown to dark brown clayey fine sandy silt with roots, occasional fine to medium sub-rounded gravel
1.00 -	D		100.0			0.60	HEAD DEPOSITS Soft to firm slightly fine sandy silty CLAY becoming orange brown with depth and friable
1.80 -	D		100.0			2.20	
2.90 -	D		150.0			2.80	HEAD DEPOSITS Firm fissured orange brown and green grey mottled fine sandy silty CLAY with occasional fine to medium sub-rounded gravel
						3.20	
End of Trial Pit at 3.20 m							

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.60m bgl
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# Trial Pit: TP 2

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.10 -	D					0.20 TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and rootlets
0.60 -	D					HEAD DEPOSITS Firm friable orange brown fine sandy silty CLAY
1.50 -	D		250.0			
2.30 -	D		225.0			HEAD DEPOSITS Lightly fissured firm stiff green grey and orange brown mottled very slightly fine sandy silty CLAY with occasional fine to medium sub-rounded gravel
3.00 -	D		250.0			
						3.10 End of Trial Pit at 3.10 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.20m bgl
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# Trial Pit: TP 3

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	MADE GROUND Brown to dark brown fine sandy silty with occasional fine to medium sub-rounded to sub-angular gravel and occasional brick
1.40 -	D					1.70	HEAD DEPOSITS Friable orange brown clayey sandy SILT
2.20 -	D		150.0			2.00	HEAD DEPOSITS Friable firm to stiff orange brown and green grey mottled fine sandy silty CLAY with occasional fine to medium sub-rounded gravel and very occasional fine sand partings
3.00 -	D		175.0			2.70	HEAD DEPOSITS Stiff closely fissured green grey and orange brown mottled silty CLAY with very occasional fine to medium sub-rounded gravel
						3.10	End of Trial Pit at 3.10 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 4

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and roots
1.00 -	D		100.0			1.90	HEAD DEPOSITS Soft firm friable orange brown fine sandy silty CLAY
1.70 -	D		75.0			2.20	LONDON CLAY FORMATION Stiff orange brown and grey brown mottled silty CLAY
2.40 -	D		250.0			2.60	
End of Trial Pit at 2.60 m							

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.30m bgl
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# Trial Pit: TP 5

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.20 -	D					0.30 TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel
0.60 -	D					HEAD DEPOSITS Friable soft orange brown fine sandy silty CLAY
1.50 -	D					
2.50 -	D					
						3.30 End of Trial Pit at 3.30 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 6

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel
0.50 -	D					0.70	HEAD DEPOSITS Dry brown clayey fine sand SILT / clay dry with occasional fine to medium sub-rounded gravel
1.20 -	D					1.00	HEAD DEPOSITS Friable soft to firm orange brown fine sandy CLAY
2.50 -	D					2.00	
						3.00	End of Trial Pit at 3.00 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 7

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and rootlets
0.80 -	D					0.30	HEAD DEPOSITS Soft friable orange brown clayey fine sandy SILT / fine sandy silty clay
2.00 -	D					2.70	
3.20 -	D		175.0			3.00	HEAD DEPOSITS Fissured stiff grey brown and orange brown mottled silty CLAY
						3.20	End of Trial Pit at 3.20 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.30m bgl
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# Trial Pit: TP 8

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.30 -	D					1.30	MADE GROUND Brown slightly clayey sandy silt with abundant fine to coarse brick gravel, ceramic and occasional ash
1.10 -	D					1.30	HEAD DEPOSITS Soft to firm friable orange brown fine sandy silty CLAY / clayey silt
1.40 -	D		100.0			1.90	
2.90 -	D					3.20	End of Trial Pit at 3.20 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 9

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.35	HEAD DEPOSITS Friable firm becoming softer with depth orange brown fine sandy silty CLAY
1.00 -	D		200.0			0.35	
2.00 -	D		50.0			2.95	
3.00 -	D						LONDON CLAY FORMATION Stiff fissured grey brown and orange brown mottled silty CLAY End of Trial Pit at 3.50 m
3.40 -	D		275.0			3.30 3.50	

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 10

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30 0.30	TOPSOIL Brown to dark brown fine sandy silt with occasional fine to medium sub-rounded gravel
1.20 -	D					2.40	HEAD DEPOSITS Friable soft to firm fine sandy silty CLAY
2.20 -	D					2.70	
2.80 -	D		225.0			3.00 0.30	HEAD DEPOSITS Stiff fissured grey brown and orange brown mottled silty CLAY with occasional fine sub-angular to sub-rounded gravel
							End of Trial Pit at 3.00 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 12

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30 0.30	MADE GROUND Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and possible occasional fine ash
1.50 -	D					2.60	HEAD DEPOSITS Friable soft orange brown fine sandy silty CLAY
3.00 -	D		225.0			2.90 3.10	HEAD DEPOSITS Stiff fissured greyish brown, orange brown and yellow brown mottled silty CLAY with occasional fine to coarse sub-rounded gravel End of Trial Pit at 3.10 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 13

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.50 -	D & J					1.30	MADE GROUND Dark brown silty sand / sandy silt with abundant chalk, ash, clinker, glass, tarmac, brick, ceramics and gravel
1.20 - 1.40 -	D & J D					1.30	HEAD DEPOSITS Soft orange brown fine sandy silty CLAY
2.70 -	D		175.0			2.60 0.40 3.00	LONDON CLAY FORMATION Stiff orange brown and green grey mottled silty CLAY
End of Trial Pit at 3.00 m							

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 14

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	TOPSOIL Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and roots
1.40 -	D					1.70	HEAD DEPOSITS Friable soft orange brown and grey brown mottled fine sandy silty CLAY
2.20 -	D					2.00	LONDON CLAY FORMATION Stiff orange brown and grey brown mottled silty CLAY
						2.50	End of Trial Pit at 2.50 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.30m bgl
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# Trial Pit: TP 15

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.20 -	D					MADE GROUND Dark brown fine sandy silt with occasional gravel and occasional brick
0.70 -	D					HEAD DEPOSITS Friable soft to firm orange brown fine sandy silty CLAY
1.60 -	D					
2.80 -	D					LONDON CLAY FORMATION Fissured stiff grey brown and orange brown mottled silty CLAY
						End of Trial Pit at 3.00 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 16

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.30 - 0.50 -	D D					0.35 0.35	MADE GROUND Dark brown fine sandy silt with occasional fine to medium sub-rounded gravel and occasional fine to medium brick
						0.55 0.90	HEAD DEPOSITS Dry and very stiff fine sandy clayey SILT / silty clay with occasional fine to medium gravel
1.20 -	D					1.40	HEAD DEPOSITS Soft friable orange brown and grey brown mottled fine sandy silty CLAY
2.40 -	B		100.0			2.30 0.70	HEAD DEPOSITS Soft to firm orange brown, yellow brown and grey brown fine sandy silty CLAY with occasional ferruginous staining
2.90 -	D					3.00	End of Trial Pit at 3.00 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

**Groundwater Observations:**

No water seepage visible in unstable corner. Soil Damp at 2.70m bgl

**Stability:**

Unstable on one corner of pit in gravelly material

**General Remarks:**

No roots observed





# Trial Pit: TP 17

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 - 0.50 -	D B					1.00	MADE GROUND Dry and friable brown fine sandy silty clay / clayey silt with occasional fine to medium sub-rounded to sub-angular gravel, occasional fine to coarse brick, concrete fragments up to 0.4m deep
1.20 -	D					1.00	HEAD DEPOSITS Soft friable orange brown fine sandy silty CLAY
2.20 -	D					2.50	End of Trial Pit at 2.50 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 18

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details				
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description	
0.25 -	D					0.35	TOPSOIL Dark brown fine sandy silt with occasional fine to medium gravel and roots	
0.80 -	D					0.35 - 1.55	HEAD DEPOSITS Friable soft orange brown fine sandy silty CLAY / clayey silt	
2.10 -	D		200.0			1.90 - 2.40	LONDON CLAY FORMATION Stiff grey brown, greenish grey and orange brown mottled silty CLAY	
							2.40	End of Trial Pit at 2.40 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 0.35m bgl
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# Trial Pit: TP 19

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.30 -	D					0.40	MADE GROUND Dark brown fine sandy silt with brick and gravel
0.60 -	D					0.40	HEAD DEPOSITS Firm friable and dry orange brown fine sandy silty CLAY / clayey silt becoming softer from 1.40m bgl
1.10 -	D					1.80	
1.60 -	D		100.0				
2.20 -	D					2.20	

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 20

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.20 -	D					0.30 TOPSOIL Brown to dark brown fine sandy silt with occasional fine to medium gravel
1.20 -	D					1.90 HEAD DEPOSITS Friable soft to firm orange brown fine sandy silty CLAY / clayey silt
2.20 -	D					2.20 End of Trial Pit at 2.20 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

**Groundwater Observations:**

Very slow seep at 2.00m bgl

**Stability:**

Stable

**General Remarks:**

No roots observed



# Trial Pit: TP 21

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.25	TOPSOIL Dark brown fine sandy silt with occasional sub-rounded to sub-angular flint gravel and rootlets
0.50 -	B					1.45	HEAD DEPOSITS Stiff friable and dry orange brown fine sandy silty CLAY / clayey silt with occasional light brown mottling, silt pockets and fine rootlets
1.30 -	D		500.0			1.70	HEAD DEPOSITS Fissured stiff grey brown and orange brown mottled silty CLAY with occasional fine to medium sub-rounded gravel  End of Trial Pit at 2.00 m
1.80 -	D		250.0			2.00	

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 1.70m
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# Trial Pit: TP 22

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details			
Depth	Type	Result	Hand Pen.	Elev.	Legend	DepthThick	Description
0.20 -	D					0.30	TOPSOIL Dark brown fine sandy silt with fine to medium sub-rounded gravel and roots
0.60 -	B					1.40	HEAD DEPOSITS Stiff friable orange brown fine sandy silty CLAY with occasional roots
1.20 -	D		500.0			1.70	
1.80 -	B					2.10	HEAD DEPOSITS Orange brown and light grey brown mottled fine to coarse sub-rounded to sub-angular flint GRAVEL in a fine sandy clay matrix
							End of Trial Pit at 2.10 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 1.70m bgl
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# Trial Pit: TP 23

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.20 -	D					MADE GROUND Dark brown fine sandy silt with occasional fine brick, ash and gravel
0.70 -	B					HEAD DEPOSITS Firm friable fine sandy silty CLAY becoming softer with depth
1.50 -	D		100.0			
2.10 -	D					End of Trial Pit at 2.10 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: No roots observed
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# Trial Pit: TP 24

Site: Great Grovehurst Farm, Sittingbourne	Start Date: 01/10/2013	Ground Level: -
Client: PFA Consulting Ltd	End Date: 02/10/2013	Easting: -
Project No: 13838	Logged By: GJ	Northing: -
Site National Grid Reference:	Excavation Method:	
Site Level (mOD): 0.000	Plant:	
	Shoring/Support: None	
	Trial Pit Length: -	Trial Pit Width: -

Samples & Tests				Strata Details		
Depth	Type	Result	Hand Pen.	Elev.	Legend	Description
0.20 -	D					0.30 TOPSOIL Dark brown fine sandy silt with fine to medium sub-rounded gravel and rootlets
1.00 -	D					HEAD DEPOSITS Dry and friable orange brown fine sandy silty CLAY with occasional rootlets
1.80 -	D					HEAD DEPOSITS Orange brown silty SAND
						2.20 End of Trial Pit at 2.20 m

**General Notes:**

- All linear dimensions are in metres unless otherwise stated
- All relative density/shear strength descriptions are based only on field observations and available in-situ test data.
- Trial pit logged from the ground surface below 1.2 m depth.

Groundwater Observations: Dry	Stability: Stable	General Remarks: Roots observed to 1.30m bgl
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**Appendix E**  
**Soakage Test Data**

## Soakage Test Data

### Trial Pit No. TP19

Time (min)	Depth to water (m BGL)	Notes
0.00	1.252	
1.00	1.253	
2.00	1.254	
3.00	1.255	
5.00	1.263	
10.00	1.270	
15.00	1.278	
21.00	1.290	
31.00	1.308	
45.00	1.326	
65.00	1.347	
98.00	1.389	
121.00	1.412	
155.00	1.439	
200.00	1.455	

### Trial Pit Dimensions

Top Length (m)	2.5
Top Width (m)	1.2
Base Length (m)	1.3
Base Width (m)	1.0
Depth (m)	2.1 (At start of test)



## Soakage Test Data

### Trial Pit No. TP20

Time (min)	Depth to water (m BGL)	Notes
0.00	1.390	Water seepage at 2.0m
1.00	1.390	
2.00	1.390	
3.00	1.391	
5.00	1.391	
17.00	1.393	
23.00	1.398	
35.00	1.398	
45.00	1.398	
60.00	1.398	
90.00	1.398	
124.00	1.398	
147.00	1.398	
180.00	1.398	
200.00	1.398	

### Trial Pit Dimensions

Top Length (m)	2.5
Top Width (m)	1.1
Base Length (m)	1.8
Base Width (m)	1.0
Depth (m)	2.5 (At start of test)

## Soakage Test Data

### Trial Pit No. TP21

Time (min)	Depth to water (m BGL)	Notes
0.00	1.230	
1.00	1.234	
2.00	1.235	
3.00	1.235	
5.00	1.236	
8.00	1.237	
15.00	1.240	
20.00	1.245	
28.00	1.247	
35.00	1.247	
41.00	1.254	
55.00	1.257	
65.00	1.264	
107.00	1.269	
180.00	1.283	
205.00	1.284	
230.00	1.296	
256.00	1.297	

### Trial Pit Dimensions

Top Length (m)	2.6
Top Width (m)	1.2
Base Length (m)	0.8
Base Width (m)	1.0
Depth (m)	1.8 (At start of test)

## Soakage Test Data

### Trial Pit No. TP22

Time (min)	Depth to water (m BGL)	Notes
0.00	1.287	
1.00	1.289	
2.00	1.297	
3.00	1.301	
5.00	1.309	
8.00	1.324	
15.00	1.330	
20.00	1.344	
34.00	1.367	
53.00	1.380	
92.00	1.426	
158.00	1.465	
188.00	1.479	
216.00	1.490	
240.00	1.513	

### Trial Pit Dimensions

Top Length (m)	2.5
Top Width (m)	1.1
Base Length (m)	1.5
Base Width (m)	0.9
Depth (m)	2.1 (At start of test)

## Soakage Test Data

### Trial Pit No. TP23

Time (min)	Depth to water (m BGL)	Notes
0.00	1.320	
1.00	1.321	
2.00	1.323	
3.00	1.325	
5.00	1.327	
10.00	1.329	
15.00	1.330	
30.00	1.338	
46.00	1.343	
118.00	1.348	
147.00	1.352	
175.00	1.358	
212.00	1.360	

### Trial Pit Dimensions

Top Length (m)	2.4
Top Width (m)	1.1
Base Length (m)	1.7
Base Width (m)	1.0
Depth (m)	2.2 (At start of test)

## Soakage Test Data

### Trial Pit No. TP24

Time (min)	Depth to water (m BGL)	Notes
0.00	1.255	
1.00	1.258	
2.00	1.259	
3.00	1.245	
5.00	1.250	
12.00	1.252	
18.00	1.257	
32.00	1.272	
49.00	1.285	
64.00	1.297	
135.00	1.350	
164.00	1.369	
196.00	1.388	
240.00	1.405	

Trial Pit Dimensions	
Top Length (m)	2.5
Top Width (m)	1.2
Base Length (m)	1.4
Base Width (m)	1.0
Depth (m)	2.1 (At start of test)

Date: 1-2 October 2013

Job No.: 13838

Job Name: Great Grovehurst Farm