GROUND ENGINEERING LIMITED

Newark Road, Peterborough PE1 5UA
Tel: 01733 566566
Email: admin@groundengineering.co.uk

FURTHER GROUND INVESTIGATION AND REMEDIATION SCHEME

PEAR TREE FARM

ST. JAMES ROAD

LONG SUTTON

LINCOLNSHIRE

Report Reference C15075C

On behalf of:

Nene Transport (Lincs) Limited
Greenworld Park
Sutton Bridge
Spalding
Lincolnshire
PE12 9RN

October 2023

CONTENTS

Introduction	Page 1
Location, Topography and Geology of the Site	Page 2
Site Work	Page 3
Chemical Laboratory Testing and Monitoring	Page 4
Ground Conditions	Page 5
Soil Gas	Page 6
Comments on Soil and Vapour Chemical Testing	Page 7
Remediation Method Statement	Page 12

FIGURES

Site Location Plan	Figure 1
Borehole Location Plan	Figure 2
Plan showing Proposed Development	Figure 3

APPENDICES

Records of Boreholes and Monitoring	Appendix 1
Laboratory Chemical Test Results	Appendix 2

NENE TRANSPORT (LINCS) LIMITED

FURTHER GROUND INVESTIGATION AND REMEDIATION SCHEME

PEAR TREE FARM

ST. JAMES ROAD

LONG SUTTON

LINCOLNSHIRE

Report Reference No. C15075C **October 2023**

INTRODUCTION

Ground Engineering Limited was instructed by the client, Nene Transport (Lincs) Limited, to further investigate the ground adjacent new dwelling, which was under construction, at Pear Tree Farm, St. James Road, Long Sutton, Lincolnshire. Following discussion with South Holland District Council it was agreed that an additional ground investigation should be carried to check if vapours from historical petroleum pollution could affect the proposed residential development.

The scope of further investigation comprised the installation of standpipes into five window sample boreholes located along the edge of the building footprint, with chemical analysis on recovered soil samples for petroleum hydrocarbons; and the soil gas monitored for volatile organic compounds (VOC) vapour. This report documents the findings of this investigation together with the submission of an updated remediation scheme for the proposed development.

Reference should be given to a desk study and ground investigation provided in Ground Engineering reports C15075 July 2020 & C15075A September 2020; and also to Delta-Simons report 17-0252.03 September 2018. The client subsequently removed an area of petroleum impacted soil from within the building footprint and Ground Engineering inspected the remediated area and documented the findings in report C15075B August 2022.

LOCATION, TOPOGRAPHY AND GEOLOGY OF THE SITE

The rural site is located at Pear Tree Farm, St. James Road, Long Sutton in Lincolnshire as shown in Figure 1. The National Grid Reference for the centre of the site is TF 4086 2026.

At the time of the investigation in August 2023, the building foundations had all been constructed and sections of the building steel frame erected.

The site stands at about 3mOD, on level ground within the Lincolnshire Fens. Drains are present along the boundaries in the south-western and south-eastern parts of the site. The site is approximately 400m north of the west-east aligned South Holland Main Drain.

The geological map, sheet 144 (1992) at 1:50,000 scale, shows superficial Terrington Beds (now named Tidal Flat Deposits), overlying the solid geology of the Ampthill Clay at depth. The site is within an area reclaimed by the time of the Doomsday Survey in 1086.

The ground conditions encountered in the previous investigation comprised 0.15m to 0.45m thickness of made ground, which rested on Tidal Flat Deposit soils.

SITE WORK

The site work was carried out on 14 August 2023 and comprised five window sample boreholes (WS1 to WS5) whose locations are shown in Figure 2. Service plans were consulted, and a cable avoidance tool (CAT) was used to check for the absence of buried services prior to boring.

The borehole records have been produced in accordance with British Standard BS5930:2015+A1:2020 'Code of Practice for Site Investigations' and is given in Appendix 1. The records provide the descriptions and depths of the various strata encountered, samples taken, and the groundwater conditions observed during excavation, boring and on completion.

The boreholes were started by the excavation, using hand tools, of a service inspection pit to a depth of 1.20m in order to ensure the absence of buried services. Representative small disturbed samples of soil were taken from the starter pit.

The window sample boreholes were formed by a small track-mounted window sampling and super heavy dynamic probing rig and taken to a depth of 3.00m. The window sampling equipment consisted of drive-in sample tubes of specially constructed and strengthened steel, lined with a plastic core-liner. The barrels were initially of 87mm internal diameter and were reduced in diameter with successive barrels with increasing depth. Upon extraction, a continuous 'undisturbed' profile of the soil was obtained within the plastic liners.

On completion a gas/water monitoring installation was fitted into each borehole to a depth of 3.00m. The installation comprised a standpipe fitted with a silica gravel surround to a depth of 1.00m. A bentonite seal was inserted between 0.50m and 1.00m depth, above which the tube was sealed by a gas valve and a surface protective cover was fixed in concrete.

CHEMICAL LABORATORY TESTING AND MONITORING

Selected soil samples were submitted to UKAS Accredited Laboratories.

Tests were carried out to screen selected soil samples for total petroleum hydrocarbons (TPH). The results of chemical testing are presented in Appendix 2.

Return visits to site were undertaken on 23 & 30 August and 6 September 2023 to monitor the standpipe installations (WS1 to WS5) for depth to groundwater and measure gas and vapour concentrations.

The five standpipes were monitored for methane, carbon dioxide and oxygen concentrations using a Gasdata GFM436, which also recorded the atmospheric pressure and flow rate. The gas monitoring results are presented on and following the borehole records in Appendix 1.

Measurement of VOC vapour was carried out by a cumulative measurement Tenax VOC sorbent tubes, which were installed into all five standpipes on 23 August 2023. These were subsequently recovered seven days later on 30 August 2023 and analysed in the laboratory to determine VOC vapour concentrations. The results of Tenax Tube Vapour analysis are provided in Appendix 2.

GROUND CONDITIONS

The strata encountered in WS1 to WS5 comprised a 0.20m to 1.30m cover of made ground, which rested on Tidal Flat Deposits, which were present to at least the base of the boreholes at 3.00m depth.

Made Ground

A 0.20m to 0.40m thick surface layer of sand/gravel made ground was encountered in all the boreholes. This capped a layer of clay fill, in WS1, WS2 and WS3, which was present to depth of between 0.50m and 1.30m.

The sand/gravel layer comprised mixtures of sand and gravel, gravelly sand, and sandy gravel with occasional concrete cobbles. The gravel fraction comprised brick, concrete and flint.

The clay fill comprised firm, brown, grey and black, slightly gravelly, silty, organic clay. The gravel fraction comprised flint, ash and brick, and occasional shell fragments.

Tidal Flat Deposits

At depths between 0.20m to 1.30m the boreholes passed into a soft and firm, brown and grey, silty clay, which passed into soft and very soft, brown and grey, slightly sandy, organic clay. At depths between 2.50m and 2.95m the boreholes passed into a grey and brown, silty sand. All the boreholes were completed within this layer at 3.00m depth.

Groundwater

Water seepages were encountered at 2.00m and 3.00m in WS2 and WS5. Standpipe water levels were subsequently between 1.96m and 2.28m in all of the standpipes.

The soil at depths between 0.80m and 2.00m within WS2 and WS5 had a slight petroleum hydrocarbon odour.

SOIL GAS

The monitoring of soil gasses (methane, carbon dioxide and oxygen) within the standpipes installed within boreholes DS101 and DS103 as part of a previous investigation by Delta-Simons was undertaken between 20th July and 30th July 2018. Further monitoring was carried out by Ground Engineering during this latest phase of investigation in WS1 to WS5 between 23 August and 6 September 2023. A summary of monitoring data is provided in Table 1.

Table 1: Summary of Gas/Water Monitoring Data

Dates	Hole Location	No. Visits	Water Level (mbgl)	Atmospheric Pressure (mb)	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow (l/hr)
20/07/18 to 30/07/18	DS101	3	2.31-2.42	1008-1011	<0.1	2.2-3.4	17.5-18.7	<0.1
20/07/18 to 30/07/18	DS103	3	1.92-1.95	1008-1013	<0.1-3.0	1.7-5.4	5.7-10.7	<0.1
23/08/23 to 6/09/23	WS1	3	2.03-2.21	1008-1021	<0.1	1.9-4.0	10.0-14.9	<0.1
23/08/23 to 6/09/23	WS2	3	1.96-2.02	1008-1021	<0.1	1.3-1.5	16.9-18.2	<0.1
23/08/23 to 6/09/23	WS3	3	2.01-2.07	1008-1021	<0.1	0.6-0.8	18.3-18.9	<0.1
23/08/23 to 6/09/23	WS4	3	2.08-2.13	1008-1021	<0.1	1.0-1.1	18.7-19.4	<0.1
23/08/23 to 6/09/23	WS5	3	2.18-2.20	1008-1021	<0.1	2.9-3.3	17.5-18.4	<0.1

The results indicate a Gas Screening Value (GSV) of 0.003l/hr for methane and 0.0054l/hr for carbon dioxide.

The results fall into Characteristic Situation 1 as defined by BS8485:2015+A1:2019 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'.

COMMENTS ON SOIL AND VAPOUR CHEMICAL TESTING

The results of the laboratory chemical testing on near surface soil samples have primarily been compared to soil screening values (SSVs) produced by Land Quality Management Limited (LQM) and the Chartered Institute for Environmental Health (CIEH) presented in their document 'The LQM/CIEH S4ULs for Human Health Risk Assessment: 2015 (Publication Number S4UL3608)'. The LQM/CIEH S4ULs are intended for use in assessing the potential risks posed to human health by contaminants in soil and are transparently-derived and cautious 'trigger values' above which further assessment of the risks or remedial action may be needed. The S4ULs (Suitable for Use Levels) have been derived, in accordance with UK legislation and Environment Agency policy, using a modified version of the Environment Agency CLEA 1.06 software.

For each contaminant the adopted soil screening criteria have been calculated for the following land uses:

- Residential use with home grown produce
- Residential use without home grown produce
- Public Open Spaces Near Residential Housing

The intended purpose of the SSVs are as "intervention values" in the regulatory framework for assessment of human health risks in relation to land use. These values are not binding standards but are intended to inform judgements about the need for action to ensure that a new use of land does not pose any unacceptable risks to the health of the intended users.

Table 2 compares the test results with the SSVs in relation to the specified uses. The number of test results, which exceed these values, are also provided. Table 3 provides a summary of the TPH results.

Residential use with home grown produce usage values are considered appropriately conservative screening values for the proposed residential development.

Table 2 : Comparison of Chemical Test Results for Near Surface Soil with Soil Screening Values (SSV)

Determinand	Number of Samples	Min Value (mg/kg)	Max Value (mg/kg)	Number of Samples Exceeding SSV for:			Measured 95th Percentile (mg/kg)	Soil Screening Values (SSV) (1% SOM)			
				Residential with home grown produce	Residential without home grown produce	Public Open Spaces Near Residential Housing		Assessment Method	Residential with home grown produce (mg/kg)	Residential without home grown produce (mg/kg)	Public Open Spaces Near Residential Housing (mg/kg)
TPH Aliphatic >C5-C6	2	<0.05	<0.05	0	0	0	-	S4UL	42	42	570,000
TPH Aliphatic >C6-C8	2	<0.10	<0.10	0	0	0	-	S4UL	100	100	600,000
TPH Aliphatic >C8-C10	2	<0.05	1.10	0	0	0	-	S4UL	27	27	13,000
TPH Aliphatic >C10-C12	2	16	160	1	1	0	-	S4UL	130	130	13,000
TPH Aliphatic >C12-C16	2	50	660	0	0	0	-	S4UL	1100	1100	13,000
TPH Aliphatic >C16-C35	2	508	1690	0	0	0	-	S4UL	65,000	65,000	250,000
TPH Aliphatic >C35-C40	2	13	160	0	0	0	-	S4UL	65,000	65,000	250,000
TPH Aromatic >C5-C7	2	<0.05	<0.05	0	0	0	-	S4UL	70	370	56,000
TPH Aromatic >C7-C8	2	<0.05	<0.05	0	0	0	-	S4UL	130	860	56,000
TPH Aromatic >C8-C10	2	<0.05	<0.05	0	0	0	-	S4UL	34	47	5000
TPH Aromatic >C10-C12	2	6.4	95	1	0	0	-	S4UL	74	250	5000
TPH Aromatic >C12-C16	2	32	780	1	0	0	-	S4UL	140	1800	5100
TPH Aromatic >C16-C21	2	36	420	1	0	0	-	S4UL	260	1900	3800
TPH Aromatic >C21-C35	2	74	150	0	0	0	-	S4UL	1100	1900	3800
TPH Aromatic >C35-C40	2	5.8	12	0	0	0	-	S4UL	1100	1900	3800

Notes
LQM/CIEH S4ULs 'Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3608. All rights reserved'
ATRISKsoil SSVs produced by Atkins Limited and provided under licence to Ground Engineering Limited

Table 3: Summary of Total Petroleum Hydrocarbon (TPH) Test Results in Soil

Depth m	Concentration of Total Petroleum Hydrocarbons (TPH) in soil mg/kg (s)				
	WS1	WS2	WS3	WS4	WS5
0.20					
0.30					
0.40		<10s			
0.50					340s
0.80		600s			
0.60	<10s		<10s	<10s	
0.70					
0.90	<10s				
1.00		1900s	<10s	<10s	
1.10					430s
1.50	<10s	730s	<10s		
1.60				<10s	
1.70					200s
1.80		<10s			
2.00	<10s		<10s	<10s	130s
2.30		<10s			
2.50	<10s			<10s	
2.60		320s	<10s		
2.70					380s
3.00	<10s	<10s	<10s	<10s	95s

Discussion of Results

Concentrations of TPH above the test detection limit (10mg/kg) were encountered in boreholes WS2 and WS5.

The petroleum concentrations in WS2 (aliphatic range C10-C12 and aromatic range C10-C21) exceeded the respective SSVs for residential with home grown produce and residential without home grown produce end use. None exceeded the respective SSV for public open spaces near residential housing.

The petroleum fractions in WS5 were all below the SSV for residential with home grown produce, residential without home grown produce end use and public open spaces near residential housing.

VOC Vapour Testing

The vapour risk was measured using gas sample analysis and Tenax sorbent tubes, which were installed in the standpipes at a depth of 0.15m. The Tenax tubes measured the cumulative VOC concentration over seven days in WS1 to WS5.

The use of 'acceptable air concentrations' is an accepted approach used in UK assessment methodologies for contaminated land such as the CLEA model.

Based on the methodology provided in CIRIA 682 (Baker et al., 2009), screening values can be based on appropriate air quality standards (HCVair).

Appropriate air quality standards (HCVair) have been obtained by reference to Land Quality Management Limited (LQM) and the Chartered Institute for Environmental Health (CIEH) document 'The LQM/CIEH S4ULs for Human Health Risk Assessment: 2015 (Publication Number S4UL3608)'.

Comparison of the vapour results for obtained for benzene, trichloroethene, toluene, xylene and naphthalene with HCVair referenced in the LQM/CIEH S4ULs document is provided in Table 4 below.

Table 4	Minimum Concentration $\mu g/m^3$	Maximum Concentration $\mu g/m^3$	LQM/CIEH HCV_{air} $\mu g/m^3$	HCV_{air} Source	HCV_{air} Exceeded
Benzene	6.8	10.1	5	S4UL	Yes
Trichloroethene	<1.3	7.6	40	S4UL	No
Toluene	4.8	7.3	5000	S4UL	No
m&p-xylene	5.4	23.6	200	S4UL	No
o-xylene	1.5	17.2	200	S4UL	No
Naphthalene	1.2	11.4	3	S4UL	Yes

The fact that the concentration of benzene and naphthalene vapours within the unsaturated soil beneath the building exceed HCVair concentrations is an indication that there is a potential risk to human health in a residential use building. Therefore it would be prudent to incorporate vapour protection measures into the building design.

Methane and Carbon Dioxide Soil Gas

Whilst the soil gas monitoring results fall into Characteristic Situation CS1 the presence of layers of organic clay and peat within the underlying Tidal Flat Deposits would suggest a low hazard potential more in keeping with a CS2 Characteristic Situation in accordance with BS8485:2015+A1:2019. 'Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings'. Tables 3 to 7 within this British Standard identify a points based method for defining the need for gas precaution measures for CS2 hazard potential. Based on this method and on the basis of a Type A (private housing) building, a minimum gas protection score of 3.5 would be required and could be achieved using a well-constructed reinforced ground slab, a low permeability gas membrane, minimal penetration of the ground slab by services and possibly an under floor void.

Conclusions

Ground gas and vapour protection measures should be incorporated into the whole building. The design and installation of the gas/vapor protection system should be carried out by a specialist and approved by the local authority prior to installation.

Petroleum impacted soil should not be reused within garden areas and where present it should be removed and replaced with a suitably thick, clean cover layer.

REMEDIATION METHOD STATEMENT

The proposed dwelling will comprise a large two-storey house with swimming pool and garage with surrounding hardstanding and gardens areas.

The following remediation method statement has been derived from the findings presented in Ground Engineering Report C15075A September 2020, C15075B August 2022 and this latest phase of investigation C15075C.

The results indicate that the made ground would generally be considered suitable for retention at the surface in the context of a proposed residential setting. Where TPH impacted soils are encountered, they should be removed from the site and replaced with clean imported granular soils, subsoil, or topsoil. Ground gas and vapour protection measures should be incorporated into the whole building.

A plan showing the proposed development is provide as Figure 3.

General Comments

1. In the event that subsequent site works reveal materials that may appear to be contaminated, the works will stop and appropriate professional advice will be sought.
2. Petroleum impacted soils, if not removed directly from site, should be stockpiled on an impermeable membrane within a quarantine area to prevent accidental mixing with cleans soil.
3. Standard Health and Safety precautions should be observed by groundworkers when dealing with soils across the site.
4. All soils removed from site will be disposed of using licensed carriers and taken to appropriately licensed disposal facilities.
5. The local authority will be informed regarding each stage of the works and photographic evidence together with copied waste transfer receipts for all soil and material disposal should be gathered, as they are essential to demonstrate the works.

Buildings and Hardstanding Areas

6. The building will incorporate methane, carbon dioxide gas and VOC vapour protection measures, which will be designed by others and detailed in a separate method statement presented by the client.
7. Providing that it is geotechnically suitable, the made ground could be retained or reused beneath buildings and permanent hardstanding areas.
8. The risk of soils affecting future users when present beneath buildings and permanent areas of hardstanding would be considered to be very low. This is because it would be highly unlikely that the general site users would normally be able to penetrate the building floors and hardstanding, which would be necessary for them to uncover any contaminated soils beneath the site.

Garden Areas

9. The groundworks contractor should undertake a watching brief during works to check for polluted soil.
10. The made ground is generally considered suitable for retention where private residential garden areas are proposed, however in the former farmyard area a clean imported topsoil may be required to provide a suitable growing medium. Selected made ground could be considered for re-use beneath proposed buildings and permanent hardstanding.
11. TPH impacted soils should be removed from the site and replaced with clean imported granular fill, subsoil or topsoil.
12. A photographic record of such remediation should be undertaken by the contractor.
13. Any imported 'clean' inert topsoil and granular fill should be supported by verification certificates to provide proof of its suitability. Documentation relating to the source of clean inert topsoil should be presented to the Local Planning Authority for approval prior to infilling. Samples of any imported clean topsoil placed in the garden areas should be tested to verify that the soil is suitable for use.

14. The Local Authority should also be informed regarding each stage of the works and photographic evidence together with copied waste transfer receipts for any arisings should be gathered, as they are essential to demonstrate the works.
15. The local water supply company should be consulted if new buried plastic water pipes within the made ground soils on this site are proposed.

Verification

16. The garden area will be inspected following placement of the clean capping layer, which will be retested to prove that it is suitable for use.
17. The analysis of all imported soil samples will meet current UK soil levels (DEFRA C4SLs, LQM/CIEH S4ULs for Residential use with home grown produce).
18. Following validation testing any unsuitable soils will be removed and replaced with clean soil in accordance with the remediation plan.

Validation

19. The work will be fully documented and on completion a validation report prepared providing a full descriptive record of the process, quantities of material excavated, stored and removed, and the materials imported and placed, together with chemical test results and photographs. Implementation of the remediation method statement should be checked during construction and on completion, and appropriate records kept so that a Validation Report can be compiled and subsequently submitted to the local authority.

GROUND ENGINEERING LIMITED

J. H. GIBB

B.Sc. (Hons.), M.Sc. (Eng.), C.Geol., F.G.S.

Associate

S. J. FLEMING

M.Sc., M.C.S.M., C.Geol., F.G.S.

Director

Figures

Figure 1: Site Location Plan

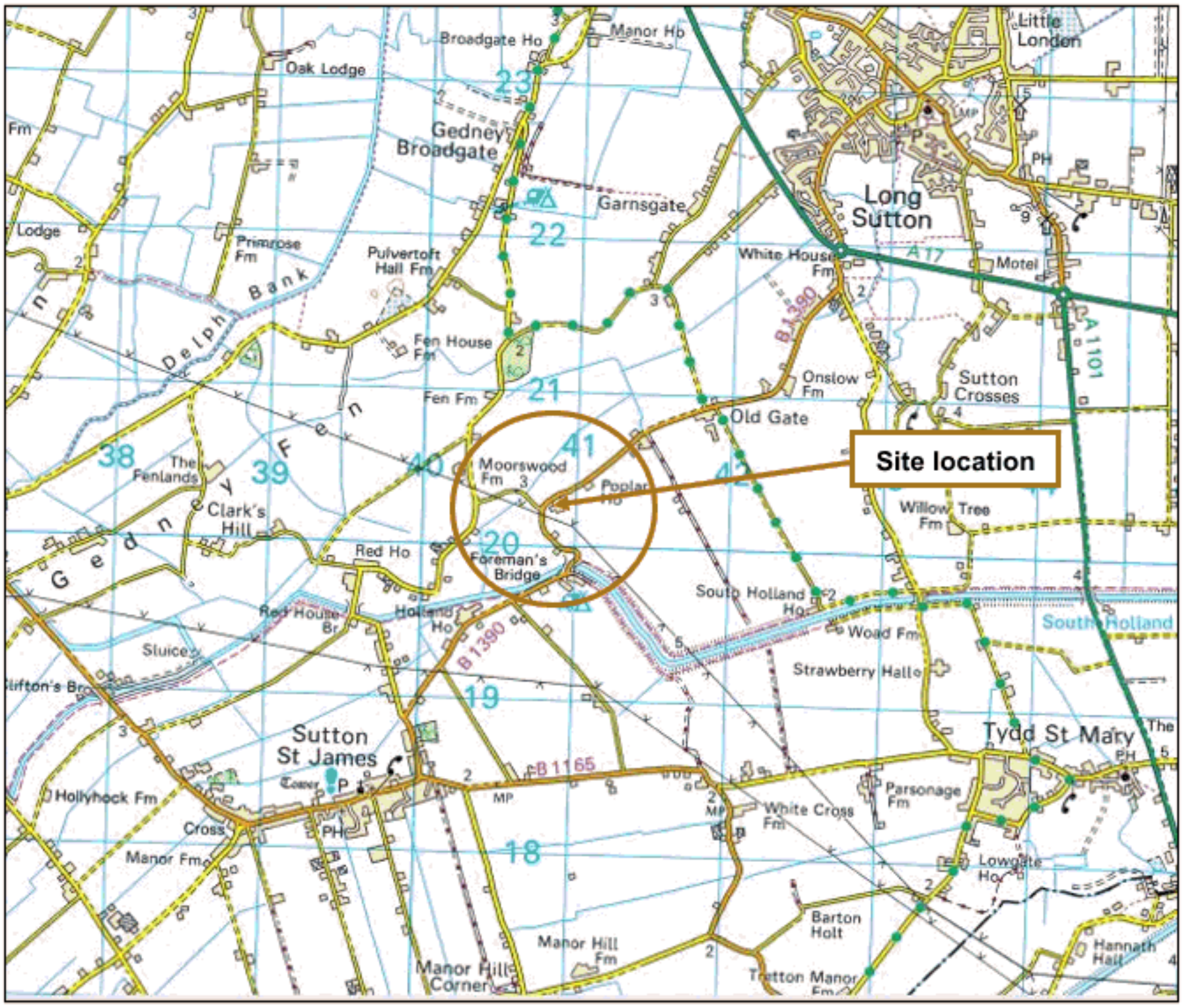
Figure 2: Borehole Location Plan

Figure 3: Plan Showing Proposed Development

Site Location Plan

Figure 1

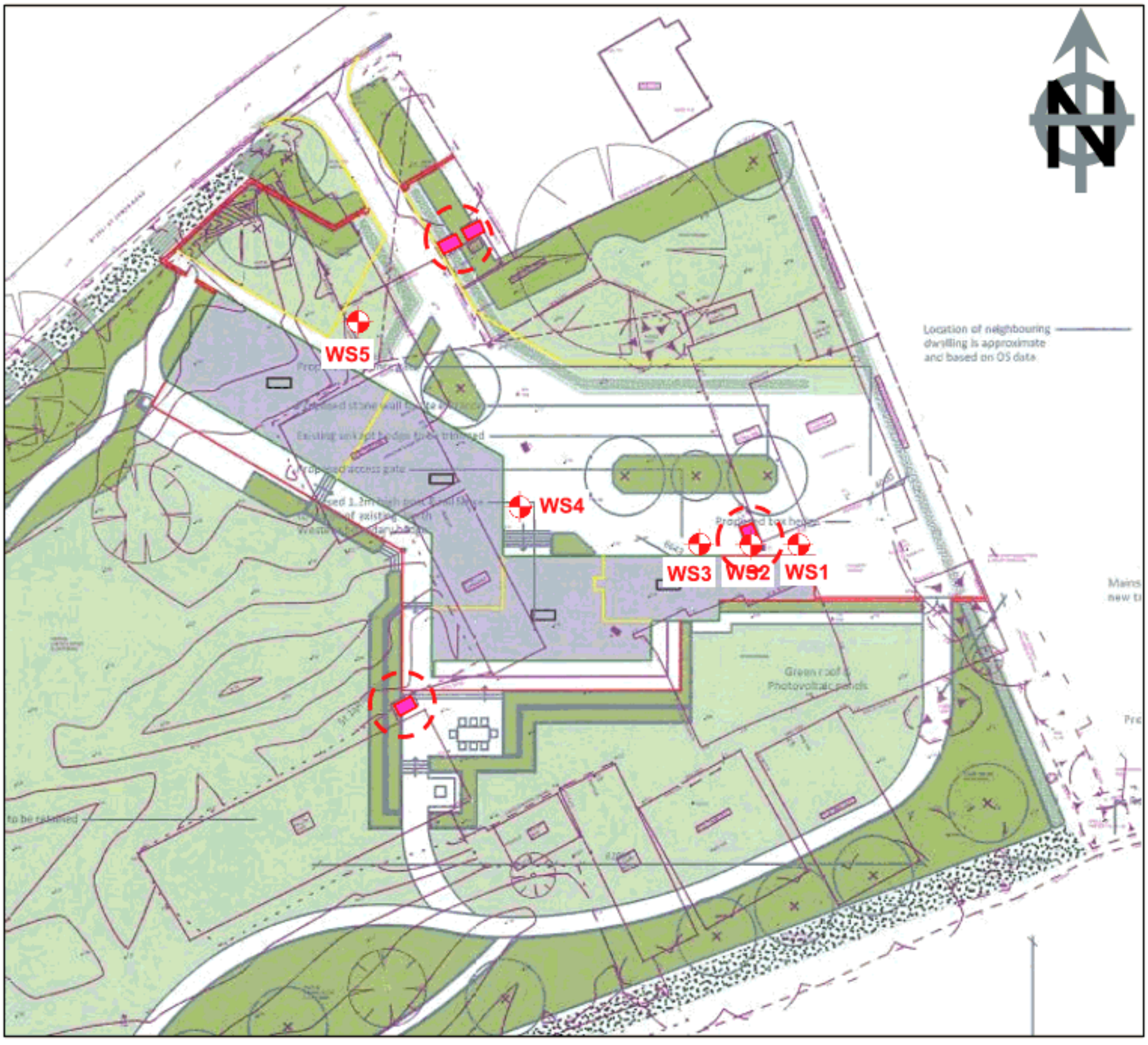
Reproduced from the Ordnance Survey sheet reproduced at **1:50,000** scale
© Crown Copyright. Licence number AL100005523



Project : Pear Tree Farm, St. James Road, Long Sutton, Lincolnshire **Client : Nene Transport (Lincs) Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C15075C**

Borehole Location Plan

Figure 2



Scale

50m

KEY

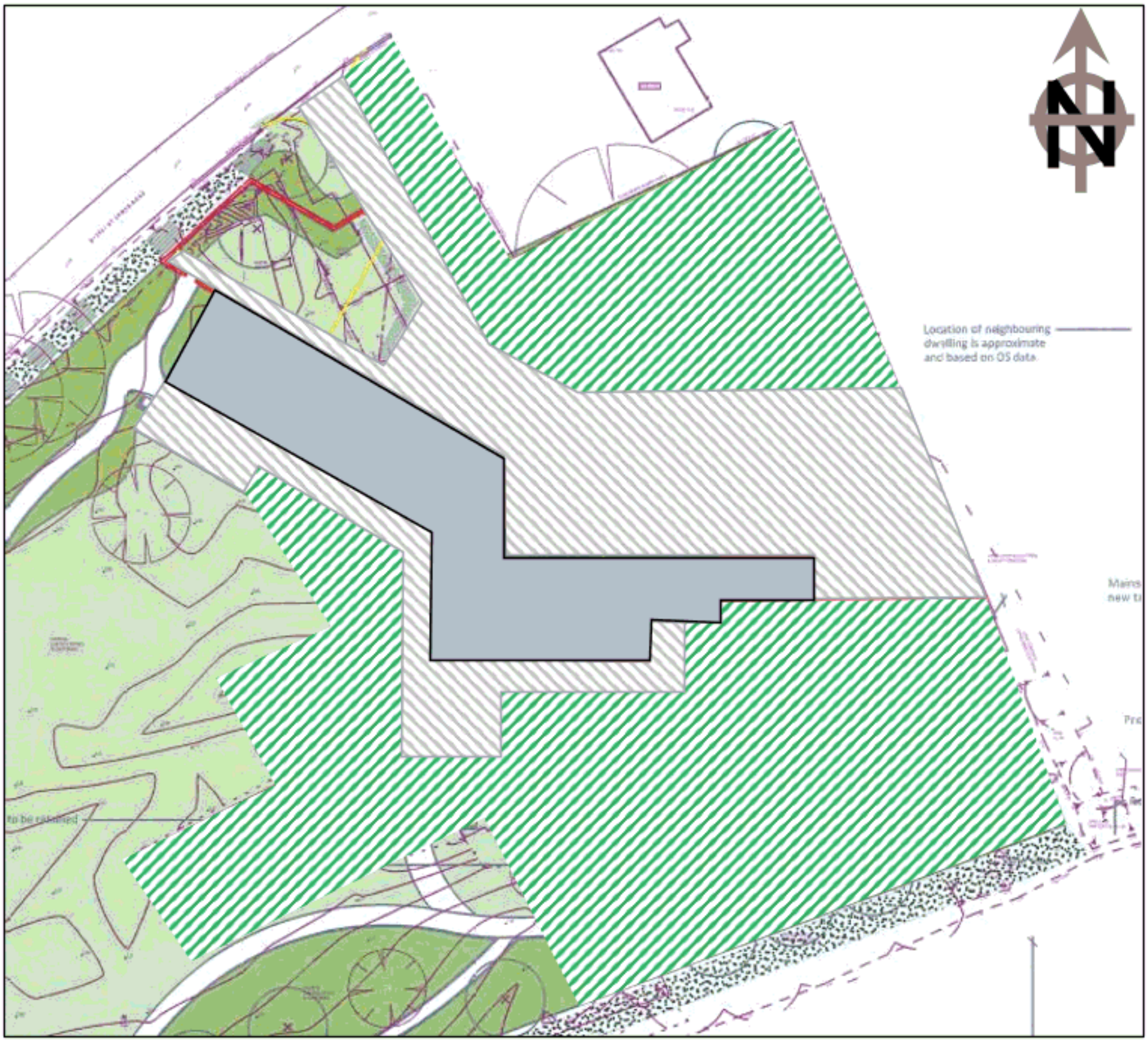
Window Sample Borehole WS1 to WS5

Former Surface Mounted Tanks

Project : Pear Tree Farm, St. James Road, Long Sutton, Lincolnshire **Client : Nene Transport (Lincs) Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C15075C**

Plan Showing Proposed Development

Figure 3



Scale

50m

KEY

- Building
- Hardstanding
- Clean imported topsoil required to provide a suitable growing medium within former farmyard area

Project : Pear Tree Farm, St. James Road, Long Sutton, Lincolnshire **Client : Nene Transport (Lincs) Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C15075C**

Appendix 1

Records of
Boreholes WS1 to WS5
Groundwater and Gas Monitoring Results

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: PEAR TREE FARM, ST. JAMES ROAD, LONG SUTTON

WINDOW SAMPLE WS1

Date: 14/08/23

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.10	D1				MADE GROUND - Brown, silty SAND AND GRAVEL. Gravel is angular to sub-rounded flint and brick fragments.		0.15	
0.10	ES1							
0.30	D2				MADE GROUND - Brown and red brown, slightly clayey, sandy GRAVEL with occasional cobbles of concrete. Gravel is angular to sub-rounded flint, slate and brick fragments.		0.40	
0.30	ES2							
0.60	D3				MADE GROUND - Firm, brown, grey and black, slightly gravelly, silty, slightly organic CLAY. Gravel is angular to rounded flint, ash and brick fragments.			
0.60	ES3							
0.60	V1	(58)					0.85	
0.90	D4				Firm, brown and grey, silty CLAY with dead root traces.			
0.90	ES4							
0.90	V2	(52)						
1.20-2.00	U1				(TIDAL FLAT DEPOSIT)		1.40	
1.50	D5				Soft, brown and grey, slightly sandy, silty, slightly organic CLAY with brown silt lenses.			
1.50	ES5							
2.00	D6		▼s					
2.00-3.00	U2		▼s					
2.00	ES6		▼s					
2.50	D7				...Becoming very soft below 2.50m depth			
2.50	ES7							
					(TIDAL FLAT DEPOSIT)		2.95	
3.00	D8				Grey and brown, silty SAND. (TIDAL FLAT DEPOSIT)		3.00	
3.00	ES8				Hole completed at 3.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Roots observed to 0.15m depth
3. Gas monitoring standpipe installed to 3.00m depth

Project No 15075c

Scale 1:25

Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						14/08/23	3.00		dry
						23/08/23	3.00	1.00	2.21
						30/08/23	3.00	1.00	2.03
						06/09/23	3.00	1.00	2.11

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: PEAR TREE FARM, ST. JAMES ROAD, LONG SUTTON

WINDOW SAMPLE
WS2

Date: 14/08/23

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.10	D1				MADE GROUND - Brown and red brown, slightly silty, sandy GRAVEL with occasional cobbles of concrete. Gravel is angular to sub-rounded, flint and brick fragments.			
0.10	ES1						0.20	
					MADE GROUND - Firm, brown and light brown, slightly gravelly, silty, slightly organic CLAY. Gravel is angular to sub-rounded flint and brick fragments.			
0.40	D2						0.50	
0.40	ES2							
					Soft, brown and blue-grey, slightly sandy, silty, slightly organic CLAY.			
0.80	D3							
0.80	ES3							
0.80	V1	(33)						
1.00	D4							
1.00	ES4							
1.20-2.00	U1							
1.50	D5							
1.50	ES5							
1.80	D6							
1.80	ES6							
2.00-3.00	U2		▼c ▽ ▼s ▼s		...Becoming very soft below 2.00m depth			
2.30	D7							
2.30	ES7				(TIDAL FLAT DEPOSIT)			
2.60	D8							
2.60	ES8						2.70	
					Brown, slightly clayey, silty SAND.			
					(TIDAL FLAT DEPOSIT)			
3.00	D9						3.00	
3.00	ES9				Hole completed at 3.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Roots observed to 0.80m depth
3. Slight hydrocarbon odour at 0.80m to 1.50m depth
4. Gas monitoring standpipe installed to 2.80m depth

Project No 15075c

Scale 1:25

Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
1	2.00		seepage			14/08/23	2.80		dry
						23/08/23	2.80	1.00	1.96
						30/08/23	2.80	1.00	2.02
						06/09/23	2.80	1.00	2.09

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: PEAR TREE FARM, ST. JAMES ROAD, LONG SUTTON

WINDOW SAMPLE
WS3

Date: 14/08/23

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.20 0.20	D1 ES1				MADE GROUND - Brown and red brown, silty, sandy GRAVEL with occasional cobbles of concrete. Gravel is angular to sub-rounded flint and brick fragments.		0.40	
0.60 0.60	D2 ES2				MADE GROUND - Firm, brown and light grey, slightly gravelly, silty, slightly organic CLAY. Gravel is angular to sub-rounded flint, brick and occasional shell fragments.		1.30	
1.00 1.00	D3 ES3							
1.50 1.50	D4 ES4				Soft, grey, dark grey and black, silty, organic CLAY. (TIDAL FLAT DEPOSIT)		1.80	
2.00 2.00	D5 ES5		▼s ▼s ▼s		Very soft, brown and dark grey, slightly sandy SILT/ CLAY. Sand is fine grained. (TIDAL FLAT DEPOSIT)		2.50	
2.60 2.60	D6 ES6				Brown and light brown, silty SAND. Sand is fine and medium grained. (TIDAL FLAT DEPOSIT)		3.00	
3.00 3.00	D7 ES7				Hole completed at 3.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Roots observed to 0.40m depth
3. Gas monitoring standpipe installed to 3.00m depth

Project No
15075c

Scale 1:25

Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						14/08/23	3.00		dry
						23/08/23	3.00	1.00	2.01
						30/08/23	3.00	1.00	2.07
						06/09/23	3.00	1.00	2.13

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: **PEAR TREE FARM, ST. JAMES ROAD, LONG SUTTON**

WINDOW SAMPLE
WS4

Date: 14/08/23

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m

Ground Level:

Samples and In-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.20	D1				MADE GROUND - Brown and red brown, slightly silty, gravelly SAND. Gravel is angular to sub-rounded flint, concrete and brick fragments.			
0.20	ES1						0.30	
					Firm, brown, light grey and grey, slightly sandy, silty CLAY.			
0.60	D2				(TIDAL FLAT DEPOSIT)			
0.60	ES2						0.70	
0.60	V1	(74)			Firm, brown and grey, silty CLAY.			
1.00	D3							
1.00	ES3							
					(TIDAL FLAT DEPOSIT)			
1.20-2.00	U1						1.50	
1.60	D4				Very soft, light grey, light brown and orange brown, silty, slightly organic CLAY with occasional lenses of peat.			
1.60	ES4							
2.00	D5				(TIDAL FLAT DEPOSIT)			
2.00-3.00	U2							
2.00	ES5		▼s					
			▼s					
			▼s				2.30	
					Very soft, grey and dark grey, silty, organic CLAY.			
2.50	D6				(TIDAL FLAT DEPOSIT)			
2.50	ES6						2.60	
					Brown and light grey, slightly silty SAND. Sand is fine grained.			
					(TIDAL FLAT DEPOSIT)			
3.00	D7						3.00	
3.00	ES7							
					Hole completed at 3.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. No roots observed
3. Gas monitoring standpipe installed to 3.00m depth

Project No
15075c

Scale 1:25

Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						14/08/23	3.00		dry
						23/08/23	3.00	1.00	2.08
						30/08/23	3.00	1.00	2.13
						06/09/23	3.00	1.00	2.18

GROUND ENGINEERING LIMITED

Tel: 01733-566566
www.groundengineering.co.uk

Site: PEAR TREE FARM, ST. JAMES ROAD, LONG SUTTON

WINDOW SAMPLE
WS5

Date: 14/08/23

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m

Ground Level:

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.10	D1				MADE GROUND - Brown, slightly clayey, sandy GRAVEL with occasional cobbles of concrete. Gravel is angular to sub-rounded flint and brick fragments.		0.20	
0.10	ES1				Stiff, brown and orange brown, slightly sandy, silty CLAY.			
0.50	D2							
0.50	ES2							
0.50	V1	(93)			(TIDAL FLAT DEPOSIT)		1.00	
1.10	D3				Firm, brown, orange brown and light grey, silty CLAY.			
1.10	ES3							
1.20-2.00	U1				(TIDAL FLAT DEPOSIT)		1.60	
1.70	D4				Firm, grey and dark brown, silty CLAY.			
1.70	ES4							
2.00	D5				...Becoming soft below 2.00m depth			
2.00-3.00	U2							
2.00	ES5				(TIDAL FLAT DEPOSIT)		2.60	
2.70	D6				Light brown and dark grey, slightly silty, slightly organic SAND. Sand is fine and medium grained.			
2.70	ES6				(TIDAL FLAT DEPOSIT)			
3.00	D7						3.00	
3.00	ES7				Hole completed at 3.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Roots observed to 0.20m depth
3. Slight hydrocarbon odour at 0.95m to 2.00m depth
4. Gas monitoring standpipe installed to 3.00m depth

Project No
15075c

Scale 1:25

Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
MP - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
1	3.00		seepage			14/08/23	3.00		dry
						23/08/23	3.00	1.00	2.18
						20/08/23	3.00	1.00	2.20
						06/09/23	3.00	1.00	2.28

Groundwater & Gas Monitoring Record

Site **Pear Tree Farm, St. James Road, Long Sutton**

Report Ref: **C15075**

Date	Borehole No.	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb) & relative pressure	Depth of Well (mbgl)	Depth to Ground water (mbgl)	Notes
		Peak	Steady	Peak	Steady	Min.	Max.					
23/08/23	WS1	<0.1	<0.1	1.9	1.9	14.9	14.9	<0.1	1020	3.00	2.21	Tenax tube installed
	WS2	<0.1	<0.1	1.3	1.3	16.9	16.9	<0.1	1020	2.80	1.96	Tenax tube installed
	WS3	<0.1	<0.1	0.6	0.6	18.4	18.4	<0.1	1020	3.00	2.01	Tenax tube installed
	WS4	<0.1	<0.1	1.0	1.0	18.7	18.7	<0.1	1020	3.00	2.08	Tenax tube installed
	WS5	<0.1	<0.1	3.3	3.3	18.1	18.1	<0.1	1020	3.00	2.18	Tenax tube installed

LEL – Lower Explosive Limit

Groundwater & Gas Monitoring Record

Site **Pear Tree Farm, St. James Road, Long Sutton**

Report Ref: **C15075**

Date	Borehole No.	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb) & relative pressure	Depth of Well (mbgl)	Depth to Ground water (mbgl)	Notes
		Peak	Steady	Peak	Steady	Min.	Max.					
30/08/23	WS1	<0.1	<0.1	3.2	3.2	11.6	11.6	<0.1	1008	3.00	2.03	Tenax tube collected
	WS2	<0.1	<0.1	1.5	1.5	18.2	18.2	<0.1	1008	2.80	2.02	Tenax tube collected
	WS3	<0.1	<0.1	0.8	0.8	18.9	18.9	<0.1	1008	3.00	2.07	Tenax tube collected
	WS4	<0.1	<0.1	1.1	1.1	19.1	19.1	<0.1	1007	3.00	2.13	Tenax tube collected
	WS5	<0.1	<0.1	2.9	2.9	18.4	18.4	<0.1	1007	3.00	2.20	Tenax tube collected

LEL – Lower Explosive Limit

Groundwater & Gas Monitoring Record

Site **Pear Tree Farm, St. James Road, Long Sutton**

Report Ref: **C15075**

Date	Borehole No.	Methane (% v/v)		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb) & relative pressure	Depth of Well (mbgl)	Depth to Ground water (mbgl)	Notes
		Peak	Steady	Peak	Steady	Min.	Max.					
06/09/23	WS1	<0.1	<0.1	4.0	4.0	10.0	10.0	<0.1	1021	3.00	2.11	
	WS2	<0.1	<0.1	1.8	1.8	17.9	17.9	<0.1	1021	2.80	2.09	
	WS3	<0.1	<0.1	1.1	1.1	18.3	18.3	<0.1	1021	3.00	2.13	
	WS4	<0.1	<0.1	1.2	1.2	19.4	19.4	<0.1	1021	3.00	2.18	
	WS5	<0.1	<0.1	3.7	3.7	17.5	17.5	<0.1	1021	3.00	2.28	

LEL – Lower Explosive Limit

Appendix 2

Laboratory Chemical Test Results

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

mCERTS THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

Amended Report

Report No.:	23-27387-2		
Initial Date of Issue:	18-Aug-2023	**Date of Re-Issue:**	28-Aug-2023
Re-Issue Details:	This report has been revised and directly supersedes 23-27387-1 in its entirety		
Client	Ground Engineering Limited		
Client Address:	Newark Road Peterborough Cambridgeshire PE1 5UA		
Contact(s):	Simon Weatherley		
Project	SW/C15075 PEAR TREE FARM, LONG SUTTON		
Quotation No.:		**Date Received:**	15-Aug-2023
Order No.:	SW/C15075	**Date Instructed:**	15-Aug-2023
No. of Samples:	32		
Turnaround (Wkdays):	9	**Results Due:**	25-Aug-2023
Date Approved:	28-Aug-2023		
Approved By:			
Details:	Stuart Henderson, Technical Manager		

Results - Soil

Project: SW/C15075 PEAR TREE FARM, LONG SUTTON

Client: Ground Engineering Limited				**Chemtest Job No.:**	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387
Quotation No.:				**Chemtest Sample ID.:**	1688647	1688648	1688649	1688650	1688651	1688652	1688653	1688654
Order No.: SW/C15075				Client Sample Ref.:	ES3	ES4	ES5	ES6	ES7	ES8	ES2	ES3
				Sample Location:	WS1	WS1	WS1	WS1	WS1	WS1	WS2	WS2
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.60	0.90	1.50	2.00	2.50	3.00	0.40	0.80
				Date Sampled:	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	20	33	23	25	28	26	18	22
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Grey
Other Material	N	2040		N/A	Stones	Stones	Stones and Roots	Stones	Stones	None	Stones	None
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05								
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05								
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05								
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10								
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05								
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25								
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00								
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00								
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00								
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00								
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00								
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00								
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00								
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05								
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05								
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05								
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00								
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00								
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00								
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00								
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00								
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00								
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00								
Total VPH >C5-C10	U	2780	mg/kg	0.50								
Total EPH >C10-C35	U	2690	mg/kg	10.00								
Total EPH >C10-C40	N	2690	mg/kg	10.00								
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	600

Results - Soil

Project: SW/C15075 PEAR TREE FARM, LONG SUTTON

Client: Ground Engineering Limited					Chemtest Job No.:	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387
Quotation No.:					Chemtest Sample ID.:	1688655	1688656	1688657	1688658	1688659	1688660	1688661	1688662
Order No.: SW/C15075					Client Sample Ref.:	ES4	ES5	ES6	ES7	ES8	ES9	ES2	ES3
					Sample Location:	WS2	WS2	WS2	WS2	WS2	WS2	WS3	WS3
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	1.00	1.50	1.80	2.30	2.60	3.00	0.60	1.00
					Date Sampled:	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Moisture	N	2030	%	0.020		23	24	23	25	25	21	21	20
Soil Colour	N	2040		N/A		Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A		Roots and Stones	Stones	Stones and Roots	Stones	None	None	Stones	Stones
Soil Texture	N	2040		N/A		Clay	Clay	Clay	Clay	Clay	Sand	Clay	Clay
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05		< 0.05							
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05		< 0.05							
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05							
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10		< 0.10							
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05		1.1							
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25		1.1							
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00		160							
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00		660							
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00		1200							
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00		490							
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00		13							
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00		2500							
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00		2600							
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05		< 0.05							
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05		< 0.05							
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05		< 0.05							
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25		< 0.25							
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00		95							
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00		780							
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00		420							
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00		74							
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00		5.8							
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00		1400							
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00		1400							
Total VPH >C5-C10	U	2780	mg/kg	0.50		1.1							
Total EPH >C10-C35	U	2690	mg/kg	10.00		3900							
Total EPH >C10-C40	N	2690	mg/kg	10.00		3900							
Total TPH >C6-C40	M	2670	mg/kg	10		1900	730	< 10	< 10	320	< 10	< 10	< 10

Results - Soil

Project: SW/C15075 PEAR TREE FARM, LONG SUTTON

Client: Ground Engineering Limited				**Chemtest Job No.:**	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387
Quotation No.:				**Chemtest Sample ID.:**	1688663	1688664	1688665	1688666	1688667	1688668	1688669	1688670
Order No.: SW/C15075				Client Sample Ref.:	ES4	ES5	ES6	ES7	ES2	ES3	ES4	ES5
				Sample Location:	WS3	WS3	WS3	WS3	WS4	WS4	WS4	WS4
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.50	2.00	2.60	3.00	0.60	1.00	1.60	2.00
				Date Sampled:	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	28	24	22	21	21	30	29	27
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	Stones	Stones	None	Stones and Roots	Stones	None	None
Soil Texture	N	2040		N/A	Clay	Clay	Clay	Sand	Clay	Clay	Clay	Clay
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05								
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05								
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05								
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10								
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05								
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25								
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00								
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00								
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00								
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00								
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00								
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00								
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00								
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05								
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05								
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05								
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25								
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00								
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00								
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00								
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00								
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00								
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00								
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00								
Total VPH >C5-C10	U	2780	mg/kg	0.50								
Total EPH >C10-C35	U	2690	mg/kg	10.00								
Total EPH >C10-C40	N	2690	mg/kg	10.00								
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10

Results - Soil

Project: SW/C15075 PEAR TREE FARM, LONG SUTTON

Client: Ground Engineering Limited												
				Chemtest Job No.:	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387	23-27387
Quotation No.:				Chemtest Sample ID.:	1688671	1688672	1688673	1688674	1688675	1688676	1688677	1688678
Order No.: SW/C15075				Client Sample Ref.:	ES6	ES7	ES2	ES3	ES4	ES5	ES6	ES7
				Sample Location:	WS4	WS4	WS5	WS5	WS5	WS5	WS5	WS5
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	2.50	3.00	0.50	1.10	1.70	2.00	2.70	3.00
				Date Sampled:	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023	14-Aug-2023
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	34	21	22	26	31	26	30	21
Soil Colour	N	2040		N/A	Grey	Brown	Brown	Brown	Grey	Brown	Brown	Brown
Other Material	N	2040		N/A	Stones	None	None	Stones	None	Stones	Roots	None
Soil Texture	N	2040		N/A	Clay	Sand	Clay	Clay	Clay	Clay	Clay	Sand
Aliphatic VPH >C5-C6	U	2780	mg/kg	0.05				< 0.05				
Aliphatic VPH >C6-C7	U	2780	mg/kg	0.05				< 0.05				
Aliphatic VPH >C7-C8	U	2780	mg/kg	0.05				< 0.05				
Aliphatic VPH >C6-C8 (Sum)	N	2780	mg/kg	0.10				< 0.10				
Aliphatic VPH >C8-C10	U	2780	mg/kg	0.05				< 0.05				
Total Aliphatic VPH >C5-C10	U	2780	mg/kg	0.25				< 0.25				
Aliphatic EPH >C10-C12	M	2690	mg/kg	2.00				16				
Aliphatic EPH >C12-C16	M	2690	mg/kg	1.00				50				
Aliphatic EPH >C16-C21	M	2690	mg/kg	2.00				68				
Aliphatic EPH >C21-C35	M	2690	mg/kg	3.00				440				
Aliphatic EPH >C35-C40	N	2690	mg/kg	10.00				160				
Total Aliphatic EPH >C10-C35	M	2690	mg/kg	5.00				570				
Total Aliphatic EPH >C10-C40	N	2690	mg/kg	10.00				730				
Aromatic VPH >C5-C7	U	2780	mg/kg	0.05				< 0.05				
Aromatic VPH >C7-C8	U	2780	mg/kg	0.05				< 0.05				
Aromatic VPH >C8-C10	U	2780	mg/kg	0.05				< 0.05				
Total Aromatic VPH >C5-C10	U	2780	mg/kg	0.25				< 0.25				
Aromatic EPH >C10-C12	U	2690	mg/kg	1.00				6.4				
Aromatic EPH >C12-C16	U	2690	mg/kg	1.00				32				
Aromatic EPH >C16-C21	U	2690	mg/kg	2.00				36				
Aromatic EPH >C21-C35	U	2690	mg/kg	2.00				150				
Aromatic EPH >C35-C40	N	2690	mg/kg	1.00				12				
Total Aromatic EPH >C10-C35	U	2690	mg/kg	5.00				220				
Total Aromatic EPH >C10-C40	N	2690	mg/kg	10.00				230				
Total VPH >C5-C10	U	2780	mg/kg	0.50				< 0.50				
Total EPH >C10-C35	U	2690	mg/kg	10.00				790				
Total EPH >C10-C40	N	2690	mg/kg	10.00				960				
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	< 10	340	430	200	130	380	95

Test Methods

SOP	Title	Parameters included	Method summary
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2690	EPH A/A Split	Aliphatics: >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C40 Aromatics: >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C40	Acetone/Heptane extraction / GCxGC FID detection
2780	VPH A/A Split	Aliphatics: >C5–C6, >C6–C7,>C7–C8,>C8-C10 Aromatics: >C5–C7,>C7-C8,>C8–C10	Water extraction / Headspace GCxGC FID detection

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.: 23-29029-1

Initial Date of Issue: 06-Sep-2023

Re-Issue Details:

Client Ground Engineering Limited

Client Address: Newark Road
Peterborough
Cambridgeshire
PE1 5UA

Contact(s): Simon Weatherley

Project SW/C15075 Pear Tree Farm

Quotation No.: Q23-32107 **Date Received:** 30-Aug-2023

Order No.: SW/C15075 **Date Instructed:** 30-Aug-2023

No. of Samples: 5

Turnaround (Wkdays): 7 **Results Due:** 07-Sep-2023

Date Approved: 06-Sep-2023

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Gas

Project: SW/C15075 Pear Tree Farm

Client: Ground Engineering Limited					**Chemtest Job No.:**	23-29029	23-29029	23-29029	23-29029
Quotation No.: Q23-32107					**Chemtest Sample ID.:**	1695340	1695341	1695342	1695343	1695344
					Sample Location:	WS1	WS2	WS3	WS4	WS5
					Sample Type:	GAS	GAS	GAS	GAS	GAS
					Top Depth (m):	0.15	0.15	0.15	0.15	0.15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Trichlorofluoromethane	N	3760	µg/m³	N/A	<1.4	3.9	1.9	<1.4	<1.4
Propanone	N	3760	µg/m³	N/A	<5.9	<5.9	<5.9	<5.9	<5.9
Diethyl ether	N	3760	µg/m³	N/A	<1.5	<1.5	<1.5	<1.5	<1.5
1,1-Dichloroethene	N	3760	µg/m³	N/A	<1	<1	<1	<1	<1
Carbon disulfide	N	3760	µg/m³	N/A	<0.6	<0.6	<0.6	<0.6	<0.6
Allyl chloride	N	3760	µg/m³	N/A	<1.5	<1.5	<1.5	<1.5	<1.5
Dichloromethane	N	3760	µg/m³	N/A	<0.9	<0.9	<0.9	<0.9	<0.9
trans-1,2-Dichloroethene	N	3760	µg/m³	N/A	<1	<1	<1	<1	<1
Methyl-tertiary-butyl ether	N	3760	µg/m³	N/A	<0.9	<0.9	<0.9	<0.9	<0.9
1,1-Dichloroethane	N	3760	µg/m³	N/A	<1	<1	<1	<1	<1
2-Butanone	N	3760	µg/m³	N/A	<7.3	<7.3	<7.3	<7.3	<7.3
cis-1,2-Dichloroethene	N	3760	µg/m³	N/A	<1	<1	<1	<1	<1
Trichloromethane	N	3760	µg/m³	N/A	<1	<1	4.8	<1	<1
Tetrahydrofuran	N	3760	µg/m³	N/A	<14.6	<14.6	<14.6	<14.6	<14.6
1,1,1-Trichloroethane	N	3760	µg/m³	N/A	<1.1	<1.1	<1.1	<1.1	<1.1
1,2-Dichloroethane	N	3760	µg/m³	N/A	<1	<1	<1	<1	<1
1-Chlorobutane	N	3760	µg/m³	N/A	<0.9	<0.9	<0.9	<0.9	<0.9
1,1-Dichloropropene	N	3760	µg/m³	N/A	<1.1	<1.1	<1.1	<1.1	<1.1
Benzene	N	3760	µg/m³	N/A	10.1	6.8	6.8	7.3	9.0
Tetrachloromethane	N	3760	µg/m³	N/A	<1.5	<1.5	<1.5	<1.5	<1.5
2-Nitropropane	N	3760	µg/m³	N/A	<1.8	<1.8	<1.8	<1.8	<1.8
Methyl methacrylate	N	3760	µg/m³	N/A	<2	<2	<2	<2	<2
2-Hexanone	N	3760	µg/m³	N/A	<3	<3	<3	<3	<3
4-Methyl-2-pentanone	N	3760	µg/m³	N/A	<5.1	<5.1	<5.1	<5.1	<5.1
Trichloroethene	N	3760	µg/m³	N/A	<1.3	<1.3	<1.3	<1.3	7.6
Dibromomethane	N	3760	µg/m³	N/A	<1.7	<1.7	<1.7	<1.7	<1.7
Bromodichloromethane	N	3760	µg/m³	N/A	<1.6	<1.6	<1.6	<1.6	<1.6
trans-1,3-Dichloropropene	N	3760	µg/m³	N/A	<1.1	<1.1	<1.1	<1.1	<1.1
cis-1,3-Dichloropropene	N	3760	µg/m³	N/A	<1.1	<1.1	<1.1	<1.1	<1.1
Toluene	N	3760	µg/m³	N/A	6.5	5.6	5.0	4.8	7.3
1,1,2-Trichloroethane	N	3760	µg/m³	N/A	<1.3	<1.3	<1.3	<1.3	<1.3
1,3-Dichloropropane	N	3760	µg/m³	N/A	<1.1	<1.1	<1.1	<1.1	<1.1
Ethyl methacrylate	N	3760	µg/m³	N/A	<2.3	<2.3	<2.3	<2.3	<2.3
Dibromochloromethane	N	3760	µg/m³	N/A	<2.1	<2.1	<2.1	<2.1	<2.1
1,2-Dibromoethane	N	3760	µg/m³	N/A	<1.9	<1.9	<1.9	<1.9	<1.9
Tetrachloroethene	N	3760	µg/m³	N/A	<1.7	<1.7	<1.7	<1.7	<1.7
Chlorobenzene	N	3760	µg/m³	N/A	<0.9	1.4	<0.9	<0.9	<0.9
1,1,1,2-Tetrachloroethane	N	3760	µg/m³	N/A	<1.7	<1.7	<1.7	<1.7	<1.7
Ethylbenzene	N	3760	µg/m³	N/A	4.3	14.8	3.6	2.8	7.3
m- & p-Xylene	N	3760	µg/m³	N/A	8.4	23.6	6.7	5.4	8.4
Styrene	N	3760	µg/m³	N/A	54.3	25.9	26.5	23.0	14.9

Results - Gas

Project: SW/C15075 Pear Tree Farm

Client: Ground Engineering Limited					**Chemtest Job No.:**	23-29029	23-29029	23-29029	23-29029	23-29029
Quotation No.: Q23-32107					**Chemtest Sample ID.:**	1695340	1695341	1695342	1695343	1695344
					Sample Location:	WS1	WS2	WS3	WS4	WS5
					Sample Type:	GAS	GAS	GAS	GAS	GAS
					Top Depth (m):	0.15	0.15	0.15	0.15	0.15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Bromoform	N	3760	µg/m³	N/A		<2.5	<2.5	<2.5	<2.5	<2.5
o-Xylene	N	3760	µg/m³	N/A		2.4	17.2	2.4	1.5	3.2
1,1,2,2-Tetrachloroethane	N	3760	µg/m³	N/A		<1.7	<1.7	<1.7	<1.7	<1.7
1,2,3-Trichloropropane	N	3760	µg/m³	N/A		<1.5	<1.5	<1.5	<1.5	<1.5
Isopropylbenzene	N	3760	µg/m³	N/A		<1.2	11.2	<1.2	<1.2	2.9
trans-1,4-Dichloro-2-butene	N	3760	µg/m³	N/A		<2.5	<2.5	<2.5	<2.5	<2.5
Bromobenzene	N	3760	µg/m³	N/A		<1.6	<1.6	<1.6	<1.6	<1.6
2-Chlorotoluene	N	3760	µg/m³	N/A		<1.3	<1.3	<1.3	<1.3	<1.3
n-Propylbenzene	N	3760	µg/m³	N/A		<1.2	9.5	<1.2	<1.2	1.5
4-Chlorotoluene	N	3760	µg/m³	N/A		<1.3	<1.3	<1.3	<1.3	<1.3
1,3,5-Trimethylbenzene	N	3760	µg/m³	N/A		<1.2	16.3	1.7	<1.2	1.5
Pentachloroethane	N	3760	µg/m³	N/A		<4	<4	<4	<4	<4
1,2,4-Trimethylbenzene	N	3760	µg/m³	N/A		2.2	25.0	3.4	1.7	4.4
tert-Butylbenzene	N	3760	µg/m³	N/A		<1.4	1.9	<1.4	<1.4	<1.4
1,3-Dichlorobenzene	N	3760	µg/m³	N/A		<1.5	<1.5	<1.5	<1.5	<1.5
sec-Butylbenzene	N	3760	µg/m³	N/A		<1.4	9.8	<1.4	<1.4	<1.4
1,4-Dichlorobenzene	N	3760	µg/m³	N/A		<1.5	<1.5	<1.5	<1.5	<1.5
4-Isopropyltoluene	N	3760	µg/m³	N/A		2.7	6.2	1.9	1.9	2.4
1,2-Dichlorobenzene	N	3760	µg/m³	N/A		<1.5	<1.5	<1.5	<1.5	<1.5
n-Butylbenzene	N	3760	µg/m³	N/A		<1.4	1.9	<1.4	<1.4	<1.4
Hexachloroethane	N	3760	µg/m³	N/A		<4.7	<4.7	<4.7	<4.7	<4.7
1,2-Dibromo-3-chloropropane	N	3760	µg/m³	N/A		<2.4	<2.4	<2.4	<2.4	<2.4
1,2,4-Trichlorobenzene	N	3760	µg/m³	N/A		<1.8	<1.8	<1.8	<1.8	<1.8
Naphthalene	N	3760	µg/m³	N/A		0.8	1.3	0.8	0.5	0.8
1,2,3-Trichlorobenzene	N	3760	µg/m³	N/A		<1.8	<1.8	<1.8	<1.8	<1.8
Hexachlorobutadiene	N	3760	µg/m³	N/A		<2.6	<2.6	<2.6	<2.6	<2.6

Tentatively Identified Compounds									
1,1,4-Trimethylcyclohexane	N	3760	µg/m³	N/A	N/A	3.7	N/A	N/A	N/A
1-Ethyl-4-methylcyclohexane	N	3760	µg/m³	N/A	3.0	N/A	N/A	N/A	N/A
1-Heptene	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	21.0
1-Hexanol, 2-ethyl-	N	3760	µg/m³	N/A	15.6	N/A	N/A	N/A	N/A
1-Methyl-4-(1-methylethyl)-cyclohexane	N	3760	µg/m³	N/A	10.3	N/A	N/A	N/A	N/A
3-Octene	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	31.6
4-Carene	N	3760	µg/m³	N/A	10.4	N/A	N/A	N/A	N/A
7-Tetradecanol	N	3760	µg/m³	N/A	N/A	N/A	1.8	N/A	N/A
Alpha.-Pinene	N	3760	µg/m³	N/A	N/A	N/A	N/A	11.8	N/A
Benzene, (2-methyl-1-propenyl)-	N	3760	µg/m³	N/A	N/A	8.4	N/A	N/A	N/A
Benzene, (3-methyl-2-butenyl)-	N	3760	µg/m³	N/A	N/A	1.6	N/A	N/A	N/A
Benzene, 1,2,3-trimethyl-	N	3760	µg/m³	N/A	N/A	24.0	N/A	N/A	N/A
Benzene, 1,2-diethyl-	N	3760	µg/m³	N/A	N/A	4.2	N/A	N/A	N/A

Results - Gas

Project: SW/C15075 Pear Tree Farm

Client: Ground Engineering Limited					**Chemtest Job No.:**	23-29029	23-29029	23-29029	23-29029
Quotation No.: Q23-32107					**Chemtest Sample ID.:**	1695340	1695341	1695342	1695343	1695344
					Sample Location:	WS1	WS2	WS3	WS4	WS5
					Sample Type:	GAS	GAS	GAS	GAS	GAS
					Top Depth (m):	0.15	0.15	0.15	0.15	0.15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Benzene, 1,3-dimethyl-	N	3760	µg/m³	N/A	7.7	N/A	4.4	4.0	N/A
Benzene, 1-ethyl-2-methyl-	N	3760	µg/m³	N/A	N/A	21.7	N/A	N/A	N/A
Benzene, 1-ethyl-3-methyl-	N	3760	µg/m³	N/A	N/A	N/A	3.4	N/A	N/A
Benzene, 1-methyl-3-propyl-	N	3760	µg/m³	N/A	N/A	7.9	N/A	N/A	N/A
Benzene, 1-methyl-4-(2-propenyl)-	N	3760	µg/m³	N/A	N/A	1.5	N/A	N/A	N/A
Benzene, 1-methyl-4-propyl-	N	3760	µg/m³	N/A	N/A	7.3	N/A	N/A	N/A
Benzene, 4-ethyl-1,2-dimethyl-	N	3760	µg/m³	N/A	N/A	1.4	N/A	N/A	N/A
Beta.-Phellandrene	N	3760	µg/m³	N/A	4.0	4.9	2.3	N/A	N/A
Bicyclo[2.2.2]octane, 2-methyl-	N	3760	µg/m³	N/A	N/A	17.9	N/A	N/A	N/A
Bicyclo[4.2.0]octa-1,3,5-triene	N	3760	µg/m³	N/A	N/A	N/A	9.9	N/A	N/A
Cyclodecene, 1-methyl-	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	1.1
Cycloheptane, methyl-	N	3760	µg/m³	N/A	N/A	1.7	N/A	N/A	N/A
Cyclohexane	N	3760	µg/m³	N/A	1.7	6.4	7.0	1.3	16.1
Cyclohexane, 1,1,2-trimethyl-	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	44.1
Cyclohexane, 1,1,3,5-tetramethyl-	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	38.8
Cyclohexane, 1,1,3-trimethyl-	N	3760	µg/m³	N/A	N/A	51.6	N/A	N/A	111.5
Cyclohexane, 1,2,3-trimethyl-	N	3760	µg/m³	N/A	4.4	12.8	N/A	N/A	N/A
Cyclohexane, 1,2,4-trimethyl-	N	3760	µg/m³	N/A	2.9	14.5	N/A	N/A	24.1
Cyclohexane, 1,2-dimethyl-	N	3760	µg/m³	N/A	N/A	9.9	N/A	N/A	18.6
Cyclohexane, 1,3,5-trimethyl-	N	3760	µg/m³	N/A	N/A	5.7	N/A	N/A	N/A
Cyclohexane, 1,3-dimethyl-	N	3760	µg/m³	N/A	N/A	11.4	N/A	N/A	N/A
Cyclohexane, 1,4-dimethyl-	N	3760	µg/m³	N/A	N/A	7.3	N/A	N/A	N/A
Cyclohexane, 1-ethyl-2,3-dimethyl-	N	3760	µg/m³	N/A	N/A	5.1	N/A	N/A	N/A
Cyclohexane, 1-ethyl-2-methyl-	N	3760	µg/m³	N/A	N/A	28.4	3.4	N/A	38.8
Cyclohexane, 1-methyl-4-(1-methylethyl)-	N	3760	µg/m³	N/A	N/A	N/A	4.8	5.5	N/A
Cyclohexane, ethyl-	N	3760	µg/m³	N/A	N/A	N/A	1.1	N/A	N/A
Cyclohexane, methyl-	N	3760	µg/m³	N/A	1.5	11.3	N/A	N/A	N/A
Cyclohexane, undecyl-	N	3760	µg/m³	N/A	N/A	N/A	5.5	N/A	N/A
Cyclohexene, 3-methyl-	N	3760	µg/m³	N/A	N/A	9.8	N/A	N/A	N/A
Cyclooctane, 1,2-diethyl-	N	3760	µg/m³	N/A	3.1	N/A	N/A	N/A	N/A
Cyclooctene, 3-methyl-	N	3760	µg/m³	N/A	N/A	N/A	2.4	N/A	N/A
Cyclopentane, (2-methylpropyl)-	N	3760	µg/m³	N/A	N/A	N/A	N/A	N/A	9.5
Cyclopentane, 1,1,3,4-tetramethyl-	N	3760	µg/m³	N/A	N/A	1.0	N/A	N/A	N/A
Cyclopentane, 1,2,3-trimethyl-	N	3760	µg/m³	N/A	N/A	3.0	N/A	N/A	10.4
Cyclopentane, 1,2,4-trimethyl-	N	3760	µg/m³	N/A	N/A	1.7	N/A	N/A	9.4
Cyclopentane, 1-ethyl-3-methyl-	N	3760	µg/m³	N/A	7.1	2.4	1.9	4.3	6.5
Cyclopentane, 1-hexyl-3-methyl-	N	3760	µg/m³	N/A	N/A	N/A	1.4	2.3	N/A
Cyclopentane, methyl-	N	3760	µg/m³	N/A	13.7	17.8	24.8	10.3	23.7
Cyclopentane, pentyl-	N	3760	µg/m³	N/A	10.9	9.1	N/A	N/A	23.2
Cyclopentane, propyl-	N	3760	µg/m³	N/A	N/A	N/A	1.2	1.3	N/A
Cyclopropane, 1,2-dimethyl-1-pentyl-	N	3760	µg/m³	N/A	2.5	N/A	N/A	N/A	N/A

Results - Gas

Project: SW/C15075 Pear Tree Farm

Client: Ground Engineering Limited					**Chemtest Job No.:**	23-29029	23-29029	23-29029	23-29029	23-29029
Quotation No.: Q23-32107					**Chemtest Sample ID.:**	1695340	1695341	1695342	1695343	1695344
					Sample Location:	WS1	WS2	WS3	WS4	WS5
					Sample Type:	GAS	GAS	GAS	GAS	GAS
					Top Depth (m):	0.15	0.15	0.15	0.15	0.15
Determinand	**Accred.**	**SOP**	**Units**	**LOD**						
Decane	N	3760	µg/m³	N/A		112.9	60.0	42.1	64.6	48.9
Decane, 3,8-dimethyl-	N	3760	µg/m³	N/A		N/A	4.8	N/A	2.4	N/A
D-Limonene	N	3760	µg/m³	N/A		7.3	N/A	3.8	7.6	6.4
Dodecane	N	3760	µg/m³	N/A		30.7	12.3	11.0	18.0	5.8
Furan, 2-methyl-	N	3760	µg/m³	N/A		8.1	N/A	2.3	5.0	N/A
Furan, 3-methyl-	N	3760	µg/m³	N/A		N/A	2.3	N/A	N/A	N/A
Heptane	N	3760	µg/m³	N/A		17.6	N/A	N/A	3.5	N/A
Heptane, 2,4-dimethyl-	N	3760	µg/m³	N/A		5.8	1.9	N/A	4.9	N/A
Heptane, 2,6-dimethyl-	N	3760	µg/m³	N/A		N/A	4.1	N/A	N/A	N/A
Heptane, 2-methyl-	N	3760	µg/m³	N/A		2.1	3.6	N/A	1.2	N/A
Heptane, 3-methyl-	N	3760	µg/m³	N/A		15.7	N/A	4.2	8.7	N/A
Naphthalene, 1,2,3,4-tetrahydro-	N	3760	µg/m³	N/A		N/A	1.2	N/A	N/A	N/A
Naphthalene, decahydro-	N	3760	µg/m³	N/A		N/A	11.4	N/A	N/A	N/A
Naphthalene, decahydro-	N	3760	µg/m³	N/A		N/A	N/A	1.9	N/A	N/A
Naphthalene, decahydro-2-methyl-	N	3760	µg/m³	N/A		N/A	2.9	N/A	N/A	N/A
n-Hexane	N	3760	µg/m³	N/A		10.7	9.2	15.6	7.5	12.4
Nonane, 3-methyl-	N	3760	µg/m³	N/A		11.2	N/A	4.0	4.5	N/A
Octane	N	3760	µg/m³	N/A		147.8	44.5	49.1	91.7	145.8
Octane, 2,6-dimethyl-	N	3760	µg/m³	N/A		2.7	N/A	1.7	N/A	N/A
Octane, 2-methyl-	N	3760	µg/m³	N/A		N/A	N/A	2.0	1.2	N/A
Octane, 3-methyl-	N	3760	µg/m³	N/A		1.3	4.5	N/A	N/A	N/A
Octane, 4-methyl-	N	3760	µg/m³	N/A		9.5	N/A	N/A	4.7	N/A
o-Cymene	N	3760	µg/m³	N/A		2.3	5.7	N/A	N/A	N/A
Pentane	N	3760	µg/m³	N/A		5.1	N/A	N/A	3.4	N/A
Pentane, 3-ethyl-2-methyl-	N	3760	µg/m³	N/A		N/A	1.9	N/A	N/A	11.5
Pentane, 3-methyl-	N	3760	µg/m³	N/A		N/A	3.7	4.8	7.0	N/A
Spiro[4.5]decane	N	3760	µg/m³	N/A		3.4	N/A	N/A	N/A	N/A
Tetradecane	N	3760	µg/m³	N/A		6.2	30.0	2.2	3.6	N/A
trans-Decalin, 2-methyl-	N	3760	µg/m³	N/A		N/A	3.2	N/A	N/A	N/A
Undecane	N	3760	µg/m³	N/A		13.1	N/A	N/A	N/A	N/A
Undecane, 3-methyl-	N	3760	µg/m³	N/A		5.9	N/A	1.6	N/A	N/A
Undecane, 5-methyl-	N	3760	µg/m³	N/A		3.2	N/A	N/A	N/A	N/A

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com