

PHASE II GEO-ENVIRONMENTAL ASSESSMENT

**97A LOVEDEAN LANE,
WATERLOOVILLE, PO8 9RN**

REC REFERENCE: 1CO108540/P2/R1

REPORT PREPARED FOR: HERRINGGATE UK LTD

DATE: JANUARY 2020



REC Ltd, Unit 47, 1 Winnall Valley Road, Winchester, SO23 0LD, 020 3478 8076, rec ltd.co.uk
Resource and Environmental Consultants: Registered in England and Wales,

Resource and Environmental Consultants: Registered in England and Wales, Company number 03133832, Registered address: Osprey House, Pacific Quay, Broadway, Manchester, M50 2UE



QUALITY ASSURANCE

Issue/Revision	Issue 1	Revision 1	Revision 2
Remarks	Draft for Comment	Updated with asbestos quantification results	
Date	January 2020	January 2020	
Prepared by	Lauren Burnett	Lauren Burnett	
Position	Geo-Environmental Consultant	Geo-Environmental Consultant	
Signature			
Checked by	Charlotte Law	Charlotte Law	
Position	Senior Geo-Environmental Consultant	Senior Geo-Environmental Consultant	
Signature			
Authorised by	Ged Sojka	Ged Sojka	
Position	Operations Director	Operations Director	
Signature			
Report Reference	1CO108540		

Office Address:

REC Ltd, Unit 47, 1 Winnall Valley Road, Winchester, SO23 0LD
Tel: 01329 847 783

General Enquiries:

T: 0845 676 9303
E: info@recltd.co.uk
W: www.recltd.co.uk



EXECUTIVE SUMMARY

Site Address	97A Lovedean Lane, Waterlooville, Portsmouth, PO8 9RN	
Current Site Use	The eastern section of the site comprises an area of mixed soft and hardstanding where former structures were present. The western section of the site was on a raised slope, with soft landscaping and mature trees.	
Proposed Use	3no. residential dwellings with associated car parking and soft landscaped gardens.	
Site Investigation Findings	Topsoil: Identified in 8no. locations to a maximum (not proved), depth of 0.60mbgl. Made Ground: Identified within 18no. locations, to a maximum (not proved) depth of 0.65mbgl. Head Deposits: Identified within 13no. locations beneath the overlying Topsoil or Made Ground to a maximum (not proved) depth of 0.55mbgl. Tarrant Chalk Member: Identified within 4no. locations in the Omnia investigation to the base of the borehole at 5.00mbgl. Groundwater: Not encountered during the site investigation.	
Contamination Assessment		
Revised Conceptual Site Model (CSM)	Human Health	No contaminants that exceeded the GAC were encountered within the topsoil. Statistical analysis was undertaken on the remaining 19no. samples, which included material from the remaining Made Ground and Head Deposits. The samples were all taken from <1.00mbgl in order to assess the risk to human health. Although certain contaminants exceeded the GAC for residential without plant uptake end use, statistical analysis has demonstrated that the null hypothesis can be rejected, and that there are no unacceptable risks to human health.
Conclusions	➤ Following a comprehensive sampling and analysis exercise, the results indicate that the Null Hypothesis can be rejected, and therefore the critical concentrations for lead, cadmium, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene are not exceeded for a residential with plant uptake scenario; ➤ Further sampling around WS207 for additional asbestos analysis; and, ➤ No unacceptable risk to human health has been identified and therefore no remedial action is required.	



TABLE OF CONTENTS

1.0 INTRODUCTION	1
1.1 Background	1
1.2 Proposed Development	2
1.3 Objectives	2
1.4 Limitations	2
2. SITE SETTING	3
2.1 Site Details	3
2.2 Current Site Use	3
2.3 Surrounding Area	4
3. SITE INVESTIGATION	5
3.1 Site Investigation	5
3.2 Laboratory Analysis	6
3.2.1 Soil Chemical Analysis	6
4. GROUND AND GROUNDWATER CONDITIONS	7
4.1 Ground Conditions	7
4.1.1 Summary of Ground Conditions	7
4.1.2 Topsoil	7
4.1.3 Made Ground	8
4.1.4 Superficial Deposits	8
4.1.5 Tarrant Chalk Member	8
4.2 Groundwater Conditions	8
5. TIER II GENERIC QUANTITATIVE CONTAMINATED LAND RISK ASSESSMENT	9
5.1 Human Health	9
5.1.1 Asbestos	11
5.2 Statistical Analysis	11
5.3 Revised Conceptual Site Model	11
6. CONCLUSIONS & RECOMMENDATIONS	13

APPENDICES

Appendix I	Drawings
	1CO108540-001 – Site Location Plan
	1CO108540-002 – Proposed Development Plan
	1CO108540-003 – Exploratory Hole and Contamination Location Plan
Appendix II	Limitations
Appendix III	Glossary
Appendix IV	Photographs
Appendix V	Exploratory Hole Logs
Appendix VI	Chemical Laboratory Results
Appendix VII	CIEH Workbook



1.0 INTRODUCTION

1.1 Background

Resource and Environmental Consultants Ltd (REC) was commissioned by Herringate UK Ltd ('the Client') to undertake a Phase II Geo-Environmental Assessment at 97A Lovedean Lane, Waterloo, Portsmouth, PO8 9RN ('the site'). A Site Location Plan (Ref. 1CO108540-001) is presented in Appendix I.

A previous Phase I and II investigation was undertaken at the site by Omnia Consulting in July 2018 (report ref: A10965/1.0 Draft). The site works comprised 5no. window sample boreholes and 2no. hand dug pits in order to assess the ground for potential contamination, geotechnical properties and to install ground gas and groundwater monitoring wells. The investigation identified elevated concentrations of cadmium, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene in one location (WS101) at a depth of 0.15mbgl when compared to the General Assessment Criteria (GAC) values for residential with home grown produce.

Further works were undertaken by Omnia in August 2018 (ref: A10965/19092018/L1) where hand pits were advanced around WS101 in order to delineate the contamination previously identified. Lead, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene were identified within one location at 0.20mbgl. The letter report did not contain the laboratory analysis in the appendices, therefore the chemical analysis of this phase of works is not included.

REC has been commissioned to review the previous reports undertaken on the site in relation to queries raised within the Environmental Health Officer (EHO) Comments (Memorandum dated 24th July 2019). Following a discussion with the EHO in November 2019 it was understood that further investigation and sampling is required to assess the Made Ground across the site. It is understood that a draft Remediation Strategy (RS) had been received by the EHO, which indicated removal of the Made Ground within the former chalk pit, and a clean cover system for the rear gardens to the western boundary of the site.

A revised RS was written by Omnia in October 2019 (Ref: A10965/2.0), which was made available to REC. In summary, the RS comprised the following:

- ▶ Excavation of near surface soils within areas of private gardens to 600mmbgl;
- ▶ Excavation of impacted made ground from within the former chalk pit;
- ▶ Off-site disposal of excavated materials in line with current guidelines of relocation onsite within the constraints of a Materials Management Plan (MMP);
- ▶ Installation of a clean cover system, incorporating a high-visibility geotextile membrane within the private gardens of plots 1-3; and,
- ▶ Backfilling of a chemically and geotechnical suitable material into the former chalk pit.



1.2 Proposed Development

REC understands that the proposed development comprises the construction of 3no. two-storey residential dwellings with associated gardens and car parking. A proposed development plan (ref. 1CO108540-002) is presented within Appendix I.

1.3 Objectives

The objectives of the Geo-Environmental Assessment are as follows:

- ▶ Review available Omnia Consulting reports:
 - ▶ A10965/1.0 Draft dated July 2018;
 - ▶ A10965/19092018/L1 dated August 2018; and,
 - ▶ A10965/2.0 dated October 2019.
- ▶ Undertake hand pitting on site to obtain additional samples for chemical laboratory analysis;
- ▶ Assess environmental concerns by carrying out in depth statistical analysis on chemical data obtained by REC and Omnia;
- ▶ Undertake a risk assessment to determine the extent of Made Ground removal if required; and,
- ▶ Provide recommendations regarding future work and development on site, if required.

1.4 Limitations

REC has incorporated the data presented in the Omnia reports undertaken to date, however have not checked the accuracy or completeness of the data.



2. SITE SETTING

2.1 Site Details

Table 2.1 Site Details

Site Address	97A Lovedean Lane, Waterlooville, PO8 9RN.
Co-ordinates	468751, 112265

2.2 Current Site Use

Brief Site Walkover

A site walkover was undertaken on 4th December 2019 and the following site description comprises the site layout and features based on the REC engineer's observations at the time.

Approximately half of the site was an open area of mostly hard standing ground. Towards the southern boundary, there were small patches of former soft landscaping. Rubble remained on site where structures had been recently demolished, and a stockpile of demolished materials was located in the northeast corner of the site. The western section of the site was elevated by approximately 8-10m comprising woodland with mature trees, many of which contain tree protection orders (TPOs).

Figure 2.1: Aerial view of the site.



Access to the site was via a gated entrance at the end of a private driveway off Lovedean Lane to the north east. Residential gardens border the site to the north, east and south. Selected photographs from the site walkover are presented in Appendix IV.



2.3 Surrounding Area

The surrounding land uses are summarised in Table 2.2 below:

Table 2.2 **Surrounding Land Uses**

Direction	Land Use
North	Residential
East	Residential
South	Residential
West	Residential



3. SITE INVESTIGATION

3.1 Site Investigation

Omnia's investigation in June 2018 comprised 5no. window samples within the hardstanding section of the site, and 2no. hand pits within the elevated woodland area.

A ground investigation by REC has been designed in order to assess the chemical conditions on site, and increase the data set. The scope for these works comprised:

- ▶ 20 no. hand pits to a maximum depth of 600mm;
- ▶ Laboratory analysis on 20 no. samples; and,
- ▶ Full REC supervision.

Exploratory fieldwork was undertaken on 4th December 2019. A selection of site photographs are presented in Appendix IV and the works, along with the Omnia Phase II investigation, are summarised in Table 3.1 below:

Table 3.1 Summary of Fieldwork

Investigation & Date	Hole Location ID	Rationale	Type	Maximum Depth (mbgl)
Omnia June 2018	HP101	General assessment for ground conditions and potential contamination	Hand Pit	0.30
	HP102			0.30
	WS101	General assessment for potential contamination, geotechnical properties and to install monitoring wells	Window Sample	5.00
	WS102			
	WS103			
	WS104			
	WS105			
REC December 2019	HP201	To obtain information on shallow ground conditions and to obtain samples for chemical laboratory analysis	Hand Pit	0.60
	HP202			0.60
	HP203			0.65
	HP204			0.60
	HP205			0.60
	HP206			0.60
	HP207			0.60
	HP208			0.60
	HP209			0.60
	HP210			0.65
	HP211			0.60
	HP212			0.60
	HP213			0.65
	HP214			0.60
	HP215			0.30
	HP216			0.60
	HP217			0.60
	HP218			0.60
	HP219			0.60
	HP220			0.60



The locations of exploratory hole locations are shown on the Exploratory Hole Location Plan (drawing ref. 1CO108540-003) included within Appendix I. Exploratory hole logs are included within Appendix V.

3.2 Laboratory Analysis

Soil samples obtained for chemical analysis were collected in appropriate sampling containers and using appropriate PPE. All samples were subsequently stored in cooled boxes prior to submission to a UKAS accredited analytical laboratory. A detailed copy of REC sampling methodology, QA procedures and laboratory chain of custody forms can be provided upon request.

3.2.1 Soil Chemical Analysis

Selected soil samples were submitted to UKAS accredited i2 Analytical in Watford, and scheduled for the following chemical analyses:

- ▶ Asbestos identification;
- ▶ Soil Organic Matter (SOM);
- ▶ Heavy metals;
- ▶ Total cyanide;
- ▶ Total phenols;
- ▶ pH;
- ▶ Water soluble sulphate;
- ▶ Speciated Polycyclic Aromatic Hydrocarbons (PAH); and
- ▶ Total Petroleum Hydrocarbons (TPH).

The results of the chemical analyses are included in Appendix VI.



4. GROUND AND GROUNDWATER CONDITIONS

4.1 Ground Conditions

4.1.1 Summary of Ground Conditions

Based on information contained in the Omnia reports, the south eastern section of the site is situated on an old chalk pit, which has been partially infilled since the 1930s as shown below. Additionally, the eastern section of the site consists of mature woodland.

Figure 4.1 Approximate areas of elevated woodland (purple) to the west, and the hardstanding area (blue)



The strata identified on site is set out in Table 4.1. below.

Table 4.1 Summary of Ground Conditions Encountered

Stratum	Min Depth to Top of Strata (m)	Max Depth to Base of Strata (m)	Max Thickness (m)
Topsoil	Ground Level	0.60	0.60 <i>NP</i> (HP206)
Made Ground	Ground Level	3.50	3.50 (WS103)
Superficial Deposits (Head)	0.05	5.00	1.90 (WS101)
Tarrant Chalk Member	1.20	5.00	3.80 <i>NP</i> (WS102)

NP – Not proved

4.1.2 Topsoil

Topsoil was encountered within the 8no. hand pits undertaken on the elevated section of the site, which comprised woodland. Generally, the soils were found to comprise dark brown slightly sandy slightly gravelly clay with frequent roots and rootlets. Sand was fine to coarse. Gravel was angular to subrounded fine to medium flint.



4.1.3 Made Ground

Made Ground was encountered in 18no. locations. This stratum was found to comprise varying colours of sand, clay and gravel. Sand was fine to coarse. Gravel was angular to rounded fine to coarse flint, limestone, brick, glass, ceramic, plastic, clinker, organic wood, and concrete. Subrounded to rounded flint cobbles were identified within HP204, and subangular to angular brick cobbles were identified within WS103 and HP210. There was a putrid odour identified within HP219.

4.1.4 Superficial Deposits

Head deposits were identified within 13no. locations beneath the overlying Topsoil or Made Ground. Typically, the stratum comprised yellowish brown to orangish brown slightly sandy slightly gravelly clay. Sand was fine to coarse. Gravel was angular to rounded fine to coarse flint.

4.1.5 Tarrant Chalk Member

The Omnia June 2018 investigation identified chalk beneath the Head deposits in 4no. locations to a maximum, not proved depth of 5.00mbgl. This was recovered as structureless chalk composed of creamish white slightly gravelly slightly sandy silt. Gravel was weak low density white with frequent black specks. Grade Dm.

4.2 Groundwater Conditions

Groundwater was not encountered during either investigation in any exploratory hole location.



5. TIER II GENERIC QUANTITATIVE CONTAMINATED LAND RISK ASSESSMENT

REC has undertaken a Tier II quantitative risk assessment to determine if any potential contaminants within the underlying soils and groundwater present potentially unacceptable risks to the identified receptors. Both datasets from the July 2018 Omnia and December 2019 REC investigations are included.

5.1 Human Health

At a Tier II stage, the long term (chronic) risk to human health is assessed by utilising appropriate and conservative generic assessment criteria (GAC) to determine whether there are potentially unacceptable risks at the site.

To undertake the Tier II assessment within the context of the proposed development, the most appropriate GAC values available will be those based upon a residential with plant uptake end use, and a conservative soil organic matter (SOM) of 1%.

The following assessment, summarised below and overleaf, has primarily adopted the S4UL (Suitable for Use Levels reference values published by LQM/CIEH in 2015, the S4ULs). Currently, no published GAC value is available for cyanide and therefore REC has utilised the Environmental Agency Contaminated Land Exposure Assessment Tool (CLEA v1.06) to derive the relevant GAC for this proposed land use. Due to the absence of a published lead GAC for direct use within the planning regime, the 2014 Defra C4SL (Category 4 Screening Level) has been used as this value is considered to incorporate the latest toxicological, bio-accessibility and exposure modelling research to date.

Table 5.1 Summary of Generic Human Health Risk Assessment for residential with plant uptake end use with 1% SOM

Determinand	Units	GAC	GAC Source	N	[mc]	Location /Strata	Primary Pathways	Assessment
Inorganics								
Arsenic	mg/kg	37	(i)	27	15	N/A	1	No Further Action
Barium	mg/kg	1,200	(i)	27	260		1	
Beryllium	mg/kg	1.7	(i)	27	1.6		1,3	
Boron	mg/kg	290	(i)	27	1.4		1,2	
Cadmium	mg/kg	11	(i)	27	0.7	WS101 @ 0.15	1	See Discussion
Chromium	mg/kg	910	(i)	27	40	N/A	1	No Further Action
Chromium (VI)	mg/kg	6	(i)	27	1.8		1	
Copper	mg/kg	2,400	(i)	27	47		1	
Lead	mg/kg	200	(iv)	27	240	HP211 @ 0.20	1	See Discussion
Mercury [Inorganic]	mg/kg	40	(i)	27	<0.3	N/A	1	No Further Action
Nickel	mg/kg	180	(i)	27	24		1	
Selenium	mg/kg	250	(i)	27	<1.0		1	
Zinc	mg/kg	3,700	(i)	27	480		1	
Cyanide [Total]	mg/kg	3.4	(v)	27	<1		1	
Asbestos	-	D.	-	27	D	HP207 @ 0.20	3	See Discussion



Determinand	Units	GAC	GAC Source	N	[mc]	Location /Strata	Primary Pathways	Assessment
Organics - PAHs								
Phenols	mg/kg	280	(ii)	27	<1.0	N/A	5	No Further Action
Naphthalene	mg/kg	2.3	(ii)	27	0.56		4	
Acenaphthylene	mg/kg	170	(ii)	27	<0.05		1	
Acenaphthene	mg/kg	210	(ii)	27	<0.05		1	
Fluorene	mg/kg	170	(ii)	27	<0.05		1	
Phenanthrene	mg/kg	95	(ii)	27	2.0		1	
Anthracene	mg/kg	2,400	(ii)	27	0.37		1	
Fluoranthene	mg/kg	280	(ii)	27	3.9		1	
Pyrene	mg/kg	620	(ii)	27	3.5		1	
Benzo(a) Anthracene	mg/kg	7.2	(ii)	27	2.3		1	
Chrysene	mg/kg	15	(ii)	27	2.0		1	
Benzo(b) Fluoranthene	mg/kg	2.6	(ii)	27	5.53	WS101 @ 0.15 and HP215 @ 0.20	1	See Discussion
Benzo(k) Fluoranthene	mg/kg	77	(ii)	27	1.20	N/A	1	No Further Action
Benzo(a)Pyrene	mg/kg	2.2	(ii)	27	4.83	WS101 @ 0.15	1	See Discussion
Indeno (123-cd)Pyrene	mg/kg	27	(ii)	27	1.2	N/A	1	No Further Action
Dibenzo(a,h) Anthracene	mg/kg	0.24	(ii)	27	0.64	WS101 @ 0.15; HP213 @ 0.20 and HP215 @ 0.20	1	See Discussion
Benzo(ghi) Perylene	mg/kg	320	(ii)	27	1.5	N/A	1	No Further Action
Organics – TPH								
TPH C5-C6	mg/kg	42	(iii)	27	<0.001	N/A	4	No Further Action
TPH C6-C8	mg/kg	100	(iii)	27	<0.001		4	
TPH C8-C10	mg/kg	27	(iii)	27	<0.001		4	
TPH C10-12	mg/kg	74	(iii)	27	<1.0		4	
TPH C12-C16	mg/kg	140	(iii)	27	3.7		4	
TPH C16-C21	mg/kg	260	(iii)	27	19		4	
TPH C21-C35	mg/kg	1,100	(iii)	27	49		4	
Key [mc] Maximum Concentration Recorded D. Detected N.D. None Detected (Limit of Detection = <0.0001%) Primary Pathways 1 Ingestion of soil and indoor dust and / or oral background exposure; 2 Consumption of home-grown produce and attached soil; 3 Inhalation of dust (background and indoor); 4 Inhalation of vapour (background and indoor); 5 Direct dermal / skin contact. Generic Assessment Criteria (GAC) Source (i) LQM/CIEH Suitable For Use Level (S4UL) (2015); (ii) S4UL – Conservative Assessment Approach of 2.5% SOM; (iii) S4UL – 2.5% SOM and assumed worst case aliphatic / aromatic compound; (iv) Defra Category 4 Screening Level (2014); (v) CLEA 1.06 Derived Value.								



Based on Table 5.1, concentrations of the following contaminants exceeded the GAC:

- ▶ Lead within HP211 at 0.20mbgl;
- ▶ Cadmium within WS101 @ 0.15mbgl;
- ▶ Benzo(b)fluoranthene within WS101 @ 0.15 and HP215 at 0.20mbgl;
- ▶ Benzo(a)pyrene within WS101 @ 0.15mbgl;
- ▶ Dibenzo(a,h)anthracene within WS101 at 0.15; HP213 at 0.20 and HP215 at 0.20mbgl; and,
- ▶ Asbestos (Chrysotile loose fibres) within HP207 at 0.20mbgl.

5.1.1 Asbestos

Chrysotile fibres were identified within HP207 at 0.20mbgl. Quantification results show <0.001% asbestos within the sample.

5.2 Statistical Analysis

Statistical analysis was undertaken on the samples obtained by REC during the site investigation and the samples analysed in the Phase II Omnia site investigation from July 2018, discounting samples of the topsoil (8no.) as no contaminant concentrations exceeded the GAC. The analysis was undertaken on the remaining 19no. samples using the CIEH Statistics Calculator based on the Guidance on Comparing Soil Contamination Data with a Critical Concentration (CIEH/CL:AIRE, 2008).

Null hypothesis = Planning: Is the true mean lower than the critical concentration?

Table 5.2 Summary of statistical analysis

	Lead	Cadmium	B(b)F	B(a)P	D(a,h)A
GAC (mg/kg)	200	11	2.6	2.1	0.28
No. Samples	19	19	19	19	19
No Samples > GAC	1	1	2	2	3
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Outliers	Yes	Yes	Yes	Yes	Yes
No. Outliers	1	1	1	1	1
Value of Outlier(s) (mg/kg)	240	14.7	5.53	4.83	0.64
Sample Mean (mg/kg)	69.74	1.14	1.35	1.18	0.15
UCL 95	125.64	4.43	2.27	1.98	0.26

*B(b)F = Benzo(b)Fluoranthene; B(a)P = Benzo(a)Pyrene; D(a,h)A = Dibenzo(a,h)Anthracene

It can be seen from Table 5.2, that the upper 95th confidence limit of the mean concentration for each contaminant is less than the critical value (GAC). The null hypothesis is therefore rejected. A copy of the CIEH workbook is included within Appendix VII.

5.3 Revised Conceptual Site Model

No contaminants with concentrations that exceeded the GAC were encountered within the topsoil. Statistical analysis was undertaken on the remaining 19no. samples, which included material from the remaining Made Ground and Head Deposits.

The samples were all taken from <1.00mbgl in order to assess the risk to human health. Although



certain contaminants exceeded the GAC for residential with plant uptake end use, statistical analysis has demonstrated that the null hypothesis can be rejected, and that there is not an unacceptable risk to human health.

With regard to the single sample containing asbestos fibres (<0.001%), further sampling is recommended during the ground works around the location of HP207 to confirm whether any additional asbestos fibres are present. Should the further sampling confirm the presence of asbestos the surrounding material may need removing.



6. CONCLUSIONS & RECOMMENDATIONS

Based on the findings of this report, the following conclusions can be made:

- ▶ Following a comprehensive sampling and analysis exercise, the results indicate that the Null Hypothesis can be rejected, and therefore the critical concentration for lead, cadmium, benzo(b)fluoranthene, benzo(a)pyrene and dibenzo(a,h)anthracene are not exceeded for a residential with plant uptake scenario;
- ▶ Further sampling around WS207 for additional asbestos analysis; and,
- ▶ No unacceptable risk to human health has been identified and therefore no remedial action is required.

END OF REPORT



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

APPENDIX I DRAWINGS

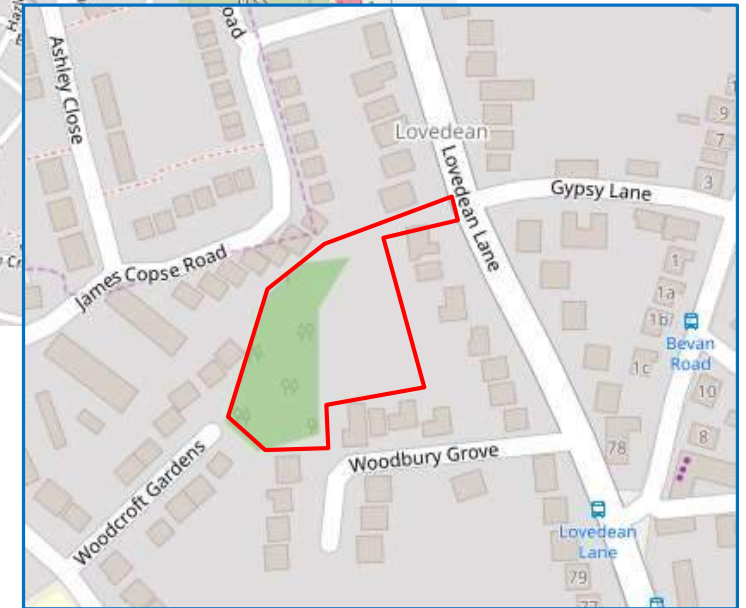
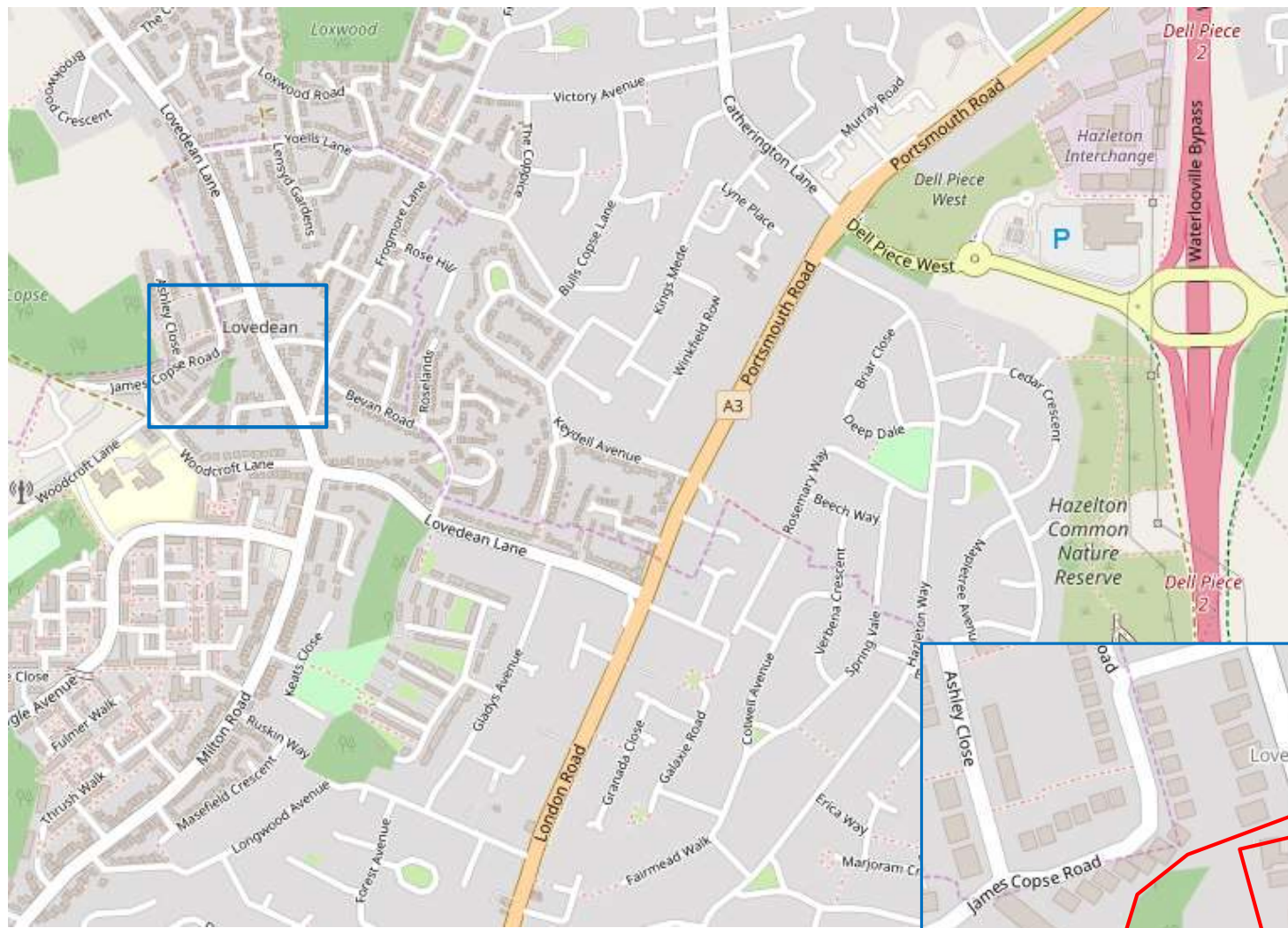
APPENDIX I

DRAWINGS

KEY:



 Site Boundary



The client must not amend any drawing, design or other intellectual property produced by REC Ltd, without permission in writing from REC Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, REC Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.



REC Ltd
Capital Business Centre,
22 Carlton Road,
South Croydon, CR2 0BS

t + 44 2034 788076
recld.co.uk

Job No. & Title:

1CO108540
Lovedeane Lane

Client:

Herringate UK Ltd

Drawn by:	LB
Approved by:	CL
Date:	January 2020

Notes:

Open Street Map, 2019

Drawing Title:

1CO108540-001
Site Location Plan

KEY:



The client must not amend any drawing, design or other intellectual property produced by REC Ltd, without permission in writing from REC Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, REC Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.



REC Ltd
Capital Business Centre,
22 Carlton Road,
South Croydon, CR2 0BS
t + 44 2034 788076
recld.co.uk

Job No. & Title:

1CO108540
Lovedean Lane

Client:

Herringgate UK Ltd

Drawn by: LB
Approved by: CL
Date: January 2020

Notes:
Extracted from R&R
Design Studio Ltd job
1085 drawing no: 1100.

Drawing Title:

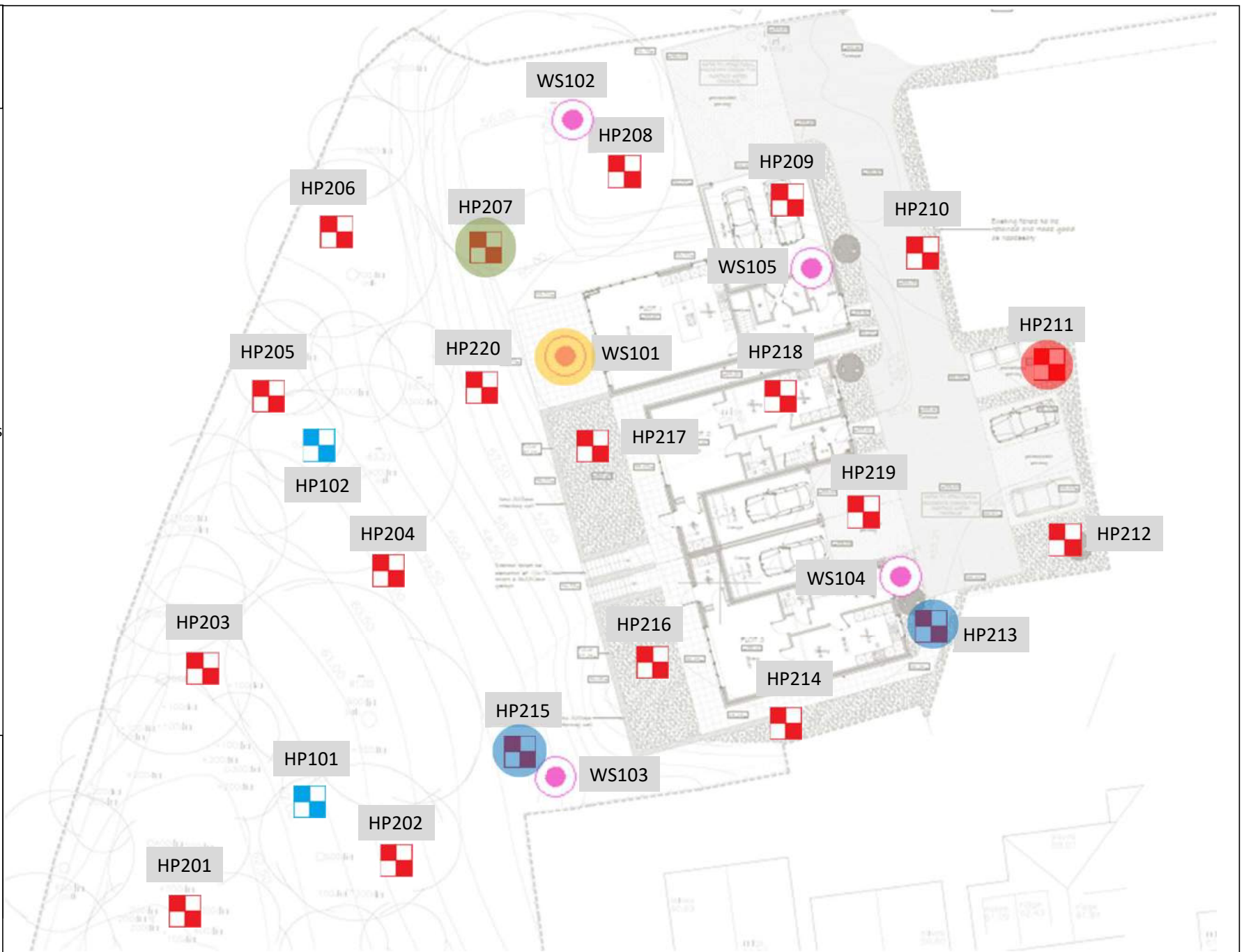
1CO108540-002
Proposed Development Plan

KEY:



-  REC Hand Pit Location
-  Previous Investigation Hand Pit
-  Previous Investigation Window Sample
-  Contamination of Cadmium and PAHs identified in previous investigation
-  Asbestos identified at 0.20mbgl
-  PAH exceedances at 0.20mbgl
-  Lead exceedance at 0.20mbgl

The client must not amend any drawing, design or other intellectual property produced by REC Ltd, without permission in writing from REC Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, REC Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.



REC Ltd
Capital Business Centre,
22 Carlton Road,
South Croydon, CR2 0BS

t + 44 2034 788076
recld.co.uk

Job No. & Title:

1CO108540
Lovedean Lane

Client:

Herringgate UK Ltd

Drawn by: LB
Approved by: CL
Date: January 2020

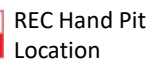
Notes:
Extracted from R&R
Design Studio Ltd job
1085 drawing no: 1100.

Drawing Title:

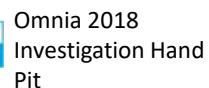
1CO108540-003
Exploratory Hole and
Contamination Plan



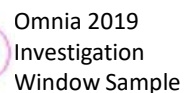
N



REC Hand Pit
Location

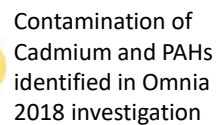


Omnia 2018
Investigation Hand
Pit



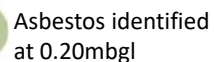
Omnia 2019
Investigation
Window Sample

Contamination of Cadmium and PAHs identified in Omnia 2018 investigation



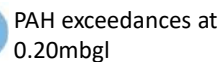
Contamination of Cadmium and PAHs identified in Omnia 2018 investigation

Asbestos identified
at 0.20mbgl



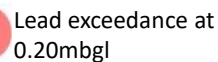
Asbestos identified
at 0.20mbgl

PAH exceedances at
0.20mbgl



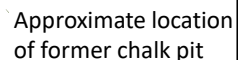
PAH exceedances at
0.20mbgl

Lead exceedance at 0.20mbgl



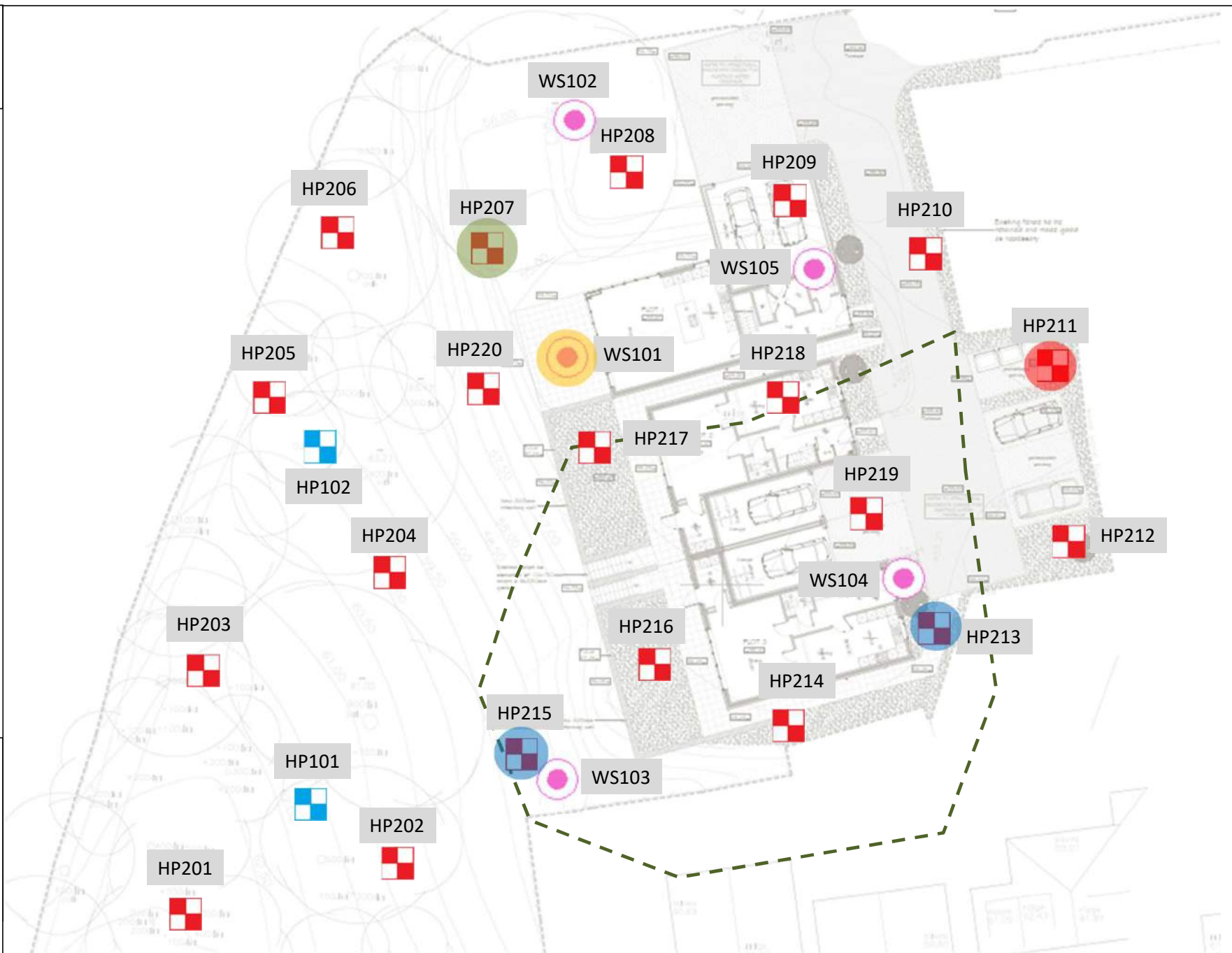
Lead exceedance at 0.20mbgl

Approximate location
of former chalk pit



Approximate location
of former chalk pit

The client must not amend any drawing, design or other intellectual property produced by REC Ltd, without permission in writing from REC Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, REC Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.



REC Ltd
Capital Business Centre,
22 Carlton Road,
South Croydon, CR2 OBS

t + 44 2034 788076
recltd.co.uk

Job No. & Title:
1CO108540
Lovedean Lane

Client:

Herringgate UK Ltd

Drawn by: LB

LE

Approved by: CL

Cl

Date: January 2020

January 2020

Notes:

Extracted from R&R
Design Studio Ltd job
1085 drawing no: 1100.

Drawing Title:

1CO108540-003
Exploratory Hole and
Contamination Plan

KEY:



-  Elevated woodland section
-  Made Ground
-  Approximate location of former chalk pit

The client must not amend any drawing, design or other intellectual property produced by REC Ltd, without permission in writing from REC Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, REC Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.



REC Ltd
Capital Business Centre,
22 Carlton Road,
South Croydon, CR2 0BS
t + 44 2034 788076
recld.co.uk

Job No. & Title:

1CO108540
Lovedean Lane

Client:

Herringgate UK Ltd

Drawn by:	LB
Approved by:	CL
Date:	January 2020

Notes:

Extracted from R&R
Design Studio Ltd job
1085 drawing no: 1100.

Drawing Title:

1CO108540-003
Exploratory Hole and
Contamination Plan



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

APPENDIX II LIMITATIONS

APPENDIX II LIMITATIONS



1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between REC Ltd and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. In addition to the above REC Ltd note that when investigating, or developing, potentially contaminated land it is important to recognise that sub-surface conditions may vary spatially and also with time. The absence of certain ground, ground gas, and contamination or groundwater conditions at the positions tested is not a guarantee that such conditions do not exist anywhere across the site. Due to the presence of existing buildings and structures access could not be obtained to all areas. Additional contamination may be identified following the removal of the buildings or hard standing.
7. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
8. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
9. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
10. This report presents an interpretation of the geotechnical information established by excavation, observation and testing. Whilst every effort is made in interpretative reporting to assess the soil conditions over the Site it should be noted that natural strata vary from point to point and that man made deposits are subject to an even greater diversity. Groundwater conditions are dependent on seasonal and other factors. Consequently there may be conditions present not revealed by this investigation.
11. REC can not be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by REC is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by REC in this connection without their explicit written agreement there to by REC.
12. Rather, this investigation has been undertaken to provide a preliminary characterisation of the existing sub-surface geotechnical characteristics and make up and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.
13. This investigation has been undertaken to reasonably characterise existing sub-surface conditions and the findings of this study are our best interpretation of the data collected, within the scope of work and agreed budget. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

GLOSSARY

APPENDIX III

APPENDIX III

GLOSSARY



TERMS

AST	Above Ground Storage Tank
BGS	British Geological Survey
BSI	British Standards Institute
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CIEH	Chartered Institute of Environmental Health
CIRIA	Construction Industry Research Association
CLEA	Contaminated Land Exposure Assessment
CSM	Conceptual Site Model
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	General Assessment Criteria
GL	Ground Level
GSV	Gas Screening Value
HCV	Health Criteria Value
ICSM	Initial Conceptual Site Model
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)
ND	Not Detected
LMRL	Lower Method Reporting Limit
NR	Not Recorded
PAH	Poly Aromatic Hydrocarbon
PCB	Poly-Chlorinated Biphenyl
PID	Photo Ionisation Detector
QA	Quality Assurance
SGV	Soil Guideline Value
SPH	Separate Phase Hydrocarbon
Sp.TPH (CWG)	Total Petroleum Hydrocarbon (Criteria Working Group)
SPT	Standard Penetration Test
SVOC	Semi Volatile Organic Compound
UST	Underground Storage Tank
VCCs	Vibro Concrete Columns
VOC	Volatile Organic Compound
WTE	Water Table Elevation

UNITS

m	Metres
km	Kilometres
%	Percent
%v/v	Percent volume in air
mb	Milli Bars (atmospheric pressure)
l/hr	Litres per hour
µg/l	Micrograms per Litre (parts per billion)
ppb	Parts Per Billion
mg/kg	Milligrams per kilogram (parts per million)
ppm	Parts Per Million
mg/m ³	Milligram per metre cubed
m bgl	Metres Below Ground Level
m bcl	Metre Below Cover Level
mAOD	Metres Above Ordnance Datum (sea level)
kN/m ²	Kilo Newtons per metre squared
µm	Micro metre



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

APPENDIX IV PHOTOGRAPHS

APPENDIX IV PHOTOGRAPHS



PLATE 1 – View of the site from the entrance gate (located in the north east corner of site) facing south west.



PLATE 2 – Elevated area of mature woodland in the eastern section of the site.



PLATE 3 – View of the site from the raised section facing north east



PLATE 4 – View of the site facing east, showing changes in levels



PLATE 5 – Inside HP203 located on the raised section of the site.



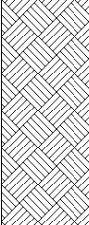
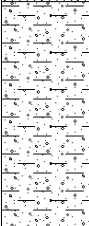
PLATE 6 – Inside HP214.



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

APPENDIX V
EXPLORATORY LOGS

APPENDIX V **EXPLORATORY LOGS**

		  		Trial Pit Log			Borehole No. HP201	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterlooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.30			Dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]
		0.50 - 0.60	ES					Yellowish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse flint. [SUPERFICIAL DEPOSITS]
					0.60		End of Borehole at 0.60m	
								1
								2
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions Length: (m) Width: Depth: 0.60	 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
Stability: Stable								

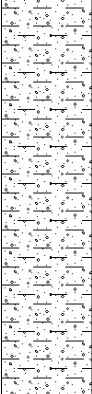
		  		Trial Pit Log			Borehole No. HP202	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.20	ES		0.20			Dark brown slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]
		0.40 - 0.50	ES					Yellowish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint. [SUPERFICIAL DEPOSITS]
					0.60			End of Borehole at 0.60m
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: (m) Width: Depth: 0.60
Stability: Stable								 CONCEPT LIFE SCIENCES DELIVERING SCIENCE

		  		Trial Pit Log			Borehole No. HP203	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.65		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.20	ES		0.20			Dark brown slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]
		0.50 - 0.60	ES					Yellowish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse flint. [SUPERFICIAL DEPOSITS]
					0.65			End of Borehole at 0.65m
								1
								2
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.65mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions Length: (m) Width: Depth: 0.65	 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
Stability: Stable								

		  		Trial Pit Log			Borehole No. HP204	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterlooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.20	ES		0.20			Dark brown slightly sandy slightly gravelly CLAY with frequent roots and rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [TOPSOIL]
		0.50 - 0.60	ES		0.60			Orangish brown slightly sandy gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse flint. Cobbles are subrounded to rounded flint. [SUPERFICIAL DEPOSITS]
								End of Borehole at 0.60m
								1
								2
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions Length: (m) Width: Depth: 0.60	 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
Stability: Stable								

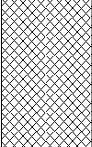
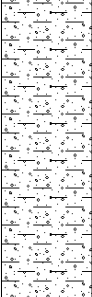
   			Trial Pit Log			Borehole No. HP205 Sheet 1 of 1		
Project Name: Lovedean Lane			Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP	
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN			Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10	
Client: Herringgate UK Ltd			Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.05			Dark brown slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular to rounded fine to medium flint. [TOPSOIL]
					0.60			Greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse flint and tree bark. [TOPSOIL]
								End of Borehole at 0.60m
								1
								2
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions (m) Length: Width: Depth: 0.60	 CONCEPT LIFE SCIENCES DELIVERING SCIENCE
Stability: Stable								

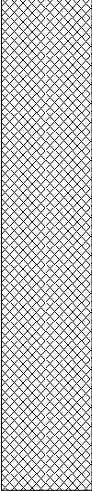
   			Trial Pit Log				Borehole No. HP207	
Project Name: Lovedean Lane			Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP	
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN			Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10	
Client: Herringgate UK Ltd			Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.05			Grey GRAVEL. Gravel is angular to subrounded fine to coarse limestone. [MADE GROUND] Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse limestone, flint and brick. [MADE GROUND]
					0.60			
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: (m) Width: Depth: 0.60
Stability: Stable								 CONCEPT LIFE SCIENCES DELIVERING SCIENCE

		  		Trial Pit Log			Borehole No. HP208	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.05		 Grey GRAVEL. Gravel is angular to subrounded fine to coarse limestone. [MADE GROUND]	 Orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to medium flint. [SUPERFICIAL DEPOSITS]
					0.60		End of Borehole at 0.60m	
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: (m) Width: Depth: 0.60
Stability: Stable								

		  		Trial Pit Log			Borehole No. HP209	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.40	ES		0.05		 Grey GRAVEL. Gravel is angular to subrounded fine to coarse limestone.  Brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. [SUPERFICIAL DEPOSITS] <u>At 0.15mbg: Tree roots.</u>	
					0.60		End of Borehole at 0.60m	
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: Width: Depth: 0.60
Stability: Stable								

		  		Trial Pit Log				Borehole No. HP210	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP			
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.65		Scale: 1:10			
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.30	ES		0.65		Brown slightly sandy gravelly CLAY with occasional cobbles. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint, brick, glass, ceramic and plastic. Cobbles are angular to subangular brick. [MADE GROUND]		
							End of Borehole at 0.65m		
								1	
								2	
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.65mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions (m) Length: Width: Depth: 0.65		
Stability: Stable							 CONCEPT LIFE SCIENCES DELIVERING SCIENCE		

		  		Trial Pit Log			Borehole No. HP212	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10 - 0.20	ES		0.20			Brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint and brick. [MADE GROUND]
		0.40 - 0.50	ES					Orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. [SUPERFICIAL DEPOSITS]
					0.60		End of Borehole at 0.60m	
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: (m) Width: Depth: 0.60
Stability: Stable								 CONCEPT LIFE SCIENCES DELIVERING SCIENCE

		  		Trial Pit Log			Borehole No. HP213	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.65		Scale: 1:10		
Client: Herringate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.65			Brown slightly sandy slightly gravelly CLAY with occasional roots. Sand is fine to coarse. Gravel is angular to subrounded fine to medium flint. [MADE GROUND]
								End of Borehole at 0.65m
								1
								2
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.65mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions Length: (m) Width: Depth: 0.65	
Stability: Stable							 CONCEPT LIFE SCIENCES DELIVERING SCIENCE	

   			Trial Pit Log			Borehole No. HP214 Sheet 1 of 1		
Project Name: Lovedean Lane			Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP	
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN			Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10	
Client: Herringate UK Ltd			Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.60			Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint and brick. [MADE GROUND]
		End of Borehole at 0.60m						
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion. Stability: Stable								
						Pit Dimensions (m) Length: Width: Depth: 0.60		 CONCEPT LIFE SCIENCES DELIVERING SCIENCE

		  		Trial Pit Log			Borehole No. HP217	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterlooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05 - 0.15	ES		0.15			Grey sandy GRAVEL. Sand is fine to coarse. Gravel is angular to subangular limestone. [MADE GROUND]
								Orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint. [SUPERFICIAL DEPOSITS]
		0.40 - 0.50	ES		0.60			
								End of Borehole at 0.60m
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions Length: (m) Width: Depth: 0.60
Stability: Stable								 CONCEPT LIFE SCIENCES DELIVERING SCIENCE

		  		Trial Pit Log			Borehole No. HP218	
Project Name: Lovedean Lane		Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP		
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN		Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10		
Client: Herringgate UK Ltd		Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 0.30	ES		0.05		 Grey GRAVEL. Gravel is angular to subrounded fine to coarse limestone.  Orangish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse flint and brick.  [MADE GROUND]	
		0.50 - 0.60	ES		0.60			
End of Borehole at 0.60m								
1								
2								
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.							Pit Dimensions Length: (m) Width: Depth: 0.60	
Stability: Stable							 CONCEPT LIFE SCIENCES DELIVERING SCIENCE	

REC DELIVERING SOLUTIONS				Trial Pit Log Borehole No. HP220 Sheet 1 of 1					
Project Name: Lovedean Lane				Proj. ID: 1CO108540		Easting: Northing:		Hole Type IP	
Location: 97a Lovedean Lane, Waterloooville, PO8 9RN				Plant: Handpitting Tools		Level (m AOD): Final Depth (m): 0.60		Scale: 1:10	
Client: Herringgate UK Ltd				Crew: REC		Start Date: 04/12/2019 End Date: 04/12/2019		REC Engineer: LB	
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.30	ES		0.60			Brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to rounded fine to coarse brick and flint. [MADE GROUND]	
				End of Borehole at 0.60m					
								1	
								2	
Remarks: Location cleared with a Cable Avoidance Tool [CAT]. No groundwater encountered. Hole terminated at 0.60mbgl. Hole backfilled with arisings and made safe upon completion.								Pit Dimensions (m) Length: Width: Depth: 0.60	
Stability: Stable									



APPENDIX VI
CHEMICAL LABORATORY RESULTS



Lauren Burnett

Resource Environmental Consultants Ltd
Unit 47
1 Winnall Valley Road
Winchester
SO23 0LD

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: lauren.burnett@recltd.co.uk

Analytical Report Number : 19-77920

Project / Site name:	Lovedean Lane	Samples received on:	12/12/2019
Your job number:	1CO108540	Samples instructed on:	16/12/2019
Your order number:	007863	Analysis completed by:	24/12/2019
Report Issue Number:	1	Report issued on:	24/12/2019
Samples Analysed:	20 soil samples		

Signed:

Will Fardon

Technical Reviewer (CS Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-77920-1 Lovedean Lane 1CO108540

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Page 1 of 12

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394746	1394747	1394748	1394749	1394750
Sample Reference	HP101	HP102	HP103	HP104	HP105
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-0.60	0.40-0.50	0.10-0.20	0.50-0.60	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	15
Total mass of sample received	kg	0.001	NONE	0.90	0.90

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.0	4.7	4.2	4.3	4.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	65	33	11	550	55
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.033	0.016	0.0057	0.28	0.028
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	32.6	16.3	5.7	275	27.5
Organic Matter	%	0.1	MCERTS	2.5	2.2	13	8.8	4.6
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.015	0.013	0.073	0.051	0.027

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
-----------------------------	-------	-----	--------	--------	--------	--------	--------	--------



4041



Environmental Science

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394746	1394747	1394748	1394749	1394750
Sample Reference	HP101	HP102	HP103	HP104	HP105
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-0.60	0.40-0.50	0.10-0.20	0.50-0.60	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.0	1.3	< 1.0	< 1.0	2.2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	5.9	4.1	4.3	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	31	19	15	23	28
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.63	0.37	0.13	0.20	0.58
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	< 0.2	1.4	< 0.2	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	1.8	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	25	12	20	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	6.0	9.3	7.1	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	19	32	34	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	13	8.3	13	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	54	39	18	24	54
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	38	33	18	27	34

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394751	1394752	1394753	1394754	1394755
Sample Reference	HP106	HP107	HP108	HP109	HP110
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.20-0.30	0.20-0.30	0.30-0.40	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	18
Total mass of sample received	kg	0.001	NONE	0.93	0.91

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile- Loose Fibres	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	4.7	6.4	6.7	7.1	6.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	64	71	45	33	37
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.032	0.035	0.023	0.017	0.018
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.8	35.3	22.5	16.5	18.3
Organic Matter	%	0.1	MCERTS	2.3	3.6	2.1	3.3	3.8
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.013	0.021	0.012	0.019	0.022

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.18	< 0.05	0.39	0.25
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.41	< 0.05	0.85	0.75
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.41	< 0.05	0.76	0.73
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.31	< 0.05	0.54	0.51
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.26	< 0.05	0.43	0.41
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.35	< 0.05	0.55	0.50
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	0.30	0.23
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.29	< 0.05	0.48	0.40
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.25	0.23
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.33	0.29

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.40	< 0.80	4.88	4.30
-----------------------------	-------	-----	--------	--------	------	--------	------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394751	1394752	1394753	1394754	1394755
Sample Reference				HP106	HP107	HP108	HP109	HP110
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.20-0.30	0.20-0.30	0.30-0.40	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	6.0	1.1	1.7	2.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.8	12	6.3	7.8	9.8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	13	200	36	95	87
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.19	0.57	0.44	0.58	0.65
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.8	< 0.2	1.0	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	0.6	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	21	19	18	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.8	47	7.9	14	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	130	25	57	70
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.7	17	12	12	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25	28	31	32	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	20	340	66	300	97

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	16
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	20	< 10	22	33
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	27	< 10	31	50
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	27	< 10	31	50

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394756	1394757	1394758	1394759	1394760
Sample Reference	HP111	HP112	HP113	HP114	HP115
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.40-0.50	0.20-0.30	0.20-0.30	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	9.2
Total mass of sample received	kg	0.001	NONE	0.91	1.0
				0.75	0.81
				0.94	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.4	6.6	7.6	7.5	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	50	30	24	34	230
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.025	0.015	0.012	0.017	0.11
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	24.9	14.9	11.8	17.1	113
Organic Matter	%	0.1	MCERTS	2.9	1.0	2.9	3.5	1.7
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.017	0.0060	0.017	0.020	0.0096

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	0.20	2.0
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	< 0.05	0.37
Fluoranthene	mg/kg	0.05	MCERTS	0.31	< 0.05	2.9	0.59	3.9
Pyrene	mg/kg	0.05	MCERTS	0.33	< 0.05	2.7	0.57	3.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	< 0.05	2.1	0.42	2.3
Chrysene	mg/kg	0.05	MCERTS	0.24	< 0.05	1.6	0.39	2.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.28	< 0.05	2.3	0.48	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.11	< 0.05	1.2	0.22	0.93
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.20	< 0.05	2.1	0.36	2.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.2	0.24	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	< 0.05	0.26
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	0.31	1.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.72	< 0.80	19.2	3.78	22.7
-----------------------------	-------	-----	--------	------	--------	------	------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394756	1394757	1394758	1394759	1394760
Sample Reference				HP111	HP112	HP113	HP114	HP115
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.40-0.50	0.20-0.30	0.20-0.30	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.4	1.6	1.5	1.9	1.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	7.9	8.4	7.8	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	260	45	52	71	69
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	0.59	0.77	0.66	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.3	0.7	0.6
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	24	26	17	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	9.6	17	20	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	240	39	37	140	49
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	18	23	17	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	46	44	38	35	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	110	80	180	300

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	3.7
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	15	< 10	19
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	15	< 10	36	18	37
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	22	< 10	51	23	60
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	22	< 10	51	23	60

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394761	1394762	1394763	1394764	1394765
Sample Reference	HP116	HP117	HP118	HP119	HP120
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.40-0.50	0.50-0.60	0.20-0.30	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	15
Total mass of sample received	kg	0.001	NONE	0.88	0.82

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	7.8	7.4	7.1	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	22	22	33	46	45
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.011	0.011	0.017	0.023	0.023
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.1	10.9	16.5	23.1	22.5
Organic Matter	%	0.1	MCERTS	0.7	1.9	1.7	2.5	2.5
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0043	0.011	0.0097	0.014	0.014

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.56	< 0.05	< 0.05	< 0.05	0.20
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.23	0.24	< 0.05	0.34
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.13
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.45	0.73	< 0.05	1.1
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.45	0.74	< 0.05	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.43	0.75	< 0.05	0.93
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.44	0.66	< 0.05	0.88
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.67	1.1	< 0.05	1.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.27	0.68	< 0.05	0.87
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.52	1.2	< 0.05	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.40	0.77	< 0.05	0.67
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.55	1.1	< 0.05	0.76

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	4.41	8.12	< 0.80	9.62
-----------------------------	-------	-----	--------	--------	------	------	--------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394761	1394762	1394763	1394764	1394765
Sample Reference				HP116	HP117	HP118	HP119	HP120
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.40-0.50	0.50-0.60	0.20-0.30	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.7	4.9	1.6	1.4	1.8
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.6	8.2	7.2	8.2	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	67	76	89	76	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.91	0.79	0.81	0.67	0.85
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.4	0.6	0.7
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	18	15	19	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	22	25	20	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	60	55	95	130	53
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	21	18	19	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	40	34	32	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	260	250	110	480

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	12	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	16	49	< 10	13
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	12	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	23	61	< 10	21
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	23	73	< 10	21

Analytical Report Number : 19-77920

Project / Site name: Lovedean Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1394746	HP101	None Supplied	0.50-0.60	Brown loam and clay with vegetation and gravel
1394747	HP102	None Supplied	0.40-0.50	Brown loam and clay with vegetation and gravel
1394748	HP103	None Supplied	0.10-0.20	Brown loam with vegetation.
1394749	HP104	None Supplied	0.50-0.60	Brown loam and clay with vegetation and rubble.
1394750	HP105	None Supplied	0.20-0.30	Brown clay and loam with vegetation.
1394751	HP106	None Supplied	0.20-0.30	Brown loam and clay with vegetation.
1394752	HP107	None Supplied	0.20-0.30	Brown loam and clay with vegetation and gravel
1394753	HP108	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394754	HP109	None Supplied	0.30-0.40	Brown clay and loam with vegetation and gravel
1394755	HP110	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394756	HP111	None Supplied	0.20-0.30	Brown clay and loam with gravel and vegetation.
1394757	HP112	None Supplied	0.40-0.50	Brown clay and loam with gravel.
1394758	HP113	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394759	HP114	None Supplied	0.20-0.30	Brown clay and loam with fibrous material and vegetation.
1394760	HP115	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394761	HP116	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394762	HP117	None Supplied	0.40-0.50	Brown clay and loam with vegetation and gravel
1394763	HP118	None Supplied	0.50-0.60	Brown clay and loam with vegetation and gravel
1394764	HP119	None Supplied	0.20-0.30	Brown clay and sand with gravel.
1394765	HP120	None Supplied	0.20-0.30	Brown clay and sand with gravel.

Analytical Report Number : 19-77920

Project / Site name: Lovedean Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In-house method based on BS1377 Part 2, 1990, Classification tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Iss No 19-77920-1 Lovedean Lane 1CO108540

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Page 11 of 12

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
HP101		S	19-77920	1394746	c	Total cyanide in soil	L080-PL	c
HP102		S	19-77920	1394747	c	Total cyanide in soil	L080-PL	c
HP103		S	19-77920	1394748	c	Total cyanide in soil	L080-PL	c
HP104		S	19-77920	1394749	c	Total cyanide in soil	L080-PL	c
HP105		S	19-77920	1394750	c	Total cyanide in soil	L080-PL	c
HP106		S	19-77920	1394751	c	Total cyanide in soil	L080-PL	c
HP107		S	19-77920	1394752	c	Total cyanide in soil	L080-PL	c
HP108		S	19-77920	1394753	c	Total cyanide in soil	L080-PL	c
HP109		S	19-77920	1394754	c	Total cyanide in soil	L080-PL	c
HP110		S	19-77920	1394755	c	Total cyanide in soil	L080-PL	c
HP111		S	19-77920	1394756	c	Total cyanide in soil	L080-PL	c
HP112		S	19-77920	1394757	c	Total cyanide in soil	L080-PL	c
HP113		S	19-77920	1394758	c	Total cyanide in soil	L080-PL	c
HP114		S	19-77920	1394759	c	Total cyanide in soil	L080-PL	c
HP115		S	19-77920	1394760	c	Total cyanide in soil	L080-PL	c
HP116		S	19-77920	1394761	c	Total cyanide in soil	L080-PL	c
HP117		S	19-77920	1394762	c	Total cyanide in soil	L080-PL	c
HP118		S	19-77920	1394763	c	Total cyanide in soil	L080-PL	c
HP119		S	19-77920	1394764	c	Total cyanide in soil	L080-PL	c
HP120		S	19-77920	1394765	c	Total cyanide in soil	L080-PL	c



Lauren Burnett

Resource Environmental Consultants Ltd
Unit 47
1 Winnall Valley Road
Winchester
SO23 0LD

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

e: lauren.burnett@recltd.co.uk

Analytical Report Number : 19-77920

Replaces Analytical Report Number : 19-77920, issue no. 1

Project / Site name:	Lovedean Lane	Samples received on:	16/12/2019
Your job number:	1CO108540	Samples instructed on:	16/12/2019
Your order number:	007863	Analysis completed by:	24/01/2020
Report Issue Number:	2	Report issued on:	27/01/2020
Samples Analysed:	20 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Iss No 19-77920-2 Lovedean Lane 1CO108540

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Page 1 of 14

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394746	1394747	1394748	1394749	1394750
Sample Reference	HP201	HP202	HP203	HP204	HP205
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-0.60	0.40-0.50	0.10-0.20	0.50-0.60	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	15
Total mass of sample received	kg	0.001	NONE	0.90	0.90

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	5.0	4.7	4.2	4.3	4.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	65	33	11	550	55
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.033	0.016	0.0057	0.28	0.028
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	32.6	16.3	5.7	275	27.5
Organic Matter	%	0.1	MCERTS	2.5	2.2	13	8.8	4.6
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.015	0.013	0.073	0.051	0.027

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80
-----------------------------	-------	-----	--------	--------	--------	--------	--------	--------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394746	1394747	1394748	1394749	1394750
Sample Reference	HP201	HP202	HP203	HP204	HP205
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.50-0.60	0.40-0.50	0.10-0.20	0.50-0.60	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		

Heavy Metals / Metalloids

Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	2.0	1.3	< 1.0	< 1.0	2.2
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.2	5.9	4.1	4.3	10
Barium (aqua regia extractable)	mg/kg	1	MCERTS	31	19	15	23	28
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.63	0.37	0.13	0.20	0.58
Boron (water soluble)	mg/kg	0.2	MCERTS	0.4	< 0.2	1.4	< 0.2	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	1.8	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	25	12	20	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	6.0	9.3	7.1	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	19	32	34	25
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	13	8.3	13	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	54	39	18	24	54
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	38	33	18	27	34

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394751	1394752	1394753	1394754	1394755
Sample Reference	HP206	HP207	HP208	HP209	HP210
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.20-0.30	0.20-0.30	0.30-0.40	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	10
Total mass of sample received	kg	0.001	NONE	0.93	0.94
				0.89	0.90
				0.90	0.91

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	4.7	6.4	6.7	7.1	6.7
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	64	71	45	33	37
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.032	0.035	0.023	0.017	0.018
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.8	35.3	22.5	16.5	18.3
Organic Matter	%	0.1	MCERTS	2.3	3.6	2.1	3.3	3.8
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.013	0.021	0.012	0.019	0.022

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.18	< 0.05	0.39	0.25
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.41	< 0.05	0.85	0.75
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.41	< 0.05	0.76	0.73
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.31	< 0.05	0.54	0.51
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.26	< 0.05	0.43	0.41
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.35	< 0.05	0.55	0.50
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.19	< 0.05	0.30	0.23
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.29	< 0.05	0.48	0.40
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.25	0.23
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.33	0.29

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.40	< 0.80	4.88	4.30
-----------------------------	-------	-----	--------	--------	------	--------	------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394751	1394752	1394753	1394754	1394755
Sample Reference				HP206	HP207	HP208	HP209	HP210
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.20-0.30	0.20-0.30	0.30-0.40	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	< 1.0	6.0	1.1	1.7	2.1
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.8	12	6.3	7.8	9.8
Barium (aqua regia extractable)	mg/kg	1	MCERTS	13	200	36	95	87
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.19	0.57	0.44	0.58	0.65
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.8	< 0.2	1.0	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	0.6	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	21	19	18	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	4.8	47	7.9	14	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	130	25	57	70
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.7	17	12	12	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	25	28	31	32	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	20	340	66	300	97

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	16
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	20	< 10	22	33
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	27	< 10	31	50
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	27	< 10	31	50

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394756	1394757	1394758	1394759	1394760
Sample Reference	HP211	HP212	HP213	HP214	HP215
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.40-0.50	0.20-0.30	0.20-0.30	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	9.2
Total mass of sample received	kg	0.001	NONE	0.91	1.0
				0.75	0.81
				0.94	

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.4	6.6	7.6	7.5	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	50	30	24	34	230
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.025	0.015	0.012	0.017	0.11
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	24.9	14.9	11.8	17.1	113
Organic Matter	%	0.1	MCERTS	2.9	1.0	2.9	3.5	1.7
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.017	0.0060	0.017	0.020	0.0096

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.1	0.20	2.0
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	< 0.05	0.37
Fluoranthene	mg/kg	0.05	MCERTS	0.31	< 0.05	2.9	0.59	3.9
Pyrene	mg/kg	0.05	MCERTS	0.33	< 0.05	2.7	0.57	3.5
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	< 0.05	2.1	0.42	2.3
Chrysene	mg/kg	0.05	MCERTS	0.24	< 0.05	1.6	0.39	2.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.28	< 0.05	2.3	0.48	2.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.11	< 0.05	1.2	0.22	0.93
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.20	< 0.05	2.1	0.36	2.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.2	0.24	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.28	< 0.05	0.26
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	0.31	1.4

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.72	< 0.80	19.2	3.78	22.7
-----------------------------	-------	-----	--------	------	--------	------	------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394756	1394757	1394758	1394759	1394760
Sample Reference				HP211	HP212	HP213	HP214	HP215
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.40-0.50	0.20-0.30	0.20-0.30	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	3.4	1.6	1.5	1.9	1.7
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	7.9	8.4	7.8	11
Barium (aqua regia extractable)	mg/kg	1	MCERTS	260	45	52	71	69
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	0.59	0.77	0.66	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.3	0.3	0.7	0.6
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	24	26	17	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	9.6	17	20	21
Lead (aqua regia extractable)	mg/kg	1	MCERTS	240	39	37	140	49
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	18	23	17	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	46	44	38	35	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	110	80	180	300

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	3.7
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	15	< 10	19
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	15	< 10	36	18	37
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	22	< 10	51	23	60
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	22	< 10	51	23	60

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number	1394761	1394762	1394763	1394764	1394765
Sample Reference	HP216	HP217	HP218	HP219	HP220
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	0.20-0.30	0.40-0.50	0.50-0.60	0.20-0.30	0.20-0.30
Date Sampled	04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	15
Total mass of sample received	kg	0.001	NONE	0.88	0.84

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	7.8	7.4	7.1	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	22	22	33	46	45
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.011	0.011	0.017	0.023	0.023
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.1	10.9	16.5	23.1	22.5
Organic Matter	%	0.1	MCERTS	0.7	1.9	1.7	2.5	2.5
Fraction Organic Carbon (FOC)	N/A	0.001	MCERTS	0.0043	0.011	0.0097	0.014	0.014

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
----------------------------	-------	---	--------	-------	-------	-------	-------	-------

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.56	< 0.05	< 0.05	< 0.05	0.20
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.23	0.24	< 0.05	0.34
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.13
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.45	0.73	< 0.05	1.1
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.45	0.74	< 0.05	1.2
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.43	0.75	< 0.05	0.93
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.44	0.66	< 0.05	0.88
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.67	1.1	< 0.05	1.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.27	0.68	< 0.05	0.87
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.52	1.2	< 0.05	1.3
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.40	0.77	< 0.05	0.67
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.55	1.1	< 0.05	0.76

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	4.41	8.12	< 0.80	9.62
-----------------------------	-------	-----	--------	--------	------	------	--------	------

Analytical Report Number: 19-77920

Project / Site name: Lovedean Lane

Your Order No: 007863

Lab Sample Number				1394761	1394762	1394763	1394764	1394765
Sample Reference				HP216	HP217	HP218	HP219	HP220
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20-0.30	0.40-0.50	0.50-0.60	0.20-0.30	0.20-0.30
Date Sampled				04/12/2019	04/12/2019	04/12/2019	04/12/2019	04/12/2019
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Heavy Metals / Metalloids								
Antimony (aqua regia extractable)	mg/kg	1	ISO 17025	1.7	4.9	1.6	1.4	1.8
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.6	8.2	7.2	8.2	13
Barium (aqua regia extractable)	mg/kg	1	MCERTS	67	76	89	76	180
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.91	0.79	0.81	0.67	0.85
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	0.4	0.6	0.7
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	32	18	15	19	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	22	25	20	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	60	55	95	130	53
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	23	21	18	19	23
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	40	34	32	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	260	250	110	480

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic (EC5 - EC44)	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	12	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	16	49	< 10	13
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	12	< 8.4	< 8.4
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	23	61	< 10	21
TPH-CWG - Aromatic (EC5 - EC44)	mg/kg	10	NONE	< 10	23	73	< 10	21



Analytical Report Number: 19-77920
Project / Site name: Lovedean Lane
Your Order No: 007863

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
1394752	HP207	0.20-0.30	106	Loose Fibres	Chrysotile	< 0.001	< 0.001

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 19-77920

Project / Site name: Lovedean Lane

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1394746	HP201	None Supplied	0.50-0.60	Brown loam and clay with vegetation and gravel
1394747	HP202	None Supplied	0.40-0.50	Brown loam and clay with vegetation and gravel
1394748	HP203	None Supplied	0.10-0.20	Brown loam with vegetation.
1394749	HP204	None Supplied	0.50-0.60	Brown loam and clay with vegetation and rubble.
1394750	HP205	None Supplied	0.20-0.30	Brown clay and loam with vegetation.
1394751	HP206	None Supplied	0.20-0.30	Brown loam and clay with vegetation.
1394752	HP207	None Supplied	0.20-0.30	Brown loam and clay with vegetation and gravel
1394753	HP208	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394754	HP209	None Supplied	0.30-0.40	Brown clay and loam with vegetation and gravel
1394755	HP210	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394756	HP211	None Supplied	0.20-0.30	Brown clay and loam with gravel and vegetation.
1394757	HP212	None Supplied	0.40-0.50	Brown clay and loam with gravel.
1394758	HP213	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394759	HP214	None Supplied	0.20-0.30	Brown clay and loam with fibrous material and vegetation.
1394760	HP215	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394761	HP216	None Supplied	0.20-0.30	Brown clay and loam with vegetation and gravel
1394762	HP217	None Supplied	0.40-0.50	Brown clay and loam with vegetation and gravel
1394763	HP218	None Supplied	0.50-0.60	Brown clay and loam with vegetation and gravel
1394764	HP219	None Supplied	0.20-0.30	Brown clay and sand with gravel.
1394765	HP220	None Supplied	0.20-0.30	Brown clay and sand with gravel.

Analytical Report Number : 19-77920

Project / Site name: Lovedean Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/cleanup.	L088/76-PL	W	MCERTS

Iss No 19-77920-2 Lovedean Lane 1CO108540

This certificate should not be reproduced, except in full, without the express permission of the laboratory.

The results included within the report are representative of the samples submitted for analysis.

Page 12 of 14



Analytical Report Number : 19-77920

Project / Site name: Lovedean Lane

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
----------------------	-------------------------------	-----------------------------	---------------	--------------------	----------------------

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
HP201		S	19-77920	1394746	c	Total cyanide in soil	L080-PL	c
HP202		S	19-77920	1394747	c	Total cyanide in soil	L080-PL	c
HP203		S	19-77920	1394748	c	Total cyanide in soil	L080-PL	c
HP204		S	19-77920	1394749	c	Total cyanide in soil	L080-PL	c
HP205		S	19-77920	1394750	c	Total cyanide in soil	L080-PL	c
HP206		S	19-77920	1394751	c	Total cyanide in soil	L080-PL	c
HP207		S	19-77920	1394752	c	Total cyanide in soil	L080-PL	c
HP208		S	19-77920	1394753	c	Total cyanide in soil	L080-PL	c
HP209		S	19-77920	1394754	c	Total cyanide in soil	L080-PL	c
HP210		S	19-77920	1394755	c	Total cyanide in soil	L080-PL	c
HP211		S	19-77920	1394756	c	Total cyanide in soil	L080-PL	c
HP212		S	19-77920	1394757	c	Total cyanide in soil	L080-PL	c
HP213		S	19-77920	1394758	c	Total cyanide in soil	L080-PL	c
HP214		S	19-77920	1394759	c	Total cyanide in soil	L080-PL	c
HP215		S	19-77920	1394760	c	Total cyanide in soil	L080-PL	c
HP216		S	19-77920	1394761	c	Total cyanide in soil	L080-PL	c
HP217		S	19-77920	1394762	c	Total cyanide in soil	L080-PL	c
HP218		S	19-77920	1394763	c	Total cyanide in soil	L080-PL	c
HP219		S	19-77920	1394764	c	Total cyanide in soil	L080-PL	c
HP220		S	19-77920	1394765	c	Total cyanide in soil	L080-PL	c



Phase II Geo-Environmental Assessment
97A Lovedean Lane
January 2020
1CO108540/P2/R1

APPENDIX VII
CIEH WORKBOOK

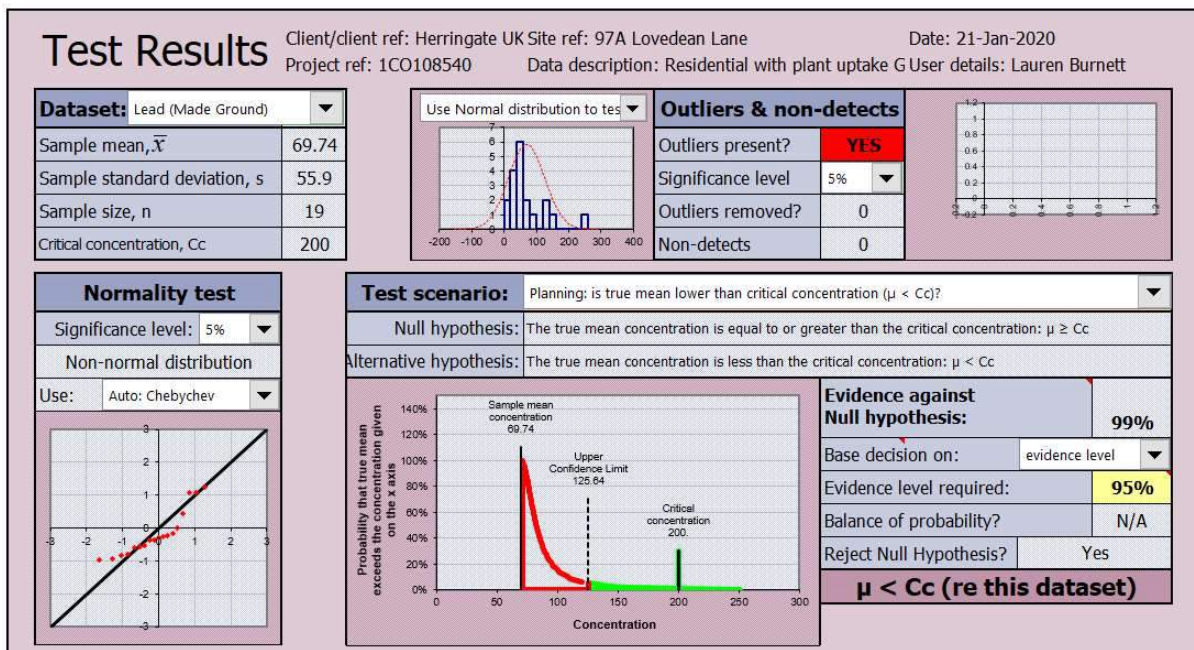


Plate 1: CIEH workbook for lead

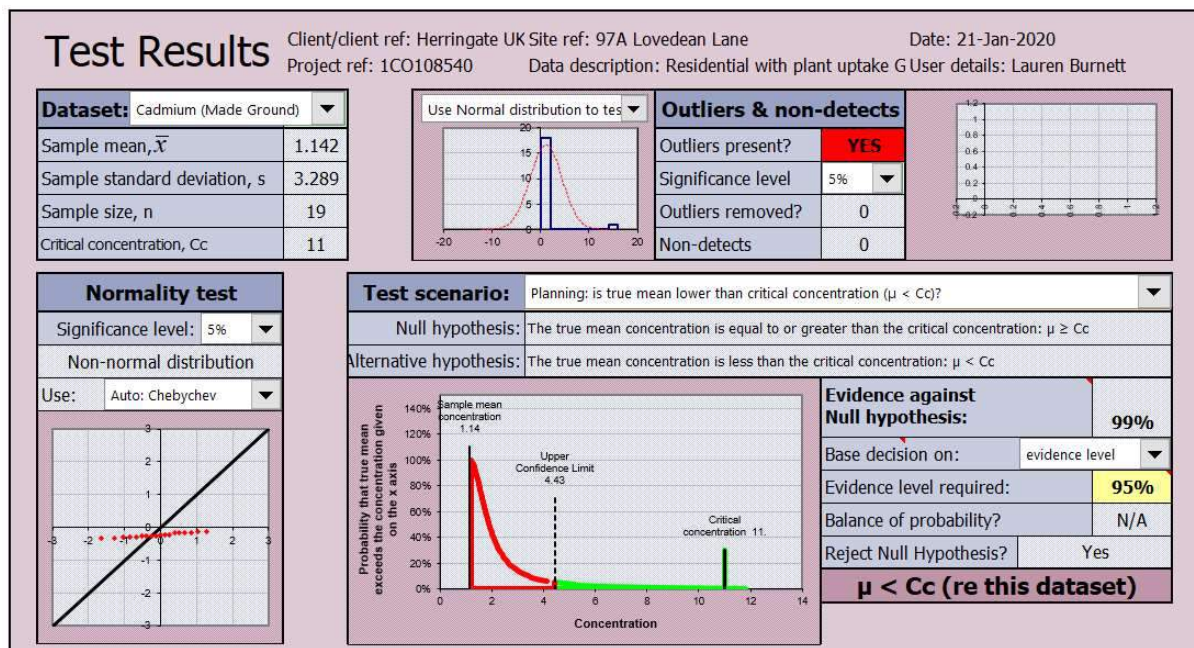


Plate 2: CIEH workbook for cadmium



Test Results		Client/client ref: Herringate UK Site ref: 97A Lovedean Lane Project ref: 1CO108540		Date: 21-Jan-2020 Data description: Residential with plant uptake G User details: Lauren Burnett	
Dataset: Benzo(b)Fluoranthene (Mad)		Use Normal distribution to test		Outliers & non-detects	
Sample mean, $\bar{x}$	0.921			Outliers present?	YES
Sample standard deviation, s	1.347			Significance level	5%
Sample size, n	19			Outliers removed?	0
Critical concentration, Cc	2.6			Non-detects	0
Normality test		Test scenario: Planning: is true mean lower than critical concentration ($\mu < C_c$)?			
Significance level:	5%	Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$			
Non-normal distribution		Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$			
Use:	Auto: Chebychev			Evidence against Null hypothesis: 97%	
				Base decision on: evidence level	
				Evidence level required: 95%	
				Balance of probability? N/A	
				Reject Null Hypothesis? Yes	
				$\mu < C_c$ (re this dataset)	

Plate 3: CIEH workbook for benzo(b)fluoranthene

Test Results		Client/client ref: Herringate UK Site ref: 97A Lovedean Lane Project ref: 1CO108540		Date: 21-Jan-2020 Data description: Residential with plant uptake G User details: Lauren Burnett	
Dataset: Benzo(a)Pyrene (Made Gro)		Use Normal distribution to test		Outliers & non-detects	
Sample mean, $\bar{x}$	0.806			Outliers present?	YES
Sample standard deviation, s	1.175			Significance level	5%
Sample size, n	19			Outliers removed?	0
Critical concentration, Cc	2.1			Non-detects	0
Normality test		Test scenario: Planning: is true mean lower than critical concentration ($\mu < C_c$)?			
Significance level:	5%	Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$			
Non-normal distribution		Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$			
Use:	Auto: Chebychev			Evidence against Null hypothesis: 96%	
				Base decision on: evidence level	
				Evidence level required: 95%	
				Balance of probability? N/A	
				Reject Null Hypothesis? Yes	
				$\mu < C_c$ (re this dataset)	

Plate 4: CIEH workbook for benzo(a)pyrene



Test Results		Client/client ref: Herringate UK Site ref: 97A Lovedean Lane Project ref: 1CO108540 Data description: Residential with plant uptake G User details: Lauren Burnett		Date: 21-Jan-2020	
Dataset: Dibenzo(a,h)Anthracen (Ma)		Use Normal distribution to test		Outliers & non-detects	
Sample mean, $\bar{x}$	0.114			Outliers present?	YES
Sample standard deviation, s	0.148			Significance level	5%
Sample size, n	19			Outliers removed?	0
Critical concentration, Cc	0.28			Non-detects	0
Normality test		Test scenario: Planning: is true mean lower than critical concentration ($\mu < C_c$)?			
Significance level:	5%	Null hypothesis: The true mean concentration is equal to or greater than the critical concentration: $\mu \geq C_c$			
Non-normal distribution		Alternative hypothesis: The true mean concentration is less than the critical concentration: $\mu < C_c$			
Use:	Auto: Chebychev			Evidence against Null hypothesis: 96%	
				Base decision on: evidence level	
				Evidence level required: 95%	
				Balance of probability? N/A	
				Reject Null Hypothesis? Yes	
				$\mu < C_c$ (re this dataset)	

Plate 5: CIEH workbook for dibenzo(a,h)anthracene