



Report on (Phase 2) Ground Investigation

Land to the rear
MANOR OAKS
(Manor Road Nurseries)
MANOR ROAD
HAYLING ISLAND
PO11 0QL

For : Mr Chris Hurley

Report Ref: 667 / R02 9 (Rev1)

Dated: 25th January 2021

Director : D I Grant BSc (Hons) PhD

Geotechnical & Geoenvironmental Consultants

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Company Number 5335508. VAT No 871 353 031*

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MANOR OAKS
(Manor Road Nurseries)
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Report No 667 R02 Rev0

Revision	Date	Comment	Author
Rev 1	25 01 2021	Discovery Strategy Added	David Grant
Rev 0	22 01 2021	1 st Issue	David Grant

Prepared for Mr Chris Hurley
by Dig-Geotech Ltd

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1. INTRODUCTION.

Dig-Geotech Ltd was requested by Mr Chris Hurley to carry out a Phase 2 Ground Investigation at land to the rear of Manor Oaks (Manor Road Nurseries), Manor Road, Hayling Island. Redevelopment is for domestic housing. The works followed the recommendations of a previous Phase 1 Desk Study & Preliminary Ground Investigation (*Ref 1*).

This report summarises the ground investigation works carried out, presents the results and discusses the findings in relation to the proposed development.

2. THE SITE

2.1 Site Location and Topography

The site is located to the rear of Manor Oaks, Manor Road, Hayling Island (Figures 1 & 2). Access is via a track to the south of Manor Oaks. OS map information suggests the site to be at an elevation of about 6m OD. The site covers an area of about 0.28Ha.

At the time of the ground investigation, the area for development comprised an aluminium & steel framed glasshouse, former vegetable plots and a grassed area formerly used for caravan storage.

2.2 Geology

British Geological Survey (BGS) information shows the site to be underlain by superficial deposits of *River Terrace Deposits (undifferentiated)* - Sand, Silt and Clay over bedrock of *London Clay Formation – Clay, Silt & Sand*.

2.3 Proposed Development

Drawings showing the proposed development are enclosed as **Appendix A**. Nine new dwellings are proposed with driveways and associated landscaping. Each house shall have a private domestic garden.

No significant earthworks are currently proposed as part of the new development. However the developer has indicated that excavations for soakaway shall be needed in rear gardens and hence clean imported topsoil shall be used placed in all rear gardens.

2.4 Previous Reports

Dig-Geotech Ltd prepared a Desk Study & Preliminary Ground Investigation Report in late 2018 (*Ref 1*). The report showed the site to have been fields that

later became an orchard and then from about 1969 a nurseries. Since the early 2000's the nursery business declined and the site was used partly for caravan storage.

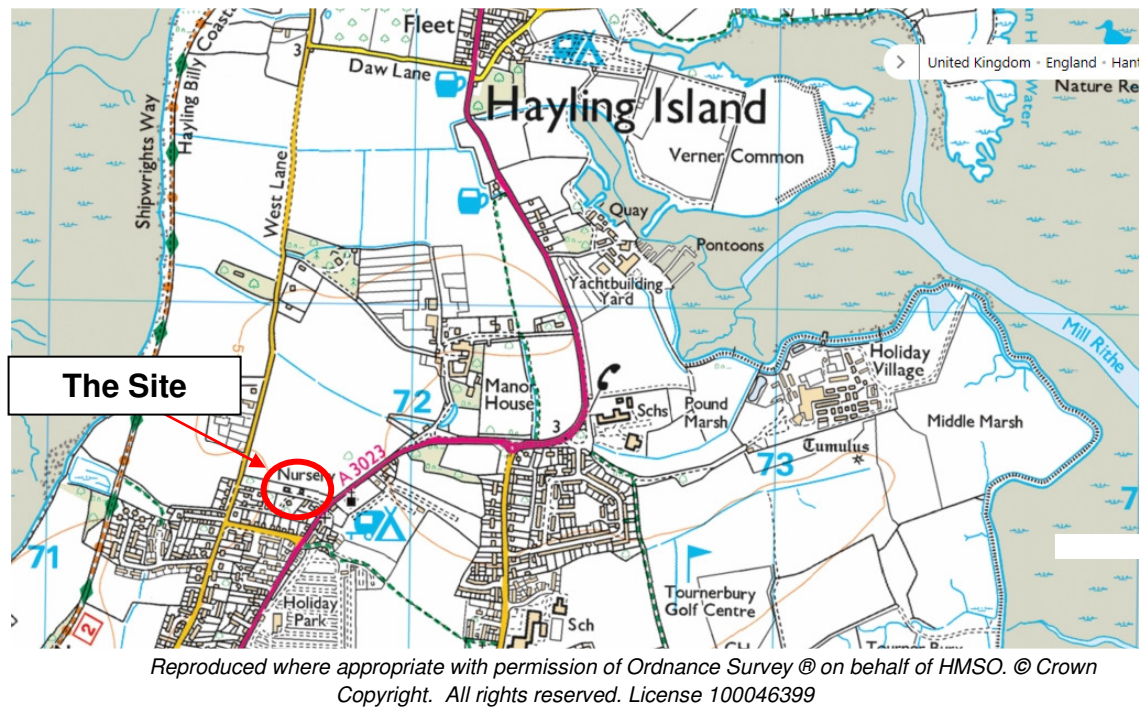


Figure 1 : Site Location

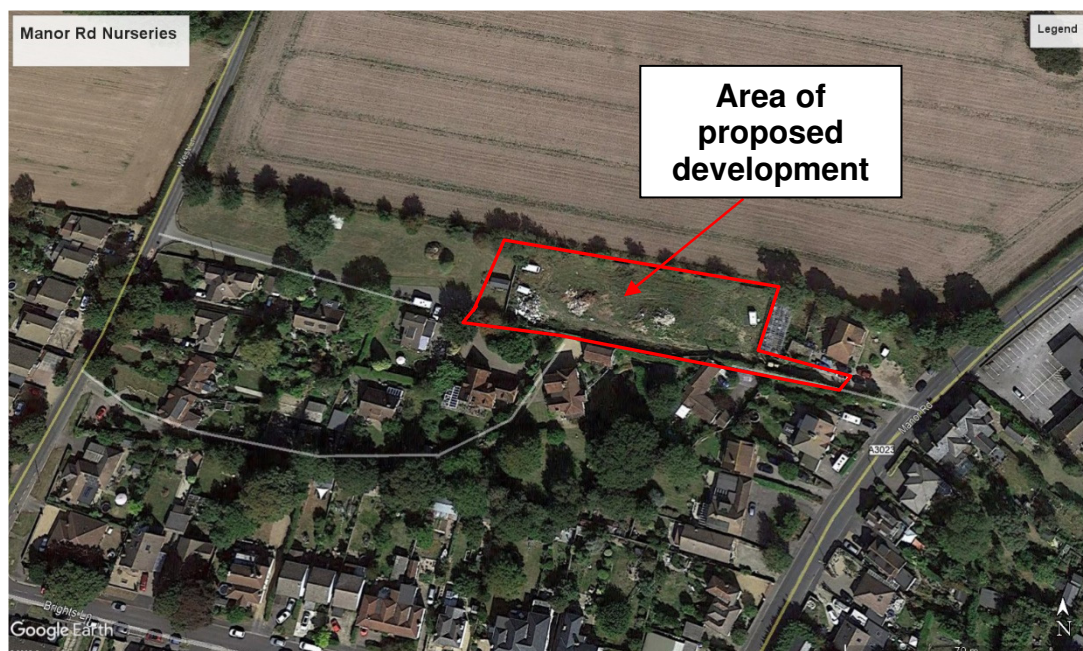


Figure 2 : Aerial Image

3. GROUND INVESTIGATION

3.1 Fieldworks

Ground investigation fieldworks were carried out on the 11th December 2020. The works comprised seven machine excavated trial pits (TP's 101 to 107).

Figure 3 shows the exploratory hole locations. The trial pits were to depths of up to 1.5m. Pits were inspected and logged by an experienced engineering geologist. Engineers' logs are enclosed as **Appendix B**.

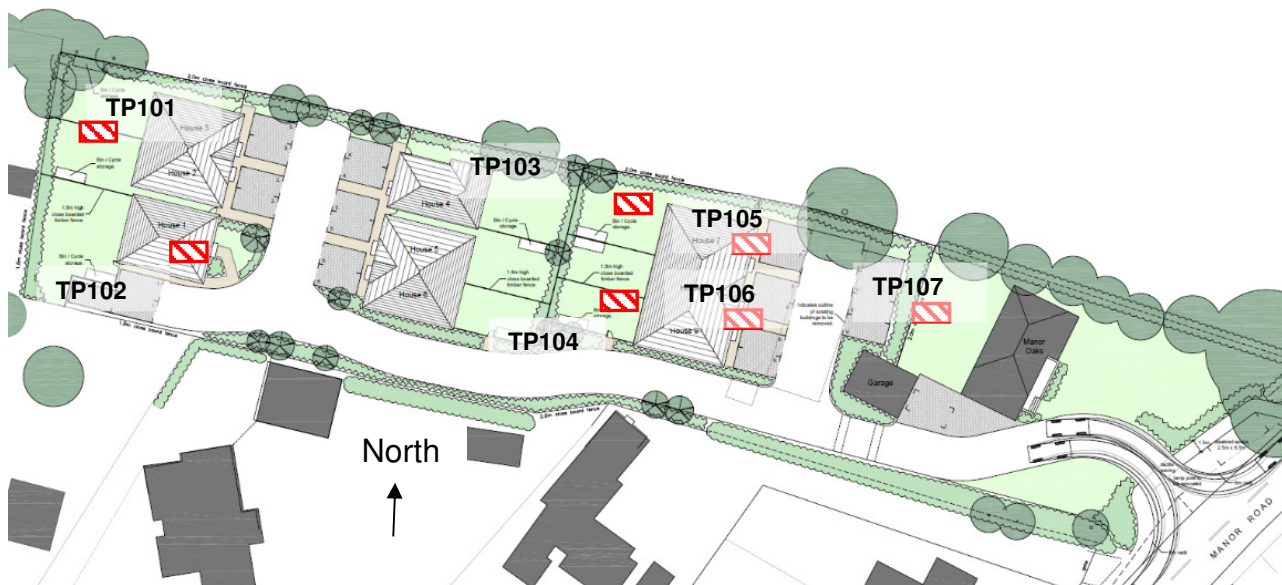


Figure 3 : Exploratory Hole Location Plan

3.2 Laboratory Contamination Testing

Sixteen soil samples were sent for laboratory contamination testing. Analyses was by Element Materials Technology Environmental UK Limited, a UKAS and MCerts accredited laboratory.

Testing included :-

- pH tests
- Total Organic Content;
- Metals suite. Arsenic, Beryllium, Cadmium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide (Total)

- Speciated Polyaromatic Hydrocarbons (PAH's) suites;
- Total Petroleum Hydrocarbons (TPH) suites. .
- Volatile Organic Compounds (VOC's) suites
- Asbestos screen.
- Pesticides suites.

The results of the laboratory chemical testing are enclosed as **Appendix C**.

3.3 Laboratory Geotechnical Testing

Laboratory geotechnical testing did not form a part of this investigation.

4. RESULTS

4.1 Ground conditions

The trial pits showed a topsoil to depths of between 0.10m to 0.30m. The topsoil appeared to have been reworked and was hence described as Made Ground at some locations.

Below the Topsoil was a yellowish brown and pale grey silty Clay proved at all locations to 1.5m depth.

Other than the topsoil, there was no visual evidence made ground, putrescible materials or organic type soils.

4.2 Laboratory contamination testing

The results for the laboratory contamination testing are enclosed within **Appendix C**. The following paragraphs detail the test results and compare them to published guidance. The general approach to assessment of potential land contamination is to compare laboratory chemical test results to published DEFRA guidance (*Ref 2*) and to 3rd edition LQM / CIEH derived S4UL's (*Ref 3*). In the absence of UK screening criteria for pesticides, values have been obtained from the US Environmental Protection Agency Regional Screening Levels documentation (*Ref 6*).

The DEFRA guidance uses the term C4SL's (*Category 4 Screening Levels*) and the LQM / CIEH guidance S4ULs (*Suitable 4 Use Levels*). All derived values are based on an assessment of Significant Possibility of Significant Harm (SPOSH). The guidance documents note that the concentrations given are purposefully conservative and can be used as a safe assessment of land for planning

purposes. More exact concentrations can be derived by computer methods for individual sites or specific risks within a site.

The guidance values also relate to proposed land use. In this case the relevant land use is *Residential with Home Grown Produce*.

The metals suite comprised **As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se & Zn**. Comparison of the test results to published C4SL's & S4UL's for a Residential use with home grown produce showed no risks.

Speciated PAH's showed no raised concentrations above those relevant to a Residential use with home grown produce.

TPH Comparison of the laboratory test results to GAC's showed no need for further more detailed assessment.

Asbestos fibres. Fifteen samples were tested for asbestos fibres. No fibres were detected.

Pesticides Suites. Ten soil samples were tested for a pesticides suite. It should be noted that results are given in µg/kg (i.e 10⁻³ mg/kg). In the absence of British Standard screening criteria, values have been compared to the US Environmental Protection Agency Regional Screening Levels documentation (*Ref 6*). Most of the determinands were below the detection levels of <10 µg/kg. However at TP101, 102 & 103 some residual concentrations of o,p'-TDE, p,p'-DDE & p,p'-DDT pesticides were evident. Concentrations were well below the relevant USEPA screening value at only about 15-20% of GAC and no risk to human health was shown. It should be noted that topsoil in this area is to be removed and replaced as part of construction.

5. DISCUSSION

5.1 Potential Soil Contamination

The current investigation's contamination testing showed no risk due to metals, organic contamination or pesticides. No asbestos fibres were identified. A previous limited investigation in 2018 also showed no risks.

No specific remediation is considered necessary. However topsoil at the site was shown visually to be of relatively poor quality and also for other construction purposes is to be replaced. Where new topsoil is required it shall need to be imported and must be tested to show that it is suitable for use. Ideally topsoil shall be sourced that has been tested prior to import. If that is not possible, the

topsoil shall be stockpiled on arrival and tested before use. The Remediation Statement presented as **Appendix D** includes a testing regime for imported topsoil.

5.2 Potential Gases Contamination

Contamination by ground gases occurring at the site or migrating from off-sites sources is considered unlikely.

5.3 Discovery Strategy

Ground investigation has shown no significant depths of made ground or large areas of potential soil contamination. However given the site history there is a small chance of made ground or other features not shown by this investigation being revealed. The Remediation Statement presented as Appendix D includes a Discovery Strategy to deal with such circumstances.

5.4 Revised Conceptual Model

The Preliminary Conceptual Model presented in the Desk Study & Preliminary Ground Investigation Report (*Ref 1*) has been updated as shown below.

Preliminary Conceptual Model (written statement) :

A site at land to the rear Manor Oak, Hayling Island to be developed as nine domestic houses. The site was fields in the late 19th & early 20th Century and became a plant nursery from the mid 20th Century. For the last 15 years part of the site has been used for caravan storage. Intrusive ground investigation has shown no risk due to previous land use that may impact the proposed development.

The network diagram at Figure 4 indicates the potential sources, pathways and targets more clearly.

Figure 4 shows that the occupants within hard surfaced areas & new buildings are not considered likely to be at risk from any minor soils contamination that may exist at the site. No risk has been shown in garden areas.

The network diagram did not include future maintenance workers who should also be considered. All services trenches at the site should be over- excavated by 50mm and backfilled with clean granular soils.

No specific remediation works are required. If however during development any suspicious materials are observed or significant depths of made ground

encountered, further specialist advice should be sought.

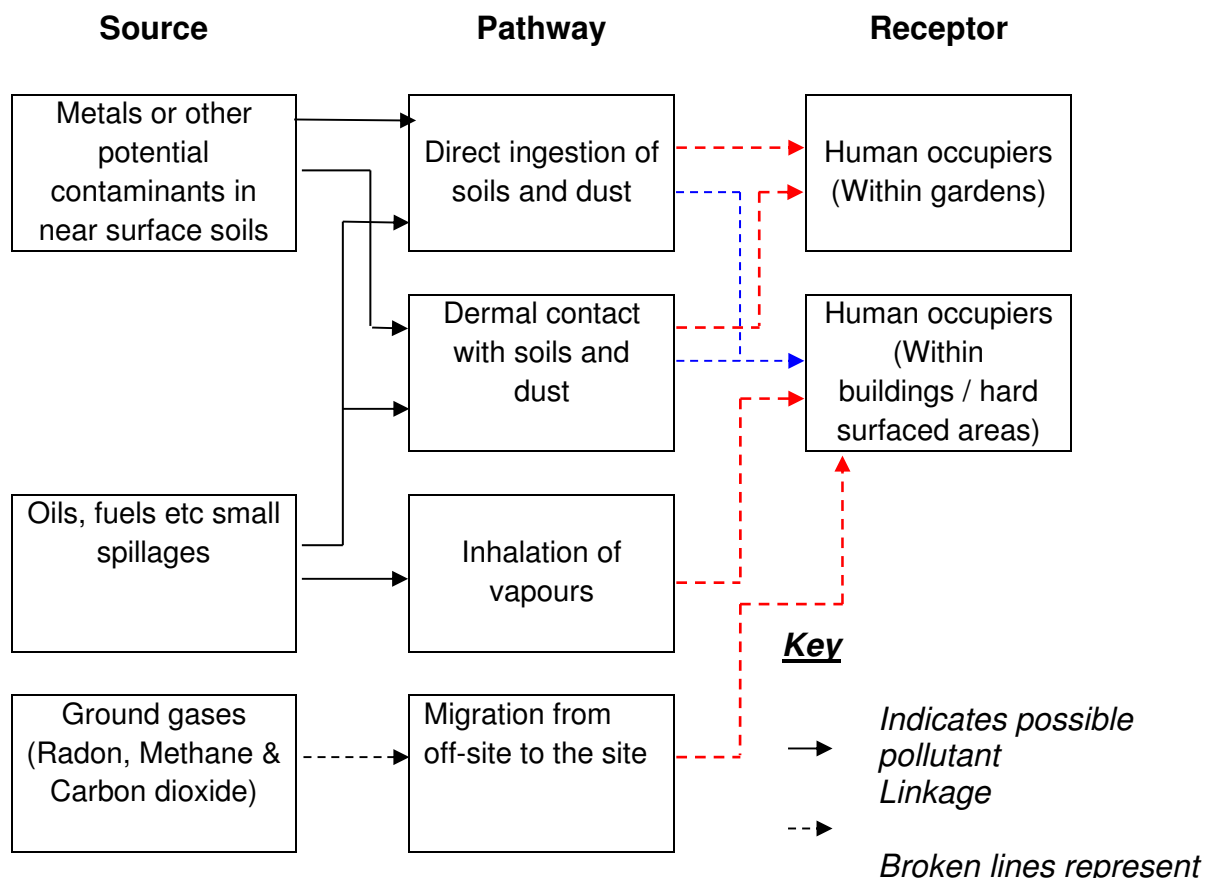


Figure 4 : Network diagram to show Preliminary Conceptual Model

Report prepared by

25 January 2020

D I Grant BSc, PhD, GICE

References :

1. Dig-Geotech Ltd (2018). Report on Desk Study & Preliminary Ground Investigation. Land to the rear Manor Oaks (Manor Road Nurseries) Manor Road, Hayling Island PO11 0QL. Report No 667 / R01 Rev1 12 Dec 2018.
2. DEFRA (2014). SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document. March 2014 (accessed online March 2016).
3. LQM / CIEH (2014). The LQM / CIEH S4ULs for Human Health Risk. ISBN 978-0-9931084-0-2.
4. EIC/AGS/CL:AIR (2010). Soil Generic Assessment Criteria for Human Health Risk Assessment.
5. US EPA (2020). Regional Screening Levels (RSLs) - Generic Tables Tables as of: November 2020. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>
6. UK Water Industry Research (UK WIR) (2011). Guidance for the Selection of Water Supply Pipes to be used in Brownfield sites. (Ref:10/WM/03/01; the 'UK Guidance').
7. NHBC (2018). NHBS Standards 2018 : Chapter 4.2 Building Near Trees. Accessed at <http://www.nhbc.co.uk/Builders/ProductsandServices/Standardsplus2018/#1> . 20 August 2018
8. BRE (2005). Special Digest 1 : 2005 Concrete in aggressive ground.

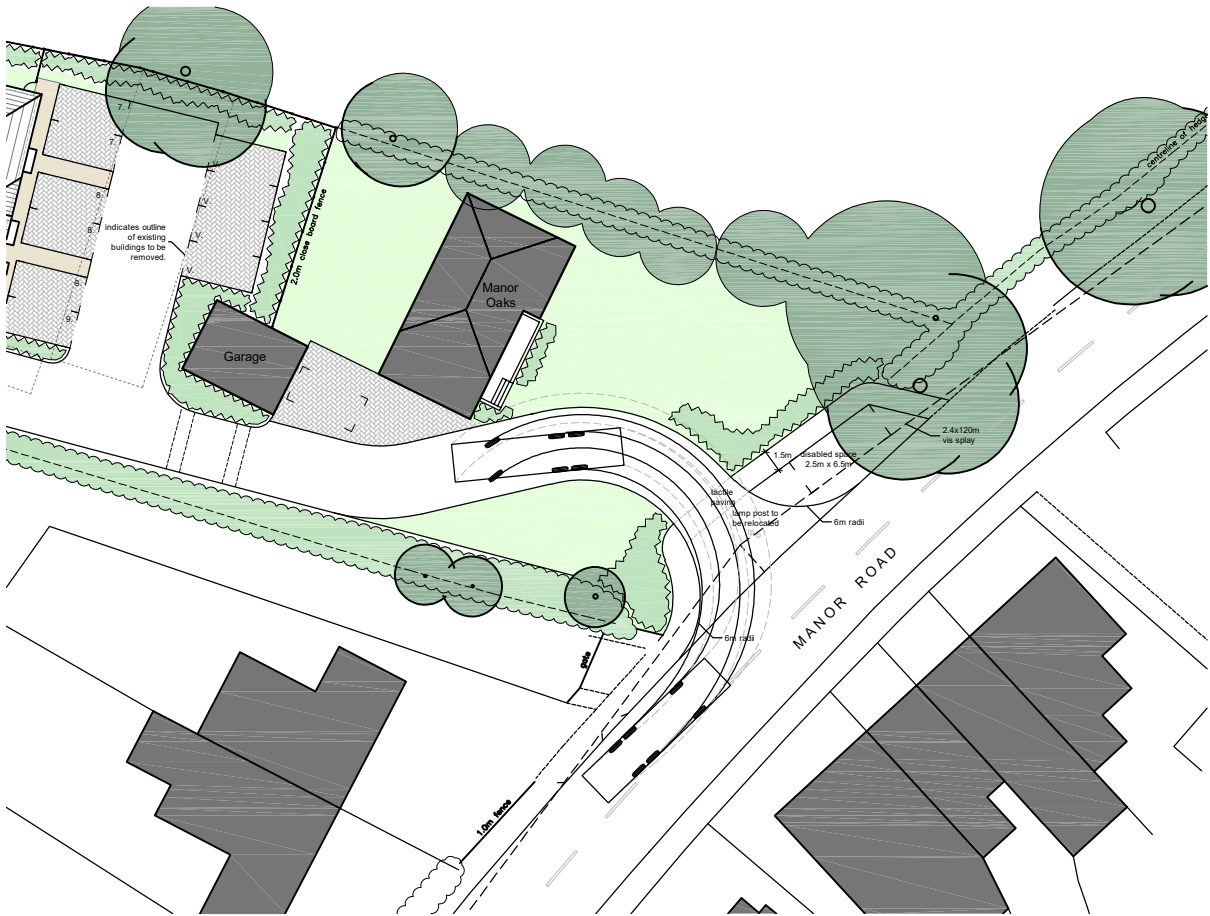
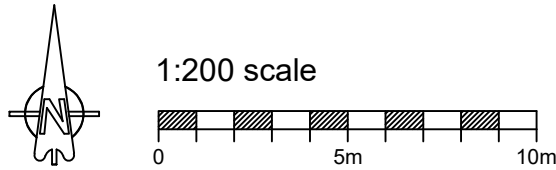
APPENDICES

Appendix A - Site Plans

GENERAL NOTES:
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE OTHER RELEVANT CONSULTANTS DRAWINGS.
2. ALL FINISHES ARE TO CONFORM TO THE CURRENT BUILDING REGULATIONS.
3. REFER TO A SEPARATE DOCUMENT FOR THE DESIGNERS RISK ASSESSMENT.
4. ALL WORKS OR MATERIALS INDICATED ON THIS DRAWING ARE TO BE TO THE LATEST RELEVANT BRITISH STANDARDS AND CARRIED OUT IN ACCORDANCE WITH THE BRITISH STANDARDS CODES OF PRACTICE OR RECOGNIZED INSTITUTE OR TRADE ASSOCIATION RECOMMENDATIONS AND PUBLICATIONS.



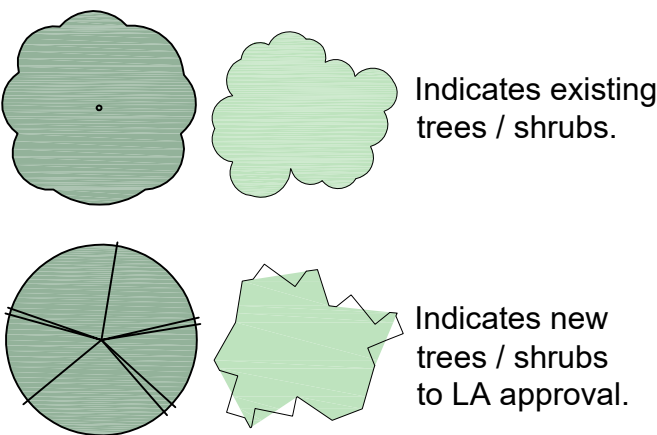
Proposed Site Layout



Proposed Refuse Vehicle Access (1:500)



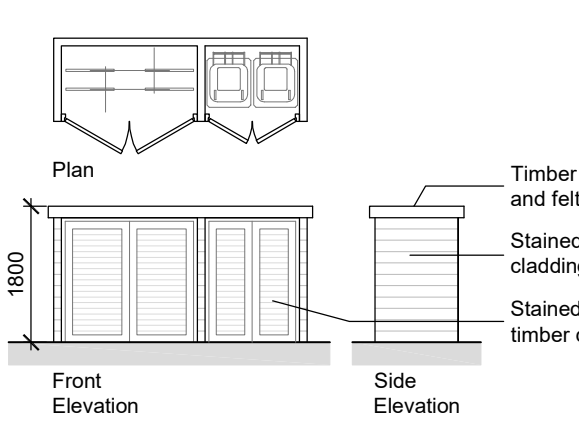
Soft Landscaping



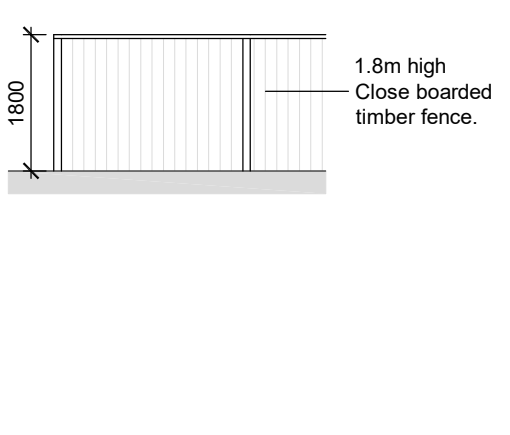
Hard Landscaping



Bin / Cycle store details



Boundary treatment details



P11	Sept 2019	Minor amendments.	LW	
P10	Aug 2019	Annotations added.	LW	
P9	Aug 2019	Access road amended.	LW	
P8	Feb 2018	Access road amended.	TH	
P7	Jan 2018	Adjusted to latest comments.	TH	
P6	Dec 2018	Access road amended.	TH	
P5	Dec 2018	Minor amendments to site access	CW	
P4	Nov 2018	Minor amendments to site access	CW	
Revision	Date	Description	Dwn	Chkd

PLC
ARCHITECTS

Lansdowne House
25-26 Hampshire Terrace
Portsmouth PO1 2QF
Hampshire England

Tel: (023) 92 755 333
E-Mail: admin@plcarchitects.com
Web: www.plcarchitects.com

Client :

Project :
Manor Road Nurseries
Manor Rd,
Hayling Island, PO11 0QL

Drawing Title :
Proposed Site Layout

Drawn By	Date	Checked By	Date	Approved By	Date
TH	Sept '18				

Drawing No.	Revision	Scale
18 - 3060 - 100	P11	1:200 @ A1

PLC ARCHITECTS © COPYRIGHT RESERVED 2017
NOT TO BE SCALED. DIMENSIONS TO BE CHECKED ON SITE
SCALING ONLY FOR LOCAL AUTHORITY PURPOSES

Appendix B - Exploratory hole logs



Trial Pit Log

Trialpit No

TP101

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

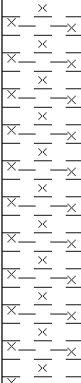
Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			MADE GROUND : Grass over brown clayey gravelly (fine & medium) topsoil.	
	0.40	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
	1.00	ES		1.50				1
							End of pit at 1.50 m	2
								3
								4
								5

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP102

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

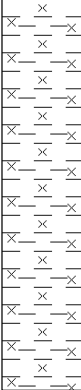
Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			MADE GROUND : Grass over brown clayey gravelly (fine & medium) topsoil.	
	0.40	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT. Land drain at 0.3m	1
				1.50			End of pit at 1.50 m	2
								3
								4
								5

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP103

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05 - 0.10	ES		0.15			MADE GROUND: Grass over brown clayey gravelly (fine & medium) topsoil.	
	0.30	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
	1.00	ES		1.50				1
								2
								3
								4
								5

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP104

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

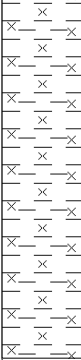
Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES		0.30			MADE GROUND: Grass over brown clayey gravelly (fine & medium) topsoil.	
	0.50	ES		1.50			Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
							End of pit at 1.50 m	

1

2

3

4

5

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP105

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05 - 0.10	ES		0.10			MADE GROUND: Grass over brown clayey gravelly topsoil.	
	0.25	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								
								

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP106

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

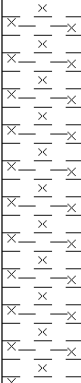
Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			MADE GROUND: Grass over brown clayey gravelly (fine & medium) topsoil	
	0.40	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
	1.00	ES		1.50				
							End of pit at 1.50 m	

Remarks:

Stability:





Trial Pit Log

Trialpit No

TP107

Sheet 1 of 1

Project Name: Manor Road Nurseries

Project No.
667

Co-ords: -

Level:

Date

11/12/2020

Location: Hayling Island

Dimensions
(m):Depth
1.50

Scale

1:25

Client: Mr Chris Hurley

Logged
Nigel Milliner

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.20			Brown clayey (fine & medium gravelly) TOPSOIL.	
	0.40	ES					Pale yellowish-brown and pale grey mottled very silty CLAY with some fine & medium gravel. Grading to very silty CLAY / clayey SILT.	
	1.00	ES		1.50				1
								2
								3
								4
								5

Remarks: Inside greenhouse

Stability:



Appendix C - Laboratory Contamination Test Results

Dig-Geotech Ltd
South View
2 Easthams Rd
Crewkerne
TA 18 7AQ



Attention :	David Grant
Date :	5th January, 2021
Your reference :	DG667
Our reference :	Test Report 20/17914 Batch 1
Location :	Hayling
Date samples received :	16th December, 2020
Status :	Final report
Issue :	1

Eighteen samples were received for analysis on 16th December, 2020 of which sixteen were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Authorised By:



Phil Sommerton BSc

Senior Project Manager

Please include all sections of this report if it is reproduced

Client Name:	Dig-Geotech Ltd	Report :	Solid
Reference:	DG667		
Location:	Hayling	Solids:	V=60g VOC jar, J=250g glass jar, T=plastic tub
Contact:	David Grant		
EMT Job No:	20/17914		

Please see attached notes for all abbreviations and acronyms

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP101	TP101	TP102	TP102	TP103	TP103	TP103	TP104	TP104	TP105			
Depth	0.10	0.40	0.10	0.40	0.05	0.30	1.00	0.15	0.50	0.05			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020			
Sample Type	Clay	Clay	Clay	Clay	Soil	Clay	Clay	Clayey Loam	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020			
Pesticides													
Organochlorine Pesticides													
Aldrin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Alpha-HCH (BHC)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Beta-HCH (BHC)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Chlorothalonil	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
cis-Chlordane	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Delta-HCH (BHC)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Dieldrin	<10	-	<10	-	15	-	-	17	-	-	<10	ug/kg	TM42/PM8
Endosulphan I	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Endosulphan II	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Endosulphan sulphate	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Endrin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Gamma-HCH (BHC)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Heptachlor	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Heptachlor Epoxide	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Hexachlorobenzene	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Isodrin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
o,p'-DDE	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
o,p'-DDT	<10	-	39	-	17	-	-	28	-	-	<10	ug/kg	TM42/PM8
o,p'-Methoxychlor	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
o,p'-TDE	<10	-	24	-	14	-	-	16	-	-	<10	ug/kg	TM42/PM8
p,p'-DDE	74	-	230	-	238	-	-	332	-	-	<10	ug/kg	TM42/PM8
p,p'-DDT	26	-	124	-	45	-	-	87	-	-	<10	ug/kg	TM42/PM8
p,p'-Methoxychlor	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
p,p'-TDE	37	-	124	-	55	-	-	75	-	-	<10	ug/kg	TM42/PM8
Pendimethalin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Permethrin I	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Permethrin II	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Quintozene (PCNB)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Tecnazene	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Telodrin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
trans-Chlordane	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Triadimefon	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Triallate	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Trifluralin	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP101	TP101	TP102	TP102	TP103	TP103	TP103	TP104	TP104	TP105			
Depth	0.10	0.40	0.10	0.40	0.05	0.30	1.00	0.15	0.50	0.05			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T	V J T			
Sample Date	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020			
Sample Type	Clay	Clay	Clay	Clay	Soil	Clay	Clay	Clayey Loam	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	LOD/LOR	Units	Method No.
Pesticides													
Organophosphorus Pesticides													
Azinphos ethyl	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Azinphos methyl	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Carbophenothion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Chlorfenvinphos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Chlorpyrifos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Chlorpyrifos-methyl	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Diazinon	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Dichlorvos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Disulfoton	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Dimethoate	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Ethion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Ethyl Parathion (Parathion)	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Etrimphos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Fenitrothion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Fenthion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Malathion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Methyl Parathion	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Mevinphos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Phosalone	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Pirimiphos Methyl	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Propetamphos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
Triazophos	<10	-	<10	-	<10	-	-	<10	-	-	<10	ug/kg	TM42/PM8
GRO C8-C10 #	<5	<5	<5	<5	-	<5	<5	<5	<5	<5	<5	mg/kg	TM5/PM8
DRO >C10-C21 #	<10	<10	15	<10	-	<10	<10	25	<10	15	<10	mg/kg	TM5/PM8
MRO >C21-C40	137	<10	411	<10	-	<10	<10	295	<10	182	<10	mg/kg	TM5/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	-	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	28.4	27.3	24.2	20.4	39.9	27.0	19.5	32.3	24.5	39.8	<0.1	%	PM4/PM0
Stone Content >= 10mm	<0.1	<0.1	<0.1	7.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	-	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	<0.0015	<0.0015	0.0101	0.0096	-	0.0146	0.0097	0.1217	0.1837	0.0017	<0.0015	g/l	TM38/PM20
Chromium III	62.1	48.2	53.7	38.1	-	49.7	47.5	66.0	39.4	53.8	<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	1.90	0.36	2.42	0.15	-	0.32	0.09	3.34	0.41	2.44	<0.02	%	TM21/PM24
Sulphide	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	<10	mg/kg	TM107/PM45

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	34-36	37-39	40-41	42-44	45-46	50-52					Please see attached notes for all abbreviations and acronyms		
Sample ID	TP105	TP106	TP106	TP106	TP107	TP107							
Depth	0.25	0.10	0.40	1.00	0.10	0.40							
COC No / misc													
Containers	V J T	V J T	J T	V J T	J T	V J T							
Sample Date	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020							
Sample Type	Clay	Clay	Clay	Clay	Clayey Loam	Clay							
Batch Number	1	1	1	1	1	1							
Date of Receipt	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020					LOD/LOR	Units	Method No.
Arsenic #	7.6	9.4	14.5	15.4	11.3	12.2					<0.5	mg/kg	TM30/PM15
Beryllium	1.1	0.8	1.5	1.4	0.8	1.4					<0.5	mg/kg	TM30/PM15
Cadmium #	0.1	0.2	0.4	0.2	0.6	<0.1					<0.1	mg/kg	TM30/PM15
Chromium #	46.0	58.2	47.6	47.4	60.0	55.8					<0.5	mg/kg	TM30/PM15
Copper #	13	18	18	15	24	16					<1	mg/kg	TM30/PM15
Lead #	16	56	17	19	90	13					<5	mg/kg	TM30/PM15
Mercury #	<0.1	<0.1	<0.1	<0.1	0.1	<0.1					<0.1	mg/kg	TM30/PM15
Nickel #	19.6	15.8	39.1	36.1	16.2	34.7					<0.7	mg/kg	TM30/PM15
Selenium #	<1	<1	1	<1	<1	1					<1	mg/kg	TM30/PM15
Total Sulphate as SO4 #	251	442	232	189	349	137					<50	mg/kg	TM50/PM29
Vanadium	41	37	56	54	34	53					<1	mg/kg	TM30/PM15
Water Soluble Boron #	1.3	2.2	0.9	0.7	1.2	0.5					<0.1	mg/kg	TM74/PM32
Zinc #	65	88	69	56	185	56					<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03					<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05					<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Phenanthrene #	<0.03	0.22	<0.03	<0.03	0.06	<0.03					<0.03	mg/kg	TM4/PM8
Anthracene #	<0.04	0.08	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Fluoranthene #	<0.03	0.69	<0.03	<0.03	0.17	<0.03					<0.03	mg/kg	TM4/PM8
Pyrene #	<0.03	0.63	<0.03	<0.03	0.16	<0.03					<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	<0.06	0.37	<0.06	<0.06	0.09	<0.06					<0.06	mg/kg	TM4/PM8
Chrysene #	<0.02	0.40	<0.02	<0.02	0.11	<0.02					<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	<0.07	0.71	<0.07	<0.07	0.22	<0.07					<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	<0.04	0.40	<0.04	<0.04	0.11	<0.04					<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene	<0.04	0.27	<0.04	<0.04	0.09	<0.04					<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04					<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	<0.04	0.31	<0.04	<0.04	0.09	<0.04					<0.04	mg/kg	TM4/PM8
PAH 16 Total	<0.6	4.1	<0.6	<0.6	1.1	<0.6					<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	<0.05	0.51	<0.05	<0.05	0.16	<0.05					<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	<0.02	0.20	<0.02	<0.02	0.06	<0.02					<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	86	83	37 ^{SV}	79	96	90					<0	%	TM4/PM8

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	34-36	37-39	40-41	42-44	45-46	50-52					Please see attached notes for all abbreviations and acronyms		
Sample ID	TP105	TP106	TP106	TP106	TP107	TP107							
Depth	0.25	0.10	0.40	1.00	0.10	0.40							
COC No / misc													
Containers	V J T	V J T	J T	V J T	J T	V J T							
Sample Date	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020							
Sample Type	Clay	Clay	Clay	Clay	Clayey Loam	Clay							
Batch Number	1	1	1	1	1	1							
Date of Receipt	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020							
Pesticides													
Organochlorine Pesticides													
Aldrin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Alpha-HCH (BHC)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Beta-HCH (BHC)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Chlorothalonil	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
cis-Chlordane	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Delta-HCH (BHC)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Dieldrin	<10	-	<10	-	84	-					<10	ug/kg	TM42/PM8
Endosulphan I	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Endosulphan II	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Endosulphan sulphate	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Endrin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Gamma-HCH (BHC)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Heptachlor	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Heptachlor Epoxide	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Hexachlorobenzene	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Isodrin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
o,p'-DDE	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
o,p'-DDT	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
o,p'-Methoxychlor	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
o,p'-TDE	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
p,p'-DDE	<10	-	<10	-	29	-					<10	ug/kg	TM42/PM8
p,p'-DDT	<10	-	<10	-	23	-					<10	ug/kg	TM42/PM8
p,p'-Methoxychlor	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
p,p'-TDE	<10	-	<10	-	11	-					<10	ug/kg	TM42/PM8
Pendimethalin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Permethrin I	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Permethrin II	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Quintozene (PCNB)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Tecnazene	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Telodrin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
trans-Chlordane	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Triadimefon	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Triallate	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Trifluralin	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	34-36	37-39	40-41	42-44	45-46	50-52					Please see attached notes for all abbreviations and acronyms		
Sample ID	TP105	TP106	TP106	TP106	TP107	TP107							
Depth	0.25	0.10	0.40	1.00	0.10	0.40							
COC No / misc													
Containers	V J T	V J T	J T	V J T	J T	V J T							
Sample Date	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020	11/12/2020							
Sample Type	Clay	Clay	Clay	Clay	Clayey Loam	Clay							
Batch Number	1	1	1	1	1	1							
Date of Receipt	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020					LOD/LOR	Units	Method No.
Pesticides													
Organophosphorus Pesticides													
Azinphos ethyl	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Azinphos methyl	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Carbophenothion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Chlorfenvinphos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Chlorpyrifos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Chlorpyrifos-methyl	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Diazinon	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Dichlorvos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Disulfoton	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Dimethoate	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Ethion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Ethyl Parathion (Parathion)	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Etrimphos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Fenitrothion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Fenthion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Malathion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Methyl Parathion	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Mevinphos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Phosalone	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Pirimphos Methyl	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Propetamphos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
Triazophos	<10	-	<10	-	<10	-					<10	ug/kg	TM42/PM8
GRO C8-C10 #	<5	<5	<5	<5	<5	<5					<5	mg/kg	TM5/PM8
DRO >C10-C21 #	<10	21	<10	<10	<10	<10					<10	mg/kg	TM5/PM8
MRO >C21-C40	14	257	<10	<10	150	<10					<10	mg/kg	TM5/PM8
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15					<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	24.5	60.7	27.0	24.2	14.5	25.8					<0.1	%	PM4/PM0
Stone Content >= 10mm	<0.1	8.2	<0.1	<0.1	<0.1	0.1					<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3					<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	<0.0015	0.0032	0.0222	0.0352	<0.0015	0.0338					<0.0015	g/l	TM38/PM20
Chromium III	46.0	58.2	47.6	47.4	60.0	55.8					<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	<0.5	<0.5	<0.5	1.3	<0.5					<0.5	mg/kg	TM89/PM45
Total Organic Carbon #	0.62	2.71	0.41	0.22	1.25	0.21					<0.02	%	TM21/PM24
Sulphide	<10	<10	<10	<10	<10	<10					<10	mg/kg	TM107/PM45

Element Materials Technology

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant
EMT Job No: 20/17914

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/17914	1	TP101	0.10	3	22/12/2020	General Description (Bulk Analysis)	Soil/Stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP101	0.40	6	22/12/2020	General Description (Bulk Analysis)	Soil/Stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP102	0.10	12	22/12/2020	General Description (Bulk Analysis)	Soil/Stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP102	0.40	15	22/12/2020	General Description (Bulk Analysis)	Soil/Stone
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP103	0.30	21	22/12/2020	General Description (Bulk Analysis)	Soil/Stone
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP103	1.00	24	22/12/2020	General Description (Bulk Analysis)	Soil/Stone
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP104	0.15	27	22/12/2020	General Description (Bulk Analysis)	soil/stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD

Client Name: Dig-Geotech Ltd
Reference: DG667
Location: Hayling
Contact: David Grant

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Date Of Analysis	Analysis	Result
20/17914	1	TP104	0.15	27	22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP104	0.50	30	22/12/2020	General Description (Bulk Analysis)	soil/stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP105	0.05	33	22/12/2020	General Description (Bulk Analysis)	soil/stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP105	0.25	36	22/12/2020	General Description (Bulk Analysis)	soil.stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP106	0.10	39	22/12/2020	General Description (Bulk Analysis)	soil.stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP106	0.40	41	22/12/2020	General Description (Bulk Analysis)	soil/stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP106	1.00	44	22/12/2020	General Description (Bulk Analysis)	Soil/Stone
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP107	0.10	46	22/12/2020	General Description (Bulk Analysis)	soil/stones
					22/12/2020	Asbestos Fibres	NAD
					22/12/2020	Asbestos ACM	NAD
					22/12/2020	Asbestos Type	NAD
					22/12/2020	Asbestos Level Screen	NAD
20/17914	1	TP107	0.40	52	21/12/2020	General Description (Bulk Analysis)	Soil/Stone
					21/12/2020	Asbestos Fibres	NAD
					21/12/2020	Asbestos ACM	NAD
					21/12/2020	Asbestos Type	NAD
					21/12/2020	Asbestos Level Screen	NAD

Client Name: Dig-Geotech Ltd

Reference: DG667

Location: Hayling

Contact: David Grant

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 20/17914

SOILS

Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above calibration range, the result should be considered the minimum value. The actual result could be significantly higher, this result is not accredited.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

EMT Job No: 20/17914

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.				No
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes

EMT Job No: 20/17914

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma – Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993 (comparabl	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM42	Modified US EPA method 8270D v5:2014. Pesticides and herbicides by GC-MS	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes		AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 First edition (2006)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes		AR	Yes
TM107	Determination of Sulphide/Thiocyanate by Skalar Continuous Flow Analyser	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.			AR	Yes

EMT Job No: 20/17914

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM108	Determination of Elemental Sulphur by Reversed Phase High Performance Liquid Chromatography with Ultra Violet spectroscopy.	PM114	End over end extraction of dried and crushed soil samples for organic analysis. The solvent mix varies depending on analysis required			AD	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

Appendix D - Discovery Strategy & Remediation Statement

This Appendix D to Report No 667/R02 represents the Remediation Statement for the proposed works. It aims to set out the remediation works required and to give proposals for confirming that remediation works have been carried out in a satisfactory manner. A *Completion Report* shall be required once the remediation works have been carried out. The Remediation Strategy comprises :

- D1 Discovery Strategy
- D2 Protection of Services Runs
- D3 Removal of Soil in garden areas
- D4 Record Keeping & Reports

D1 Discovery Strategy

Site workers shall be briefed as to the potential risks at the site due to former land use at the site.

If any unexpected made ground materials or other suspicious soils are observed, the works shall be halted in that area. Advice shall be taken from an appropriately experienced geotechnical or geoenvironmental engineer. The findings shall be reported to the nominated *Competent Person*. If further action, investigation or soil sampling is required, the *Competent Person* shall format an appropriate programme of further works.

Unexpected Made Ground materials or other suspicious soils shall include

- Asbestos fibres or suspected fibres of any kind
- Any metals other than very small fragments
- Discoloured gravels, clays etc
- Inclusions of putrescible materials, plastics, glass jars, plastics etc
- Any materials with a hydrocarbons type odour
- Any materials with a solvents type odour
- Any liquid other than clean groundwaters.

D2 Protection of services runs

Services trenches are to be over excavated by 50mm and all arisings disposed of offsite. New imported clean granular soils shall be used as bedding below services and as backfill above. This is to protect future maintenance workers.

D3 Removal & Replacement of Made Ground within domestic garden areas

No contamination was noted in soils, however the developer has elected to replace topsoil in private domestic gardens.

Excavated material shall either be stockpiled at a designated area on site or placed directly onto vehicles for off site disposal. If to be stored on site, the storage area shall be clearly demarcated.

Imported soils shall be topsoil with appropriate certification to show it is suitable for use. If such soil is not available, imported soils must be stockpiled and tested prior to spreading. Testing shall at a minimum 2 No tests per 5 Tonnes (approx. 15m³ volume) imported.

D4. Record Keeping & Reports

D4.1 General

A report shall need to be prepared and issued to the local authority to show that remediation works were carried out in an appropriate manner. The report is typically referred to as the Completion Report or Verification Report. A *Competent Person* is normally nominated by the developer to witness elements of the remediation works and to prepare the Completion Report.

D4.2 Competent Person

Any works related to remediation are typically inspected by a *Competent Person*.

It is typical that the Competent Person also be responsible for the Completion Report. The Competent Person is typically an engineer or other construction professional that has some involvement with the project but is not a direct employee of the developer or final client.

The Competent Person may in fact be a number of individuals who may be visiting the site at different stages of construction for other purposes, but who have suitable experience to witness and comment upon remediation works being carried out.

The nominated *Competent Persons* at this time are :

- **Dr David Grant** of Dig-Geotech Ltd, a geotechnical and geoenvironmental engineer with over 25 years experience.
- **Mr Nigel Milliner** of Geoprobe Environmental Ltd an engineering geologist with over 25 years experience.

It is not necessary for the Competent Person to be present at site full time. However they may be required to witness key elements of works and to attend on site as required.

D5.3 Completion Report

Any planning condition related to land contamination is unlikely to be mitigated until the submission and approval of a Completion Report.

It is important that accurate records be kept of all works that take place related to excavations and movement of earthworks material within, onto and off the site. Delivery tickets for both imported and exported earthworks materials should be kept. Photographs should be taken on a daily basis of key remediation processes.

Typically photographs should be taken : -

- Prior to that element of work taking place
- At key stages of that element of works
- To show completion of that element of works.

Once the remediation works are nearing completion the Competent Person shall need to prepare a report that details the remediation works carried out, presents evidence to show that the works were carried out in an appropriate manner and includes factual information such as:

- copies of any relevant materials disposal / import tickets
- certificates / technical specifications for installed membranes (if used)
- photographs of the general works and specific items related to

remediation.

The report shall need to be submitted to the local authority prior to mitigation of any planning condition related to potential contamination. It may also be requested by potential house purchasers' solicitors as part of any sale.

Dig-Geotech Limited

South View
Easthams Road
Crewkerne
Somerset TA18 7AQ

www.dig-geotech.com

Tel : 01460 768 38